EDITOR

Benny Aprial M
Alan Alfiansyah Putra Karo-karo
Eka Abdurrahman
Proceedings of the 8th ACPES (ASEAN Council of Physical Education and Sport) International Conference

October 28th – 30th, 2022, Medan, North Sumatera, Indonesia

ACPES 2022

General Chairs
Dr. Liliana Puspa Sari, M.Kes, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Medan, Indonesia

Dr. Sri Rezeki, M.Si, Sekolah Tinggi Ilmu Ekonomi Eka Prastya, Indonesia

Technical Programme Chairs
Anggit Wicaksono, M.Pd., Universitas Negeri Semarang, Indonesia

Ari Usman, M.Kom, Universitas Harapan, Indonesia

Khairul Usman, M.Pd, Universitas Negeri Medan, Indonesia
Preface

Greetings to all of us and the mercy and blessings of Allah.

All praise be to Allah SWT. thanks to His grace and guidance so that The 8th ACPESS INTERNATIONAL CONFERENCE 2022 (ASEAN Council of Physical Education and Sport) can be held well and smoothly. The seminar entitled "Physical Education, Sports Science, and Health" was held at UPT ASRAMA HAJI MEDAN, NORTH SUMATRA, INDONESIA.

The international seminar presented the results of research, reviews, and the results of the dedication carried out by researchers from various domestic and foreign agencies, 168 participants from 5 countries, namely Malaysia, Thailand, the Philippines, Singapore and Indonesia. Seminar results This is then documented in this proceeding. This seminar can be held successfully thanks to the help of many parties. Therefore, we would like to thank the many parties who have helped organize this seminar.

We realize that there are still many shortcomings in the preparation of the proceedings of this international seminar so that suggestions and constructive criticism are very much needed.

Hopefully this proceedings will be useful for readers and those in need.

thank you

dr. Liliana Puspa Sari, M.Kes,
Conference Organization

Steering Committee

Akifah Khansa Zikrillah Rida          Universitas Sumater Utara
Eliana, S.Pd                          Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Organizing Committee

General Chair
Dr. Liliana Puspa Sari               Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

General Co-Chairs
Dr. Sri Rezeki, M.Si                  Sekolah Tinggi Ilmu Ekonomi Eka Prastya
Khairul Usman, M.Pd                   Universitas Negeri Medan

TPC Chair and Co-Chair
Fatona Suraya,M.A.,M.Pd              Universitas Negeri Semarang
Syahrul Efendi Lubis, S.Pd.1.,M.S.   Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Sponsorship and Exhibit Chair
Ramadan, S.Pd., MM, M.Pd, AIFO        Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Local Chair
Boby Helmi, S.Pd., M.Pd.              Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Workshops Chair
Filli Azandi, M.Or.                   Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Publicity & Social Media Chair
Ari Usman, M.Kom                     Universitas Harapan

Publications Chair
Benny Aprial. M, M.Pd                Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Web Chair
Indra Mawanta Ginting, M.Kom         Sekolah Tinggi Ilmu Ekonomi Eka Prastya

Posters and PhD Track Chair
Alan A. Putra Karo karo M.Pd.        Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Panels Chair
Hardodi Sihombing M.Pd               Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Demos Chair
Rinaldi Aditya, S.Pd.,M.Pd            Sekolah Tinggi Olahraga dan Kesehatan Bina Guna

Tutorials Chairs
Anggit Wicaksono, M.Pd.              Universitas Negeri Semarang
Mawardinur, M.Or                     Sekolah Tinggi Olahraga dan Kesehatan Bina Guna
**Technical Program Committee**

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedomanta Keliat, M.Pd</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Ahmad Al Munawar, M.Pd</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Andi Nur Abady, M.Pd</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Devi Catur Winata, M.Pd</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Ika Endah Puspita Sari, M.Pd</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Nurul Syahnaz Sianipar</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Epenetur Giawa</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Yitiman Delaw</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
<tr>
<td>Arief Tambunan</td>
<td>Sekolah Tinggi Olahraga dan Kesehatan Bina Guna</td>
</tr>
</tbody>
</table>
Contents

Research on the Teaching Mode Reform of Chinese Medical Qigong Curriculum in TCM
Jing Wang, Chano Jiraporn 1

Factors Affecting Product Support to Promote Ideas and Improve Life through Movement Workshop Project
Saowaluk Pramann, Krittipat Ajanakitti, Hadee Pohma, Sudawan Wutichat, Theeranan Tanphanich, Siritan Pichainarongk 8

A Study Of Problems In The Implementation Of A Workshop Project To Promote Ideas For Life Development Through Movement
Rungsaowaluk Kitmetheekun, Chalit Chaowilai, Passapong Piromkam, Nuttawut Kitkuan, Kittikarn Naphakorn, Tharin Kanlueng 18

Effectiveness of the Workshop Project for Developing Cognitive Skills and Improving Daily Life Through Movement
Phetthianchai Suchat, Phakhunthod Sataporn, Saisudjai Warsittee, Dongkaew Chokchai, Poonsri Wichanon, Silrungtham Somboon 26

The Study on Physical Activity Programs Affecting Physical Fitness in Working-Age Adults During the Coronavirus Disease 2019 Situation
Kritchapol Arsapkdee, Chairat Choosakul, Chirawut Achariyacheevin 37

Competitive Anxiety and Mindfulness
Piyachate TASING, Chairat CHOOSAKUL, Chirawut ACHARIYACHEEVIN 48

Confirmatory Factor Analysis of Teamwork in Organizations Using the GRPI Model
Sompong Maneesakprasert, Arporn Popa, Watanyoo Kaewsuphan, Anurakpapop Meeton, Vinita Kaewkua 57

Competitive anxiety in athletes with disabilities: a systematic review
Walailak Pumpuang, Chairat Chusakul, Arporn Popa 66

Lifestyle and Academic Performance Among The Students During COVID-19 Pandemic
Vanessa S Maghanoy, Myiella R Adolfo 76

Students' Attitudes And Academic Performance In Physical Education
Buena D. Calunsag, Chiedel Joan G San Diego 83

Mental Health Assessment of Teachers in Thailand during Blended Learning
Dunhill Dufrens 104

Perceived Stress During Covid-19 Pandemic: Its Relationship To The Academic Performance Of Students
Karyl Mitzi Anne D. Demetillo, Kristine Joy A. Melitant, Edna B. Nabua 113

Pandemic After Marawi Siege: Effects And Coping Strategies Of Internally Displaced Persons (IDPs) In Government Transitory Shelters In Marawi City
Marilou F. Siton Nanaman, Irene A. Estrada 129

Precompetitive Mood Among Futsal Players in Relation to Team Performance
Jay Carlo S. Bagayas 144
Leg Power in Relation to Rebounding Performance of Male Basketball Players
Joshua Jordan N Ventic, Je-Ann D. Uy, Rebecca M. Alcuizar

Boundless Classes And Absent Bodies: Teaching Physical Education Online
Lydie D. Paderanga, Monera Salic-Hairulla, Rebecca M. Alcuizar

Emotional Attributes Of Msu-Iit's Science Students: Basis For Science Programs And Mental Health Enhancement
Gevie June Pasanting, Mylene O. Toraja, Manuel B. Barquilla, Elesar V. Malicuban, Odessa Aberilla

Information And Communications Technology (Ict) Usage And Health Status Of The Student Teachers Of Msu-lit, Iligan City
Rebecca Alcuizar, Randel John Bullawin, Uriah Daw Patria

To Investigate the Effects of Static Stretching and Dynamic Stretching on Power and Agility Performance in University Students
Joel Chia, Dominan Cho

Associations between physical activity, desk-bound time, and physical fitness in Chinese female institute students
Ming Guo Ming, Zan Wang Xiao, Teck Koh Koon

Perceived Cushioning Levels of Running Shoes with Different Mechanical Properties

The Use of Human Pose Estimation to Enhance Teaching & Learning in Physical Education
Tommy Hock Beng, Ng Steven Kwang San, Tan Shern Meng, Tan Wei Peng, Teo John Komar

Nurturing Future-Ready Learners in the new normal through Physical Education lessons: Reflections from two Singapore PE Teachers
Louis Ho J Yen, Stella Yap Sze Hui

Contribution of Price, Location, and Facilities to Interest in Renting Futsal Fields After the Covid-19 Pandemic
Agung Nugroho, Boby Helmi, Ade Evriansyah Lubis, Rinaldi Aditya, Fadhil Rashid Alfarisyi

The Formation Of The Physical Condition Of Students Through A Game Gobak Sodor Year 2021
Ahmad Al Munawar, Dicky Hendrawan, Dewi Maya Sari, Muhammad Syaleh, Pedomanta Keliat, Ahmad Habibi

Analysis Of Down Passing Movement Using The Kinovea Application On Extraculicular Students Of State Junior High School 6 Percut Sei Tuan
Benny April M, Liliana Puspa Sari, Alan Alfiansyah Putra Karo-karo, Hardodi Sihombing, Eka Abdurrahman, Ibrahim Ibrahim, Fery Adrian

The Effect Of Traditional Games On Left Muscle Power For Children Aged 10-12 Years Old In The Village Of Percut Sei Tuan Kelurahan Tanjung Rejo In 2021
Devi Catur Winata, Andi Nur Abady, Syarul Efendi, Mawardinur Mawardinur, Filli Azandi, Reza Valnacham

Development Of The Concept Of Outcome-Based Education Rhythmic Gymnastics Courses
Ika Endah Puspita Sari, Yusra Nasution, Khairul Usman, M. Irfan
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect Of Training Methods, Precision And Feedback On Gateball Sports Stroke Skills</td>
<td>288</td>
</tr>
<tr>
<td>Ramadan Ramadan</td>
<td></td>
</tr>
<tr>
<td>The Proposal of SEMERC Model to Enhance Fundamental Movement Skills in Table Tennis</td>
<td>301</td>
</tr>
<tr>
<td>Rattanachaloemwong Chanoknat, Prachanban Sathin, Malarat Anan, Pantusa Kasem</td>
<td></td>
</tr>
<tr>
<td>The Role of Recreation Leaders and The Operating of Recreational Activities in educational institutions New Normal era</td>
<td>314</td>
</tr>
<tr>
<td>Khamplew Jiranuwat, Nimnatipun Sumonratree</td>
<td></td>
</tr>
<tr>
<td>The Media Literacy in the 21st Century of Physical Education Teacher-Student</td>
<td>322</td>
</tr>
<tr>
<td>Nantawan Tongpitak, Jaturon Mahakanok, Mathee Kaewsanit, Sathin Prachanban, Kasem Pantusa</td>
<td></td>
</tr>
<tr>
<td>Effect Of Self-Confidence By Self-Talk Skill Training On Anxiety In Korfball Shooting</td>
<td>329</td>
</tr>
<tr>
<td>Vanapanich Naphatchakorn, Panurushthanon Phichayavee</td>
<td></td>
</tr>
<tr>
<td>Effects Of Imagery With Music On Ability To Perform Techniques Of Rhythmic Gymnastics</td>
<td>338</td>
</tr>
<tr>
<td>Panjarat Prawatyotin, Phichayavee Panurushthanon, Sumonratree Nimnatipu</td>
<td></td>
</tr>
<tr>
<td>The Effect Of Imagery And Modeling On Anxiety In Netball Athletes</td>
<td>349</td>
</tr>
<tr>
<td>Nasome Suttirak, Panurushthanon Phichayavee</td>
<td></td>
</tr>
<tr>
<td>The Effect of Recreation Model for Enhancing Leadership of Recreation Leaders</td>
<td>356</td>
</tr>
<tr>
<td>Tanyawong Tanet, Choeichaiyapoom Patuma</td>
<td></td>
</tr>
<tr>
<td>Systems Thinking Indicators and How to apply in Social Dance Instruction</td>
<td>364</td>
</tr>
<tr>
<td>Nussaya Tatchai, Prachanban Sathin, Mararat Anan, Pantusa Kasem</td>
<td></td>
</tr>
<tr>
<td>Aqua Zumba® Versus Aqua Jog as The Treatment of Obesity among Collegiate Students</td>
<td>372</td>
</tr>
<tr>
<td>Maisarah Shari, Sarina Md Yusof, Raja Nurul Jannat Raja Hussain, Ke</td>
<td></td>
</tr>
<tr>
<td>Keh Lay, Suhana Aiman, Norizzati Mohd Idris</td>
<td></td>
</tr>
<tr>
<td>Relationship between Self-Efficacy and Push-Up Performance among Male Gymnastics Members</td>
<td>379</td>
</tr>
<tr>
<td>Ummu Nadiah Zulkipli, Mohad Anizu Mohd Nor, Johansyah Lubis, Jamatul Shahidah Shaari</td>
<td></td>
</tr>
<tr>
<td>The Relationship Between Body Mass Index (BMI) and Lifestyle of Students in the Faculty of Education at UiTM Puncak Alam Campus</td>
<td>388</td>
</tr>
<tr>
<td>Nik Ahmad Syaqir Zahari, Nadia Ainuddin Dahlan</td>
<td></td>
</tr>
<tr>
<td>The Influence of Physical Activity on Academic Performance Among Students-Athletes: A Case in a Secondary Public School</td>
<td>398</td>
</tr>
<tr>
<td>Najihah binti Mohd Amin, Mawarni Binti Mohamed, Ani Mazlina Dewi Mohamed</td>
<td></td>
</tr>
<tr>
<td>The Implication of Covid-19 Pandemic on Stress Level between Gender in Elite Athletes</td>
<td>411</td>
</tr>
<tr>
<td>Nur Asmidar A Halim, Mohad Anizu Mohd Noor, Jamatul Shahidah Shaari, Vincent Parnabas, Ahmad Fikri Mohd Kassim, Wahidah Tumijan, Sharifah Maimunah Syed Mud Puad, Jefri Ngadirin, Azrul Hisyam Abd Jalil</td>
<td></td>
</tr>
</tbody>
</table>
Effect of Training Status on Exercise Addiction Risk and Health among Athletes
Suhana Aiman, Zuhnun Akmal Kamari, Nur Asmidar A Halim, Sarina Md Yusof, Shahidah Shaari

Types of Sport Motivation on Malaysian Athletes
Vincent Parnabas, Ochillochandern Gittom Angang, Mohad Anizu Mohd Nor

An Overview Physical Activity Level of The Universitas Negeri Surabaya Academic Community in Supporting Healthy Campus
Abdul Rahman Syam Tuasikal, Mochamad Purnomo, Kunjung Ashadi, Nurhasan Nurhasan

Development Of Quota Determination Model On Koni As A Basis For Forming A Contingent Team
Achmad Widodo, M.Dzul Fikri, Testa Adi Nugraha, Awang Firmansyah, Syafathul Jannah, Panji Bana

The Awareness of Youth People on ASEAN Para Games XI in 2022
Awang Firmansyah, Donny Ardy Kusuma, Afif Rusdiawan, Dwi Nur Cahya Kusumaningtyas, Andika Bayu Putro, Dwi Cahyo Kartiko

Sedentary Lifestyle Of Adolescent In Rural Areas in Jombang-Indonesia
Himawan Wismanadi, Meirinawati Meirinawati, Bachtiar Sjaiful Bachri, Afif Rusdiawan

Management Of Sports Facilities And Infrastructure Multievent Porprov East Java 2022
Lutfhi Abdil Khuddus, Himawan Wismanadi, Andun Sudijandoko, Catur Supriyanto, Afif Rusdiawan

Level Of Physical Activity, Body Mass Index, Sedentary Lifestyle Students In Mountain And Coastal Areas
Oce Wiriawan, Siswantoyo Siswantoyo, Donny Ardy Kusuma, Awang Firmansyah, Azmawati Binti Mohamad Nor, Afif Rusdiawan

Study Of Information And Characteristics Of Handball Athletes
Asyifa Tsalisafriana, Ranu Baskora Aji Putra

Determine fitness of UNNES basketball players using sport-specific tests and measurements
Ayu Tri Agustin, Anggit Wicaksono

How to Improve National Branding through Sport Event in Post-Pandemic Era? A Literature Review
Billy Castyana, Tandiyo Rahayu, Heny Setyawati, Agus Darmawan, Risky Vidiana Sari

The Correlation between The Energy Intake with Taste, Appearance, Maturity Level, and Food Variety in Athletes at Football Academy
Tsaniatin Nahla Al Amien, Mardiana Mardiana

Risky Health Behaviors and Type 2 Diabetes Mellitus: Ecological Study in Central Java Province, Indonesia
Maulina Istighfaroh, Lukman Fauzi

The Analysis Of Physical Activity Knowledge, Awareness, And Implementation In Healthy Living Patterns Of Drug Addicts At Rumah Damai Semarang
Mohammad Arif Ali, Ahmad Fathullah, Sugiyarto Sugiyarto, Siti Baitul Mukarromah, Dewi Marfu’ah Kurniawati, Adiska Rani Ditya Candra
Physical Activity Level and Quality of Life of Students During Covid 19 Pandemic
Wiga Nurlatifa Romadhoni, Nasuka Nasuka, Anggit Wicaksono, Adiska Rani Ditya Candra, Erwin Nizar Priambodo

Practice-Based Learning Method to Improve Physical Education Teacher Understanding of TGMD-2 Usage
Baskoro Nugroho Putro, Hanik Liskustyawati, Djoko Nugroho, Sri Santoso Sabarini, Sunardi Sunardi, Budhi Satyawan

Appropriate of Participation Solid Waste Management Model for Students in Suburban Schools
Hansakul Anong, Sangpakdee Thaninatphsait

Relationship Between Competitive Anxiety and Performance: A Study of the Archers at the National Competition
Jamatul Shahidah Shaari, Nur Farah Diyana Mohd Nizam, Mohad Anizu Mohd Nor, Nur Asmidar A Halim, Suhana Aiman, Yudik Prasetyo

The Effect Of Post Activation Potentiation Of Back Squat On 50 Meter Sprint Performance Among 100m Male Sprinters
Jun Kwong Kar

Performance Of Using Digital Platforms For The Management Of Promote Ideas And Improve Life Through Movement Workshop Project
Suesuwan Rawiwan, Karam Jongrak, Poompin Kritchaya, Huykodwattana Piyanat, Vongsrangsap Supawan

Assessment for Learning in Physical Education and Sport: Practical Tools and Strategies
Lena Chng

Physical Activities, Sedentary Behaviour, and Screen Time Related to Nutritional Status of Elementary School Students in Urban Area
Wildan Alfia Nugroho, Pipit Pitriyani, Nur Auliya, Andi Suntoda, Agus Mahendra

Hitting The Bull’s Eye Through An Evaluation Of Special Program For Sports (SPS)
Jhovelyne Acosta-Espiritu, Rebecca M. Alcuizar
Research on the Teaching Mode Reform of Chinese Medical Qigong Curriculum in TCM

Wang Jing and Jiraporn Chano

{29590123@qq.com, jiraporn.j@msu.ac.th}

Department of Physical Education, Henan University of Chinese Medicine, China, Curriculum and Instruction Department, Faculty of Education, Mahasarakham University, Thailand

Abstract. Chinese Medical Qigong has a long history and plays an important role in medical treatment. In the era of global health, people's awareness of green medicine has enhanced and the demand for Chinese Medical Qigong gradually increased. Research on the reform of teaching mode of Chinese Medical Qigong has a great impact on the development of clinical diagnosis and treatment ability of TCM college students, which could benefit to a wider range of people, and could also expand the international dissemination of TCM therapy and seek happiness for people all over the world.

Keywords: Chinese Medical Qigong, Qigong curriculum, Teaching Mode Reform.

1 Introduction

This Word document can be used as a template for papers to be published in EAI Core Proceedings. Follow the text for further instructions on text formatting, tables, figures, citations and references.

Chinese Medical Qigong is the crystallization of traditional medicine and traditional health preserving techniques. As a gem of the Chinese nation's tradition, it inherits profound Chinese culture and plays an important role in medical treatment. Understanding of Chinese Medical Qigong is the fundamental factor for the formation and improvement of TCM academic system. Through the experience of practicing Qi, people have realized the operation of Qi and the great significance of Qi to human life science. Based on this, the theory of Qi transformation, the theory of Viscera, the theory of meridians and collaterals was outlined. Therefore, the understanding and mastery of Chinese Medical Qigong play a vital role in the formation of TCM thinking of TCM college students and in the development of their clinical diagnosis.

Professor Li Jinbo (2021) addresses that the scientificity of Qigong and showed many skills of how to practise it. Professor Liu Tianjun (2012) reports that a brief history of the development of Chinese Medical Qigong, the functions and characteristics of Chinese Medical Qigong, the basic operation of Qigong method. Liu Lihong (2018) argues that the combination of academic and
interest which is a model of the combination of case characteristics and academic laws. Zhang Biao, Wei Yulong (2014) believe that for the social promotion of Chinese Medical Qigong, no matter based on academic standpoint or from the perspective of health industry, we need to develop ideas based on the characteristics of the Internet. Luo Chenglin (2015) indicates that Chinese Medical Qigong is a practice of human life self-control and reform based on TCM theory, with health care as the main objective and Qi capture as the main means. It is an important part of TCM, so it is also an important content for TCM college students. Wang Feng, Zhang Jingwen, Hou shaojing (2014) highlights that when educating and training medical Qigong talents, we should pay attention to the practice of Qigong and deepen the experience in the process of practicing Qigong.

Based on the previous research, the problems of Chinese Medical Qigong teaching are mainly as follows: 1. Lack of attention to Chinese Medical Qigong. Many colleges and universities of traditional Chinese medicine still stay in the traditional medical teaching mode. Based on the previous research, the problems of Chinese Medical Qigong teaching are mainly as follows: 1. Lack of attention to Chinese Medical Qigong. Many colleges and universities of traditional Chinese medicine still stay in the traditional medical teaching mode, ignoring the health needs of human body by exploring its own life structure. 2. Lack of inclusion in the curriculum system. As an important part of human life science, the construction of Chinese Medical Qigong has been neglected. 3. Lack of clinical ability training for students. Clinical diagnosis and treatment of Chinese Medical Qigong is a part of TCM diagnosis and treatment based on syndrome differentiation. If it was lost in TCM, the application of TCM talents in medical treatment will become monotonous and superficial, which can not better reflect the profound and profound TCM.

2 Methodology

2.1 Literature Research

Method. Literature Research Method is a method of obtaining data by investigating literature according to certain research purposes or topics, so as to comprehensively and correctly understand and master the problems to be studied.

2.2 Interview. Interview is a method by which the interviewer investigates social phenomena by interviewing the interviewee.

2.3 Observational method. Observational method is a method by which the researcher directly observes the object of study with his own senses and auxiliary tools according to a certain research aim, research outline or observation table.

2.4 Method of investigation. Method of investigation is a method of collecting materials about the realistic or historical situation of the research objects in a purposeful, planned and systematic way.

2.5 Interdisciplinary research method. Interdisciplinary research method is the use of multi-disciplinary theories, methods and results on the overall study of a topic in a comprehensive way.
3 Result

Based on the investigation of the present situation of Chinese Medical Qigong course construction in more than 10 colleges and universities in China and interviews with 30 PE administrators and teachers, a new teaching mode of Chinese Medical Qigong course is formed and popularized in 2 colleges.

3.1 Application steps

3.1.1 Incorporate into the curriculum teaching system

<table>
<thead>
<tr>
<th>Grade</th>
<th>Types of courses</th>
<th>Credit</th>
<th>Examining mode</th>
<th>Textbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>compulsory course</td>
<td>2</td>
<td>examination</td>
<td>Chinese Medical Qigong</td>
</tr>
<tr>
<td>two</td>
<td>compulsory course</td>
<td>2</td>
<td>examination</td>
<td>Chinese Medical Qigong</td>
</tr>
<tr>
<td>three</td>
<td>elective course</td>
<td>2</td>
<td>examination</td>
<td>Chinese Medical Qigong</td>
</tr>
<tr>
<td>four</td>
<td>elective course</td>
<td>2</td>
<td>examination</td>
<td>Chinese Medical Qigong</td>
</tr>
</tbody>
</table>

According to the implementation plan for the tasks and objectives of the project, experts shall be organized to discuss the talent training plan and objectives of TCM colleges and universities, and in combination with the actual teaching situation of the school, the TCM Qigong Badanjin Project shall be taken as the stage teaching content, the project shall be set as a required course and included in the syllabus for the first grade, and the curriculum content shall be subject to unified management and assessment. Taking the TCM Qigong “Five animals opera” as the limited courses for the second, third and fourth grade classes in some colleges and departments, personalized teaching is carried out according to the talent training objectives, and a curriculum evaluation index system combining formative evaluation and summative evaluation is implemented.

3.1.2 Taking Curriculum Construction as the Target Point

Based on the requirement of training compound TCM talents for schools, the project fully fulfills the requirement of multi-disciplinary thinking integration and cross-disciplinary ability integration. Actively explore new ideas and new methods for curriculum construction, build a provincial-level first-class offline course of Five Animals Opera, and take this as a target point to comprehensively promote the reform and research on the teaching mode of traditional Chinese medicine Qigong theory and practice for comprehensively improving the professional ability of traditional Chinese medicine talents, and train students to combine the movement mode of traditional health keeping skills with the mode of traditional Chinese medicine thinking, and integrate and better serve the construction of "new medicine" and the goal of healthy China.
3.1.3 Promote education by competition

In the process of the competition, we should guide students to understand the importance of Chinese Medical Qigong better, urge students to increase the density of practice, and cultivate the cohesion of the team. Organize student teams to participate in provincial or national project competitions, take this as anchor, build brand effect of Chinese Medical Qigong, set up students' example, and achieve the positive role of promoting teaching and learning by competition.

3.1.4 Research on teaching reform

The implementation of the project, the teaching team and the overall quality of teachers put forward higher requirements. We shall, by relying on the project and aiming at team building and talent cultivation, continuously carry out the research on teaching reform, innovate teaching ideas and methods, constantly update teaching modes, integrate the ideological and political teaching elements of courses, combine the technical actions of Chinese Medical Qigong with the efficacy of health care, carry out in-depth and solid research on teaching reform, and promote the improvement of the teaching effect of Chinese Medical Qigong.

3.1.5 Equal emphasis on teaching and practice

Give full play to students' subjective initiative, organize social practice activities, train students to practice well, teach right, speak understand, exercise students' team cooperation ability and practical application ability. Making full use of the theoretical knowledge of TCM major and the theory and practice of Chinese Medical Qigong, the medical attribute of traditional health care can be brought into full play and become a unique basic skill of TCM major college students.

3.1.5 Remarkable teaching results.

Since the program was brought into the curriculum system, with the extensive implementation of the program, the audience has reached nearly 9,000 (full-time undergraduates, junior college students, graduate students, etc.), about 6,000 in colleges and universities of the same major, and about 1,000 in social promotion. The role of the teacher is changed from a trainer to a guider. The teacher constantly adjusts and improves the teaching methods, absorbs new knowledge and spends more time teaching and answering questions. Students' interest in Chinese Medical Qigong has been greatly increased and students' ability to apply what they have learned has been improved. The teaching effect is remarkable.

The innovative achievements of teaching mode should be brought into curriculum management. Through teaching practice with social practice, the project has explored the teaching mode of common development, mutual complementarity and two-way circulation of four modules (teaching, competition, mass organization construction and social practice) with students as the main part and two modules (curriculum construction and teaching reform and research) with teachers as the main part, and has realized interaction such as teacher-student, student-student and social-student, and has evaluated and fed back through supervision and teaching management, finally carried out the talent training program and completed the talent training objectives.

3.2.2 Radiation Effect of Teaching Model Reform 3.2.2.1Point to area
Provide practical experience for the implementation of many health care techniques of Chinese Medical Qigong, excavate more theoretical connotation and the fusion point of professional disciplines.

3.2.2.2 Development the teaching teams and teachers sustainably and comprehensively

Continuously build a teaching team including traditional physical education, traditional Chinese medicine culture, traditional Chinese medicine health care, traditional Chinese medicine rehabilitation, rehabilitation treatment, acupuncture and massage, traditional Chinese medicine culture and science popularization, information management and other disciplines to ensure the high-quality inheritance and development of the project. Strengthen the training of teachers, continue to build online and offline teaching as a whole, use information technology teaching of school, provincial and national courses, and constantly develop and improve the undergraduate first-class curriculum.

3.2.2.3 Radiation Effects of Equivalent Professional Institutions

The teaching mode was first implemented in Guizhou University of Traditional Chinese Medicine and Anhui University of Traditional Chinese Medicine in China, with a total of 10000 students and teachers. It lays a solid foundation for the implementation of the long-term goal of "more than 20 colleges and universities of traditional Chinese medicine nationwide, benefiting hundreds of thousands of students each year", can greatly enhance the comprehensiveness of the cultivation of traditional Chinese medicine talents, and make up for the lack of comprehensive talents in traditional Chinese medicine.

3.2.2.4 Radiation effect of social practice

The project makes use of powerful platform and curriculum resources to radiate and drive about three local primary and middle schools, one community, several government organs and units and other poverty-stricken counties in the province to carry out popularization activities based on the practice and popularization of traditional Chinese medicine Qigong, and continuously expand the coverage and benefit coverage. Through the closely radiation drive, to create Henan University of Traditional Chinese Medicine Qigong inheritance and promotion of the core brand.

4 Discussion

In the process of implementing the project, we try to establish a teaching mode more in line with TCM colleges and universities by studying the setting of talent training objectives, curriculum content reform, innovation of teaching mode and integration of teaching practice.

4.1.2 The constant renewal of teaching ideas

“For carrying forward the socialist core values, cultivating the students' patriotism, collectivism, socialist spirit and the will quality of hard work and indomitable struggle, realizing the unique function of sports wisdom and sports heart.” Based on this, it is necessary to renew the teaching idea according to the needs of the times and the characteristics of TCM colleges and
universities. Train the student to grasp the technical skill the initial level ability so they will transform for the practice utilization higher level ability.

4.1.3 To Fully Explore and Apply Other Qigong Contents of TCM by Using Points to Promote Areas

Based on Baduanjin, Wu qin xi and other items of Chinese medical Qigong, explore the advanced teaching mode of TCM talent training to lay a solid foundation for the development of other items in turn.

4.2 Difficulties in project research

4.2.1 The Difficulty of Students in Establishing Intuitive Perception of Human Body

The practice of Chinese medical Qigong is relatively abstract, which needs to regulate and rationally set up the teaching progress of theory and practice.

4.2.2 Develop the teaching teams and teachers sustainably and comprehensively

It is urgent to build a teaching team with Chinese medical Qigong theoretical knowledge and practical experience.

5 Conclusion

During the implementation and promotion of this program, we shall highlight the humanistic characteristics of traditional Chinese medicine, form multi-type and diversified teaching contents and curriculum system, guide students to increase the proportion of study time, carry out scientific reform, improve the teaching evaluation system, give full play to the role of team teaching reform achievements, expand the audience, strengthen social practice, and cultivate innovative, compound and high-quality first-class undergraduate talents.

Under the background of "Healthy China 2030" program, it is very important to popularize Chinese medical Qigong. The curative effect of Chinese medical Qigong can not only bring the benefits of healthy life to a wider range of people, but also open up the soil for the development of Chinese medical Qigong to cultivate professionals, expand the path of international transmission, seek happiness for the people of the world, and enhance the credibility and influence of Chinese traditional culture in the world.

6 Acknowledgements

The authors wish to thank the editors and reviewers of Horizon JHSSR Journal, which provided us an opportunity to publish in their scholarly journal.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

Declaration of Conflicting Interests
The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article. This article is the sole work of the author and has not been presented or published elsewhere.

References

Factors Affecting Product Support to Promote Ideas and Improve Life through Movement Workshop Project

Saowaluk Pramann¹, Krittipat Ajanakitti², Hadee Pohma³, Sudawan Wutichat⁴, Theeranan Tanphanich⁵, Siriluk Pichainarongk⁶

¹,²,³,⁴,⁵,⁶

Abstract. The purpose of this research is to study the factors affecting product support to promote ideas and improve life through movement workshop project: PIILM. The target group was 4 users of sponsored products in Thailand. The methodology employed content analysis and semi-structured in-depth interviews. Interviews consisted of an examination of four factors. The results of the research demonstrated that, 1) Process factor: The sponsors considered supporting products from provided information through project coordination as organization required, 2) Analytical factor using the 5W1H technique: The sponsors' approval was to support the product from the target groups and project participants, objectives, operation process and characteristics of activities and project’s schedule, 3) Sponsorship factor: Sponsors are willing to support organization’s essential products, and to promote the products through practical use. 4) CSR Factor: The sponsors considered supporting the product by implementing the principles of the organization's ISO 26000 which defines the core elements of every social responsibility. This research is one of five sub-research papers, resulting from the PIILM workshop project for educators.

Keywords: products support, sponsorship, workshop project

1 Introduction

Development of Thai sports industry according to the National Economic and Social Development Plan (NESDP), Vol. 12 (2017-2021), focused on the development of human potential as an important key to foster sports industry (Sport Economy). Focusing on developing the sports industry and adding value to the economy through knowledge and innovation, from the NESDP, the sports industry development plan is linked to Strategy 5 of the Sports Authority of Thailand Strategic Plan (2017-2021): Development of knowledge and innovation related to sports with objective to develop quality sports science personnel and ability to provide comprehensive services at all levels. Also, promotion of research and
development in sports knowledge to develop the capability of athletes and public health; research in sports science and technology in the country focusing on creating innovations for sports (Sports Authority of Thailand Ministry of Tourism and Sports, PSU). Additionally, in accordance with the 6th National Sports Development Plan which consists of 2 phases; 1: short-term approach to improve quality, create standards and develop curricula, middle physical education; and 2: medium-term approach to promote knowledge development, awareness of sportsmanship as well as increase the number of physical education teachers and drive continuous development.[1] From the guidelines for developing basic sports dimensions, physical education teachers should be encouraged and continually developed their knowledge to benefit the learners and teaching competencies, which will lead to development of the country's sports.

Organizing a workshop project entitled: “Promoting ideas...improving lives through movement” is one of the approaches of the 6th National Sports Development Plan (2017-2021). The plan serves to increase capacity in sports management; adaptation of science and technology in sports to enhance the quality of athletes and encourage the presence of a sports scientist on all professional sports teams.[7] The objective is to promote and develop knowledge for physical education teachers, to develop and create learning for learners through movement and sports activities, to enhance learning skills or understanding of the lesson, as well as to transfer concretely and abstractly lesson-learned knowledge to the essence of the fostering ideas, intelligence, health, further than only sports. The initiative considers the importance of physical education processes, aimed to promoting and developing both wellbeing of physical and mental health. Therefore, the significance of physical education is to make people realize how important movement or exercise appropriately is, create quality of life for oneself and society.

Sports development is important to create economic value which is beneficial to the promotion of sports.[4] Support from the government, financial institutions and product sponsorship are an important part leading to success and integrity of a project and result in a more efficient project implementation, especially supporting products or facilities, which is the sponsor's corporate marketing communications strategy. The collaborative approach helps promote a good image for the organization and build confidence in products from stakeholders.

The issues mentioned above inspired researcher to study the factors affecting the product support from the workshop project: "Promoting ideas...improving lives through movement". An assessment of factors affecting product sponsorship, as well as product support for organizing training programs according to needs was conducted.

1.1 Objectives of the Study

To study factors affecting product support to promote ideas and improve life through movement workshop.

2 Scope of Research

2.1 Scope of Content

The research was aimed to assess factors affecting product support in the workshop project promoting ideas to improve life through movement. This was qualitative research
which used in-depth interviews with product sponsors in organizing the project. The researcher studied the factors affecting support which included 1) Process 2) Analytical using 5W1H (Analytical Thinking with 5W1H) 3) Sponsorship and 4) Corporate Social Responsibility: CSR.

2.2 Scope of Target Group

Product sponsors in the workshop promoting ideas, improving life through movement included 4 persons who were qualified as managers or deputy managers or representatives of the organization or the person assigned as an authority to decide support.

2.3 Scope of Time

The period of data collection occurred from February to June 2022.

3 Research Methodology

Research on factors affecting product sponsorship from workshop on improving life through mobility was applied as follows:

3.1 Target Group

The target group was 4 people who were product supporters in the workshop with qualifications as organization managers, or deputy manager or representative of the organization or the person assigned to have the authority to decide on support.

3.2 Research Instruments

The method used for data collection was a semi-structured in-depth interviews process which consisted of 2 parts:

Part 1 General information about the respondents

Part 2 Comments on the factors affecting product support in the workshop project promoting ideas to improve life through movement, consists of 4 factors: Process Factor, Analytical Factor using 5W1H (Analytical Thinking with 5W1H), Support Factor (Sponsorship) and social responsibility factor (Corporate Social Responsibility: CSR).

3.3 Development and Validation of the Research Instruments

3.3.1 The researchers analyzed and synthesized research problems to determine the research objectives

3.3.2 Researchers reviewed academic knowledge and created a semi-structured interview based on the theory and conceptual framework of related research which was used to create an interview form. As a result, the researcher processed each factor questionnaire and prepared a complete interview form.
3.3.3 Consulted with the project advisor with mock interview to ensure accuracy and accuracy in content (Content Validity) and improve the interview form according to the advice.

3.3.4 Requested assistance from an expert considering the quality of an interview from the Department of Physical Education and Sports with research method and submitted to 3 experts to check the quality of the interview tool; in terms of content validity. The Index of Item Objective Congruence (IOC) was 0.85 which was considered an acceptable criterion.

3.4 Data verification

The researcher carried out a review of the reliability of the data obtained from the interview using the member's verification method (Member Check) from the information obtained from interview. The collection, analysis and interpretation of target audience responses was systematized to build the credibility of the information.[9]

3.5 Data Analysis

Data analysis of results obtained consisted of the following:

3.5.1 Information obtained from the study of documents and interviews. Use the method of analyzing the content document (Content Analysis) reported data by descriptive methods.

3.5.2 The data obtained from the interviews was analyzed using an inductive analysis method. Analytic induction classified the information in a systematic way and interpreted the meaning of the analysis to draw conclusions. Study conclusions were organized to answer the main questions and develop theoretical relationships.

4 Results

The results of the data analysis divided into 2 parts as follows:
- Part 1 General information about the organization or product sponsor.
- Part 2 analysis of factors affecting product support. (Four factors: process, analysis using 5W1H technique, sponsorship, and social responsibility)
Table 1: Product Sponsors’ general information

<table>
<thead>
<tr>
<th>Code</th>
<th>Organization Characteristics</th>
<th>Sex</th>
<th>Age</th>
<th>Education Level</th>
<th>Time in the position</th>
<th>Workplace</th>
<th>Experience in supporting product</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Revenue and Property Management Agency</td>
<td>female</td>
<td>48</td>
<td>Bachelor Degree</td>
<td>3 yrs</td>
<td>Rajamangala University of Technology Thanyaburi Pathum Thani Province</td>
<td>yes</td>
</tr>
<tr>
<td>02</td>
<td>Student shoes, sandals, and teaching materials manufacturer</td>
<td>male</td>
<td>32</td>
<td>Bachelor Degree</td>
<td>3 yrs</td>
<td>Samutsongkram Province</td>
<td>yes</td>
</tr>
<tr>
<td>03</td>
<td>Food supplement manufacturing and distributor</td>
<td>female</td>
<td>65</td>
<td>Bachelor Degree</td>
<td>7 yrs</td>
<td>Pathumthani Province</td>
<td>yes</td>
</tr>
<tr>
<td>04</td>
<td>Medical tool and equipment distributor</td>
<td>male</td>
<td>40</td>
<td>Master Degree</td>
<td>9 yrs</td>
<td>Bangkok</td>
<td>yes</td>
</tr>
</tbody>
</table>

From Table 1, 4 product sponsors, aged 32, 40, 48 and 65 years, respectively, had a bachelor's degree with 3 persons also reported a master's degree. Time in position ranged from 3-9 years with workplaces included in Pathum Thani province, 2 organizations, Samut Songkhram province, 1 organization and Bangkok province, 1 organization. All product sponsors have previously supported products in various projects before.

Opinions on factors affecting the product support of the workshop project promote ideas, improve life through movement in 4 factors as follows: Process Analysis using 5W1H technique on sponsorship and social responsibility.

Table 2: Analyzes the factors affecting each aspect of product support.

<table>
<thead>
<tr>
<th>Process</th>
<th>Factors</th>
<th>Information analyzed from Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Providing information related to project management</td>
<td>Supporters of all organizations received information on organizing the project. Therefore, it can be considered in providing product support according to the requirements of the project and it is a good in academic promotion in educational institutions as well as expansion to community and society in the future.</td>
</tr>
<tr>
<td>Factors</td>
<td>Information analyzed from Interview</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------</td>
<td></td>
</tr>
<tr>
<td>2. Preparation and planning of project management</td>
<td>Sponsors of all organizations appreciated project coordinators and the planning implementation with professional skills as well as continual communication with supporters.</td>
<td></td>
</tr>
<tr>
<td>3. Contact and coordination and guideline for acquiring products</td>
<td>All sponsors were satisfied with the systematic interaction and coordination of the product acquisition. There was no difficulty for staff to coordinate with, which made the process go smoothly.</td>
<td></td>
</tr>
</tbody>
</table>

**Analytical Thinking with 5W1H**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Target group that your organization or you want to support the product.</td>
<td>Supporting educational target groups such as training programs or support in other forms of activities was mostly first consideration. The next target group was sports and exercise groups which is characterized by projects or activities that promote health which every organization is ready to provide support as well. Secondly considered were other groups needed products that organization can support as appropriate and beneficial to the community and society.</td>
</tr>
<tr>
<td>2. What principles do you have when considering product support?</td>
<td>Determine product support from, i.e., project objectives to benefit the community or society; consider the target group of the project that requires the product to support; then consider whether organization's ability is appropriate and sufficient to support products.</td>
</tr>
<tr>
<td>3. How does venue or area of the project affect product support decisions?</td>
<td>Support can be provided to all areas throughout Thailand in the amount and appropriateness of organizations.</td>
</tr>
<tr>
<td>4. Does the appropriateness of project dates and times influence product sponsorship considerations?</td>
<td>2 days of project events had an impact on product support considerations because various organizations commented that events for less than 2 days will not be able to provide participants with product awareness.</td>
</tr>
<tr>
<td>5. Why was your organization or you interested and decided to support the product?</td>
<td>Considering advantages to the community and society of each project, which organizations are pleased to support the product along appropriateness.</td>
</tr>
<tr>
<td>Factors</td>
<td>Information analyzed from Interview</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td><strong>Analytical Thinking with 5W1H</strong></td>
<td></td>
</tr>
<tr>
<td>6. In what ways does your organization or you support the products?</td>
<td>Product support model</td>
</tr>
<tr>
<td></td>
<td>1. Products that the organization produces and distributes</td>
</tr>
<tr>
<td></td>
<td>2. Snacks in the banquet</td>
</tr>
<tr>
<td></td>
<td>3. Scholarship</td>
</tr>
<tr>
<td></td>
<td>4. Materials and equipment related to teaching and learning management</td>
</tr>
<tr>
<td></td>
<td>5. Others as appropriate</td>
</tr>
<tr>
<td><strong>Sponsorship</strong></td>
<td></td>
</tr>
<tr>
<td>1. Does the sponsorship make recognition for participant to know the organization or you and how?</td>
<td>Two organizations had opinions that support submissions may affect their product awareness, and increase participants' awareness of the product, and the other two which are non-profit organizations, intended to support the benefit of the community and society.</td>
</tr>
<tr>
<td>2. Are the products which your organization supported, suitable or required to the project? And how?</td>
<td>The opinions of all organizations agreed that the product is suitable and necessary for the project to utilize in setting up the project until the end of the training.</td>
</tr>
<tr>
<td>3. What is the expectation from the decision to support the project?</td>
<td>Most of the organizations had the expectations to focus on academic service to the community and society, as well as knowing and recognizing the supported products through using. There was only one organization that did not expect because of organization’s mission to support without expectation in return.</td>
</tr>
<tr>
<td>4. Is the product support create an image for the organization or not and how?</td>
<td>Most organizations did not aim to create a brand image from this product support. But through publicity or awareness building was the advantages itself in return: Which some organizations have set a policy to create an image in the form of marketing and public relations of the organization's products to the target group</td>
</tr>
<tr>
<td><strong>Corporate Social Responsibility: CSR</strong></td>
<td></td>
</tr>
<tr>
<td>1. How does your contribution follow ISO 26000 key elements to social responsibility?</td>
<td>Most organizations have implemented as ISO 26000 key elements of every social responsibility.</td>
</tr>
</tbody>
</table>
Factors | Information analyzed from Interview
--- | ---
**Corporate Social Responsibility: CSR**

2. How does your support, which is committed to social responsibility according to one of any principles, affect internal and external growth for your organization? Different organizations have different forms of growth based on different principles and policies to compliance with the core elements of corporate social responsibility, in good corporate governance by considering human rights and labor practices, to increase The confidence of employees within the organization first, to encourage employees to conduct business with justice and care for consumers. Then, focus on creating quality products which provide benefit to consumers. As a result, it will affect the growth to the outside by contributing to society and community, eventually organization will be acknowledged as well.

3. Is product sponsorship a part of your organization's CSR activities and how? Product support are a part of their corporate CSR activities according to the company's CSR policies and plans for some organization. On the other hand, some organizations do not consider that product support in this training is a CSR activity, but a way to help and support organizations or individuals in network.

From Table 2, it was found that product sponsors shared the same opinion that the process factor, product support considerations and decisions come from the information and preparation of the project. It is appropriate and appreciated for the systematic coordination of the organization's procedures in respect of supporting operations. For analytical factors using the 5 W1 H technique, product sponsors considered their sponsorship by using the 5 W1 H technique to decide whether the project is organized with who (Who), what does it do (What), does it where (Where), when does it (When), the reason for doing it (Why), and how is it? (How). This process can clarify the management and success of the project. Sponsorship factors, product sponsors were satisfied to support corporate products that are essential to the project, including the opinion that it is a promotion to publicize the products of the organization through actual use among the project participants. Lastly, for social responsibility factor, all product sponsors concluded that product support is a part of the organization's implementation of the ISO 26000 international standard, which the organization defines as a core component of all social responsibility. There is also an opinion that product sponsorship activities are social responsibility or CSR activity showing social responsibility that every organization should act. CSR is also considered as helping and supporting organizations or individuals in network.
5 Discussions and Conclusions

Based on research findings on the factors affecting the support of the sponsor's products from the workshop: four factors were identified as follows:

Process factors (Process): applicants for support provide information and project preparation. It is appropriate to process requests for support from various organizations, which the researcher considers that the operation is a systematic process and clear details can lead to objectives that are achieved effectively. According to sponsorship is the process of building a marketing alliance for an organization. Sponsors will focus on goals and objectives and appropriateness of effective event process. Analytical factors using the 5W1H (Analytical Thinking with 5W1H) technique required the product sponsor to decide on sponsorship by adaptation of 5W1H techniques which clarified the implementation of the project. In this research, the use of 5W1H technique was assessed through interview questions where the researcher required key informants to show the result of analytical thinking which covered the objectives of the research. Stated that the 5W1H technique, analytical thinking, is used to answer related doubt. The questioner therefore is considered to acquire more detail and the question line must be set to address the intended purpose.

Sponsorship Factors (Sponsorship): Product sponsors consider it as an approach to promote the publicity of the organization's products through actual use among participants. Discussed the benefits of sponsorship that it is useful to reach the target group for marketers to use in the form of sport sponsorship because it can reach the target group the organization required. Also, supporting an organization's products is essential to creating product value by creating a good image of the product sponsoring event. A sports program or event is a marketing technique that sponsors aim to build brand awareness and customer loyalty. Corporate Social Responsibility (CSR) Factors: All product sponsors act in accordance with ISO 26000's core elements of corporate social responsibility which corresponds to study that the impact of sports sponsorships linked to environmental CSR on attitudes towards sponsors based on suitability in accordance with CSR principles. Generating interest with a focus on social, environmental, and philanthropic awareness is of social and corporate mutual benefits. mentioned that business social responsibility is to conduct business under ethical principles and good corporate governance along social and environmental care to lead to sustainable business development which explained by expanding and carrying out activities within and outside the organization. The sports related activities and engagement of sponsorship is for the benefit of the organization and society which leads to sustainable development initiative for the country as a whole.

6 Suggestion

6.1 Brand Recognition of actual users or project participants should be researched for communication through the sponsorship of products as required by the organization.

6.2 Additional factors in other aspects should be studied to access and analyze information from both product sponsors and project participants.

Acknowledgment

This research was supported by the Faculty of Education, Kasetsart University and would like to thank everyone for their support in presenting this research to further develop their potential
References


A Study Of Problems In The Implementation Of A Workshop Project To Promote Ideas For Life Development Through Movement

Rungsaowaluk Kitmetheekun1, Chalit chaowilai2, Passapong piromkam3, Nuttawut kitkuan4, Kittikarn Naphakorn5, Tharin Kanlueng6

{ rungsaowaluk.ki@ku.th 1, chalit.ch@ku.th 2, passapong.pir@ku.th 3, nuttawut.kitku@ku.th 4, kittikarn.nap@ku.th 5, fedutrkl@ku.ac.th 6 }

Faculty of Education and Development Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 1, Faculty of Education and Development Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 2, Faculty of Education and Development Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 3, Faculty of Education and Development Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 4, Faculty of Education and Development Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 5, Faculty of Education and Development Science, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom 6

Abstract. This study analyzes conditions and problems associated with organizing workshops, promoting ideas, and improving life through movement amongst 38 attendees at a promote ideas for life development through movement workshop. Data was collected using a questionnaire. Data analysis includes frequency, percentage, mean, standard deviation, and hypothesis testing such as the t-test and ANOVA at the statistically significant level of 0.05. Participants were 50% male and 50% female. The largest age group was 31 to 40, which accounted for 39.5% of the participants. 44.7% of respondents held a bachelor's degree or higher, 36.8% worked as physical education teachers, and 44.7% had under five years of work experience. The results revealed that the five main factors were speakers, location, services, perceptions, and utilization. Mean scores for each factor had greater than 4.5. In addition, participants' age and work experience positively correlated with cognition and utilization factors.

Keywords: Condition and problem Training projects, movements, and promotion of ideas

1 Introduction

National Strategy (2018-2033) of Thailand 4.0 and the 12th National Economic and Social Development Plan, recommend that people exercise to maintain good health within 3 strategy [1]. According to strategy 1 Promoting physical activity for all age groups will be successful, people must be well versed in physical activity through the actions of local and central
authorities and have the behavior adjusted to have physical activity in their daily lives [1]. Strategy 2: creating surrounding environment that promotes physical activity in community’s areas for all age groups [1]. Moreover, Strategy 3: Development of support systems for promoting physical activity, including knowledge creation and research of physical activity, campaign communication and policies to promote physical activity through knowledge transfer process. The workshop project to promote ideas for life development through movement is a project to promote knowledge for participants in the training on physical movement including fundamental movement skills, non-locomotor, locomotor, manipulative, and stretching programs, that effective for children [2].

It encourages knowledge of the right movements and recognizes the systematic stimulation of body parts to function more than normal, according to gender, age, and physical condition. The individual Participants will be able to apply their knowledge to teach and expand further [3]. For example, research on the development of occupational movement therapy to promote balance abilities in the elderly uses movement therapy to help promote balance abilities in the elderly. The results showed that older adults had improved their ability to balance after participating in statistically significant movements of 0.01 [4].

A study of problems in the implementation of a workshop project to promote ideas for life development through movement is important research. This is information that indicates whether the project being implemented is meeting the intended objectives or is it worth deciding whether to implement. This study includes the investigation of how problematic projects need to be improved, changed, or addressed, and how valuable the project is to plan ways to solve and improve the project effectively.

2 Objective

1. To study conditions and problems, organize workshops, promote ideas, develop life through movement.
2. To study guidelines for developing workshop projects for the next implementation.

3 Method

This study is quantitative research using a questionnaire-based data collection method as a tool to collect data from samples for analysis and display.

3.1 Headings, tables and figures

Population and sample was trainees of the training program Total 38 People By defining the criteria for selection are trainees with a training phase at least 80 percent.

3.2 Research tools
The tools used in this research use questionnaires as a tool to collect data from the sample, which is divided into 3 parts:

Part 1 Closed-Ended Questions Personal information for samples classified by gender, age, level of education, occupation and income.

Part 2: The questionnaire is a rating scale using 5 levels of measurement, including 5 levels of data on measuring the satisfaction level of participants/projects, workshops to promote ideas, improve life through movement, 3 aspects, speakers, locations and service delivery.

Divide the criteria. Satisfaction ratings are available on five levels: most, very, medium, few, and least in each text. as follows

Satisfaction level 5 = most satisfaction
Satisfaction level 4 = extreme satisfaction
Satisfaction level 3 = moderate satisfaction
Satisfaction level 2 = less satisfaction
Satisfaction level 1 = least satisfaction

Once the data is collected and the frequency breakdown is used, the average score of the sample is used to determine the level of opinion, which has a consideration criteria by which the satisfaction level is measured, there is an automorphism that can be calculated as follows:

Floor width = (highest-lowest score)/number of floors
= (5-1)/5
= 0.8

This can interpret the rating level of a comment, as follows

An average score of 4.21 – 5.00 means that the highest level of satisfaction is achieved.
An average score of 3.41 – 4.20 means that there is a high level of satisfaction.
An average score of 2.61 – 3.40 means that there is a moderate level of satisfaction.
An average score of 1.81 – 2.60 means that there is a low level of satisfaction.
An average score of 1.00 – 1.80 means that there is the least satisfaction level.

Part 3 Open-Ended Questions to express opinions and suggestions in various fields
3.3 Statistical analysis

Index of item objective congruence (IOC) was tested to measure the reliability of questionnaire which had value greater than 0.50\(^5\). The researcher led the questionnaire which was revised according to the recommendations of experts. It was then used to try out with a group of 30 people \(^5\). The reliability of the questionnaire was analyzed by Cronbach's Alpha Coefficient. The validity of the questionnaire was greater than 0.70 for the questionnaire to be used \(^5\). Data analysis included frequency, percentage, mean and standard deviation. To analysis the cognitive aspects and implementation aspects classified by gender, age, level of education, job status, and work experience was calculated by t-test, f-test anova analysis with statistical significance at 0.05. moreover, post hoc test with LSD was used to analysis after found the significaance.

4. Results

4.1 The analysis of personal factor

A total of 38 participants were divided into 19 males or 50% and females of 19 persons or 50%. The percentages of age can be divided into the following age range between 21 and 30 years old, accounting for 34.2%, and age range between 31 and 40 years old, or 39.5%. The age range between 41 and 50 years old is 13.2% and the age range between 51 and 60 years old is 13.2%. The level of education is divided into 17 undergraduates representing 44.7 percent, master's degrees representing 44.7 percent, and doctoral degrees of 4 students representing 10.5 percent. Regarding to work experience, 44.7% of respondent who have 5-10 years of work experience following 11-20 years of work experience (21.1%), and 5 persons with work experience 21 years or older, representing 13.2%.

4.2 The analysis of conditions and problems, organize workshops, promote ideas, develop life through movement.

Table 1 average and standard deviation of of conditions and problems, organize workshops, promote ideas, develop life through movement

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Standardize</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speakers</td>
<td>4.947*</td>
<td>0.222</td>
</tr>
<tr>
<td>Location</td>
<td>4.638</td>
<td>0.521</td>
</tr>
<tr>
<td>Services</td>
<td>4.816</td>
<td>0.411</td>
</tr>
<tr>
<td>Perceptions</td>
<td>4.711</td>
<td>0.448</td>
</tr>
<tr>
<td>Utilization</td>
<td>4.795</td>
<td>0.405</td>
</tr>
<tr>
<td>Total</td>
<td>4.805</td>
<td>0.486</td>
</tr>
</tbody>
</table>

Speakers factor
Participants were the most satisfied in terms of providing opportunities for participants to participate in activities and express their opinions with an average of 4.973. The satisfaction was very high in three areas: the speaker's knowledge transfer, the ability to explain the content clearly and to the point, and the speaker's answers to questions with an average of 4.947 participants. There was high satisfaction in the field of sequencing the stages of activity with an average of 4.921.

Location factor
Participants were most satisfied, consisting of the suitability of the venue for the event and the suitability of food and drink with an average of 4.684 participants. There was a very high satisfaction. The suitability of audiovisual equipment with an averaged 4.631 in terms of the appropriateness of the duration of the training. It has an average of 4.552.

Service
Participants were the most satisfied with the organizing side. There is politeness, friendliness and sociability, with an average of 4.921. There was a very high satisfaction in term of hospitality and facilitation, and the appropriateness of materials and documentation for the event with an average of 4.842. Moreover, participants were highly satisfied in terms of their suitability to register through google form, with an average of 4.815. It has an average of 4.789 in public relations and event notification.

Cognitive aspects
Participants were the most satisfied on the cognitive aspects. There are guidelines for the development of movement activities with an average of 4.763. The satisfaction consisted of having an understanding of the basic principles of movement and an understanding of the process of organizing movement activities with an average of 4.710. On the side, there are guidelines for managing learning about movement activities. It has an average of 4.657.

Implementation aspects
Participants were the most satisfied within getting the knowledge/benefits of participating in the event to be able to apply it with an average of 4.868. There was a very high satisfaction. On the side of you gain knowledge, ideas. Skills and experience from this activity with an average of 4.815. There was a high satisfaction, consisting of the ability to apply what they gained from this activity to the teaching/performance arrangements. Moreover, getting from this activity meets your expectations and using your knowledge to disseminate it to others with an average of 4.763.

4.3 The factor affecting conditions and problems, organize workshops, promote ideas, develop life through movement
Table 2 presents the results of cognitive aspects and implementation aspects classified by gender, age, level of education, job status, and work experience. It does not affect cognitive satisfaction and utilization. While work experience affected cognitive satisfaction and utilization within statistically significant at 0.05. When significant differences were found, the LSD Post hoc test was analyzed in Table 2 showing that the sample had work experience 21 years or more, the average value of cognitive satisfaction and utilization was greater than the sample with work experience lower 5 years, 5-10 years, and 11-20 years.

Table 3 Post Hoc testing with LSD method, cognitive aspects and implementation aspects classified by work experience.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>cognitive aspects</td>
<td>lower years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 - 10 years</td>
<td>-0.09375**</td>
<td>0.18751</td>
<td>0.020</td>
<td>-0.2873</td>
<td>0.4748</td>
</tr>
<tr>
<td></td>
<td>11-20 years</td>
<td>-0.03571**</td>
<td>0.19656</td>
<td>0.007</td>
<td>-0.3637</td>
<td>0.4352</td>
</tr>
<tr>
<td></td>
<td>Over 21 years</td>
<td>-0.10000**</td>
<td>0.22308</td>
<td>0.047</td>
<td>-0.3533</td>
<td>0.5533</td>
</tr>
<tr>
<td>implementation</td>
<td>lower years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aspects</td>
<td>5 - 10 years</td>
<td>0.10833**</td>
<td>0.14176</td>
<td>0.450</td>
<td>-0.1798</td>
<td>0.3964</td>
</tr>
<tr>
<td></td>
<td>11-20 years</td>
<td>-0.10952**</td>
<td>0.14860</td>
<td>0.006</td>
<td>-0.4115</td>
<td>0.1925</td>
</tr>
</tbody>
</table>
5. Discussion

Findings from research, the results can be summarized and discussed in 2 areas as follows: knowledge to transfer of speakers and the ability to explain the content clearly is the most important factors. Moreover, answering the speaker's questions is as comprehensive as possible in line with the research of Swang Choochuay [6] stated that it has developed occupational movement therapy to promote balance abilities in the elderly, which uses movement therapy to help promote it and balance ability in older adults. The results showed that older people had better balance after participating in the activity. Movement therapy statistically significant at 0.01. Furthermore, Jiravadee Rattanatanyong [7] had studied the Evaluation of the Project, “EQ at Work” Training Program. It was found that participants were desirable to enter the project if the project was held again, including having an ongoing curriculum, most participants agreed that the duration of the project should be increased. Because they want to gain knowledge both theoretically and practically while being able to apply the knowledge from the speakers, lecture and practice to the profession [8]. In accordance with Kachakorn Paksuwan [9] have organized training to promote knowledge about the correct movements and to know how to systematically stimulate parts of the body to function more than normal, according to gender. Age and physical condition of the individual participants will be able to apply their knowledge to teach and build on it.

6. Recommendation

Participants are desirable to enter the program if the project is held in a manner that is re-organized, including continuing courses. Most of the participants agreed that the project should be more date. Because they want to gain knowledge both theoretically and practically while being able to apply the knowledge from the speakers, lectures, and practice to the profession also, they wanted enough time to rest, don't get too tired. Some participants wanted more speakers to be present. It has a variety of tones and has more conversations with participants. Moreover, photos of the day-to-day activities should be updated to day-to-day participants.
References

[8] Sunand Sampaisan (2009) Satisfaction with sustainable management promotion program (K SME CARE) Graduate School. Srinakharinwirot University to be part of the study according to the Master of Business Administration degree program in Marketing.
Effectiveness of the Workshop Project for Developing Cognitive Skills and Improving Daily Life Through Movement

Suchat Phetthianchai 1, Sataporn Phakhunthod 2, Warsittee Saisudjai 3, Chokchai Dongkaew 4, Wichanon Poonsri 5, Som boon Silrungtham 6

\{p.suchat09@gmail.com 1, fedusopha@ku.ac.th 2, warsittee.mcru@gmail.com 3, chokchai.don@ku.th 4, wichanon.po@ku.th 5, fedusbs@ku.ac.th 6\}

Department of Physical Education, Faculty of Education, Muban Chombueng Rajabhat University 1, Department of Physical Education and Sport, Faculty of Education and Development Science, Kasetsart University Kamphaeng Saen Campus 2, Department of Physical Education, Faculty of Education, Muban Chombueng Rajabhat University 3, Kasetsart University Laboratory School Kamphaeng Saen Campus 4, Educational Research and Development Center 5, Department of Physical Education and Sport, Faculty of Education and Development Science, Kasetsart University Kamphaeng Saen Campus 6

Abstract. The purpose of this research is to study the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement. In this research, 38 subjects were assessed. The research data was collected from the day of the workshop for a span of two weeks. Three tools were used to collect the data from the subjects, namely, 1) a satisfaction assessment, 2) an effectiveness assessment, and 3) a daily life application assessment. Descriptive statistics and mean differentiation were used to analyze and evaluate the data. The research mainly shows four significant results. First, from the satisfaction assessment, the subjects responded with the highest level of satisfaction after the workshop. Second, from the effectiveness assessment, the mean value and the standard deviation of the effectiveness after the workshop were 5.25 ± 1.72, resulting in a moderate level. Third, when comparing the pre-test and the post-test of the effectiveness assessment, the mean effectiveness rating was 0.81 higher in the post-test than the pre-test. Lastly, regarding the daily life application assessment, the subjects responded that the workshop was highly applicable. This research is a subsection of the effectiveness of the workshop in developing cognitive skills and improving daily life through movement for the educational officer.

Keywords: Satisfaction, effectiveness, The assessment of knowledge utilization

1 Introduction

Thai society has undergone social and cultural changes all the time from the past to the present.
As a result, the structure of society and the way of life or human culture in each society change accordingly. No society truly stands still. When we refer to “society” the mechanisms of social interaction or collective social and cultural action are often discussed in a systematic manner and that social system. There will always be social changes all the time. Which the present world society has evolved over time and has evolved into a more civil society. [5]

Human Resource Development (HRD) is the key to change Human beings need to be developed all the time in order for them to be initiative and innovate. Human Resource Development is the introduction of potential, knowledge and abilities of each person to work for maximum benefit. Moreover HRD make good attitude for each other included self-awareness. It aims to develop and increase knowledge, skills and work effective competences. The Human Resource Development can be many ways or processes from training, education through teaching or observational study to the transfer of experiences between them once developed, it can be benefit itself and the next agency.

Organizing a workshop project encourage thinking and improving life through movement.

That workshop That project that needs to develop teachers, lecturer and those involved in the development of children's learning. Which the development during childhood, the young is important for learning well. (Knowledge Management and Development) [6] In the development, empathy, promotion, including laying an important foundation for children, it is inevitable that parents, family members, including teachers must take care of them. As well as to manage the learning process of children according to their age and will pass on the basics of living in the future. In the implementation of the project it is necessary to achieve the desired or expected objectives are knowledge and understanding of the content of movement activities to develop thinking and decision processes. Including attending the training course to apply the knowledge gained from the training to be applied in real practice.

From the implementation of the project to encourage trainees to gain knowledge and experiences that can be applied and integrate in instruction. Then it is expected that the trainees can apply their knowledge in teaching and actually training athletes. This training helps to develop learners and athletes to develop motor skills and develop correct thinking and decision making processes.

Therefore, stakeholders should have knowledge and understanding to support operations in the right direction, benefit and effectiveness. Consequently, the researcher is interested and would like to conduct a research study on the evaluation of the effectiveness of organizing a workshop project for developing cognitive skills and improving daily life through movement, as a guideline for the development and planning of the implementation of various projects to be of further quality

2 Objective

To study the effectiveness of a workshop project for developing cognitive skills and improving daily life through movement.

3 Methodology
3.1 Population

The population group used in this research was 38 persons who participated in the workshop project for developing cognitive skills and improving daily life through movement.

3.2 Research Instrument

1. Project Activity Satisfaction Assessment Form “Workshop project for developing cognitive skills and improving daily life through movement”. created by the researcher. Verify the authenticity of the content by 6 experts. The content validity was .93 and the reliability was .98. Consists of 3 parts:

1.1 General information

1.2 The satisfaction assessment form of the participants in the Activities / Project "Workshop project for developing cognitive skills and improving daily life through movement". The assessment is a 5-level estimation: 100 means the most to 0 means the least. The mean results are interpreted using the following criteria:

- 80 - 100 means the most
- 60 - 79 means a lot
- 40 - 59 means moderate
- 20 - 39 means less
- 0 - 19 means the least

1.3 Other suggestions

2. The project effectiveness assessment form "Workshop project for developing cognitive skills and improving daily life through movement". with a content validity is .88 and a reliability is .72. The assessment form is a 5-level estimation, divided into 10 means the most to 0 means the least. The average result is interpreted using the following criteria.

- 9 - 10 means the most
- 7 - 8 means a lot
- 5 - 6 means moderate
- 3-4 means less
- 0 - 2 means the least

3. Knowledge application survey, Project "Workshop project for developing cognitive skills and improving daily life through movement". created by the researcher. Verification of the content validity by 6 experts with a content validity is 1.0, consisting of 3 parts:

1.1 General information

1.2 A survey about the application of knowledge from the workshop project for developing cognitive skills and improving daily life through movement for work practice.

1.3 Other suggestions

3.3 Data collection
Phase 1 During the training project
1. The researcher has made a request for assistance in using the location for data collection to the Faculty of Education and Development Sciences Kasetsart University Kamphaeng Saen Campus.
2. The researcher self-collected data from the population on the day of the project.
3. The researcher used the data collected for further statistical analysis.

Phase 2 After the project
1. The researcher contacted the population in the project line application.
2. The researcher conducted a follow-up to collect data through online system 2 weeks after the project was organized.
3. The researcher used the data to analyze the statistical data and qualitatively

3.4 Analysis of research data
In this research, the researcher is analyzed the data using a computer program. As follows:
1. Describe the general data analysis of the workshop project for developing cognitive skills and improving daily life through movement by using descriptive statistics.
2. Describe the data on analyzing the satisfaction of organizing a workshop project for developing cognitive skills and improving daily life through movement by using descriptive statistics.
3. Compare the evaluation of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement before the seminar and after the seminar of the population by using descriptive statistics and mean difference.
4. Describe the data for the analysis of knowledge application of the workshop project for developing cognitive skills and improving daily life through movement by using descriptive statistics and qualitative lectures.

4 Results

<table>
<thead>
<tr>
<th>General status</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
<td>50.00</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>50.00</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30 years</td>
<td>13</td>
<td>34.21</td>
</tr>
<tr>
<td>31-40 years</td>
<td>15</td>
<td>39.47</td>
</tr>
<tr>
<td>41-50 years</td>
<td>5</td>
<td>13.16</td>
</tr>
</tbody>
</table>

From Table 1, there were 38 respondents. Divided into male respondents representing 50.00%, female respondents 50.00%. Most of the respondents’ age range is 21-30 years old, accounting for 34.21%. Age 31-40 years 39.47%. 41-50 years old and 51-60 years old accounted for 13.16%.

Educational qualification can be divided into bachelor's degree most 50.00% Master's degree 42.11 percent and doctoral degree 7.89%. The most occupation were lecturers 39.47 percent, teachers 26.32 percent, and other occupations 34.21 percent. Work experience of respondents less than 5 years and 5-10 years, there are the same number of respondents 31.57%, 11-20 years equals 21.05%, and 21 years equals 15.78 percent, respectively.

Table 2 Assessment of satisfaction of the workshop project for developing cognitive skills and improving daily life through movement

<table>
<thead>
<tr>
<th>List</th>
<th>The level of satisfaction in participating in the training program</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage</td>
</tr>
<tr>
<td>Expert</td>
<td></td>
</tr>
<tr>
<td>1. Knowledge transfer of speakers</td>
<td>99.00</td>
</tr>
<tr>
<td>2. Able to explain content clearly and to the point</td>
<td>99.00</td>
</tr>
<tr>
<td>3. Order of activities</td>
<td>98.40</td>
</tr>
<tr>
<td>4. Answering the speakers’ questions</td>
<td>99.00</td>
</tr>
<tr>
<td>5. Giving the participants an opportunity to participate in activities and express their opinions</td>
<td>99.40</td>
</tr>
<tr>
<td>Together</td>
<td>99.00</td>
</tr>
</tbody>
</table>

30
From Table 2 shows that assessment of the satisfaction of the workshop project for developing cognitive skills and improving daily life through movement of the population. Divided into the percentage of speaker satisfaction is the highest level (99.00%). Location, duration and food were at the highest level (92.80%). The service aspect was at the highest level (96.40%). and the cognitive aspect was at the highest level (94.60%) overall in all aspects was at the highest level (95.70%).

Table 3 Evaluation of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement after the seminar

<table>
<thead>
<tr>
<th>Gr ou p</th>
<th>N</th>
<th>μ</th>
<th>σ</th>
<th>Level</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>After the seminar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
From Table 3, the results showed that the workshop project for developing cognitive skills and improving daily life through movement after the seminar of the population. The mean and standard deviation (5.25 ± 1.72) were moderate.

Table 4 Evaluation of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement before and after the seminar

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Before the seminar</th>
<th>After the seminar</th>
<th>Mean difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>μ</td>
<td>σ</td>
<td>Level</td>
<td>μ</td>
</tr>
<tr>
<td>POPULAT</td>
<td>38</td>
<td>4.4</td>
<td>little</td>
<td>5.2</td>
</tr>
</tbody>
</table>

From Table 4, the results showed that the workshop project for developing cognitive skills and improving daily life through movement. Before the seminar, the results have the mean and standard deviation (4.44 ± 1.68) were at a low level. And after the seminar, the mean and standard deviation (5.25 ± 1.72) were moderate of the population. They were a mean difference is .81%.

Table 5 An analysis of the application of knowledge gained from attending workshop project for developing cognitive skills and improving daily life through movement

<table>
<thead>
<tr>
<th>Assessment item</th>
<th>Percentage</th>
<th>Level of application of knowledge</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Basic principles of movement</td>
<td>97.40</td>
<td>The most</td>
<td>80-100</td>
</tr>
<tr>
<td>2 Designing movement activities for brain development</td>
<td>98.40</td>
<td>The most</td>
<td>80-100</td>
</tr>
<tr>
<td>3 Sequence of movement activities for brain development</td>
<td>97.40</td>
<td>The most</td>
<td>80-100</td>
</tr>
<tr>
<td>4 Learning Management about movement activities for brain development.</td>
<td>96.80</td>
<td>The most</td>
<td>80-100</td>
</tr>
<tr>
<td>5 Applying the knowledge gained can be disseminated to others.</td>
<td>96.80</td>
<td>The most</td>
<td>80-100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>97.40</strong></td>
<td><strong>The most</strong></td>
<td><strong>The most</strong></td>
</tr>
</tbody>
</table>
From Table 5 The results showed that the assessment of knowledge application of the workshop project for developing cognitive skills and improving daily life through movement of the population, it was found that the percentage of trainees had the level of knowledge applied at the highest level in all aspects (97.40%) as follows: Fundamentals of movement (97.40%), Designing movement activities for brain development (98.40%), Sequence of movement activities for brain development (97.40%). Learning Management about movement activities for brain development. (96.80%) and applying the knowledge gained can be disseminated to others. (96.80%)

Applying the knowledge gained from the workshop project for developing cognitive skills and improving daily life through movement.

From the follow-up of the trainees after the training, it was found that The participants applied the knowledge gained from the workshop project for developing cognitive skills and improving daily life through movement. Fundamental principles of movement, designing, sequence of activities and learning management about movement activities for brain development. That activities can integration in teaching and learning management in primary, secondary, and higher education. Then applying the knowledge to training athletes in schools, athletes in universities. Athletes in various sports centers as well as disseminating the knowledge gained to teachers in the health education and physical education subject groups of their own schools. And teachers from different schools distribute to a university teacher in the field of physical education. Publish to trainers and assistant coaches on the same sports team. In addition to being used in teaching and disseminating knowledge, then the instructors in charge of physical education courses in higher education. And take the contents of the basic movement entered into the framework of the national qualification standards for higher education. To promote the teaching of basic movement skills to practice teacher in major of physical education. To promote and develop the basic of the movement to be used in the next work.

5 Discussion

1. The results of the satisfaction assessment of the workshop project for developing cognitive skills and improving daily life through movement found that Percentage of speaker satisfaction at the highest level (99.00%), Location, duration and food were at the highest level (92.80%). The service aspect was at the highest level (96.40%). Then the cognitive aspect was at the highest level (94.60%). Overall, all aspects were at the highest level (95.70%). Moreover, due to the willingness of the participants in the training, the satisfaction assessment of the workshop project for developing cognitive skills and improving daily life through movement was consistent with [4] conducted a study on the satisfaction of the trainees towards the course service. Good civil servants, a case study of the Ministry of Natural Resources and Environment found that the training participants had overall satisfaction at a high level. They were most satisfied with the lecturers and teaching methods. This may be because the trainees have a preference and satisfaction in the person who is the speaker. And in accordance with [3], training satisfaction had a statistically significant effect on the motivation for training and development of commercial bank employees in the Ratchadaphisek road zone at 0.05 level.

2. Assessment of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement After the seminar, it was found that the scores of the
workshop project for developing cognitive skills and improving daily life through movement. After the seminar of the population group with average and standard deviation (5.25 ± 1.72) at a moderate level. The participants have more knowledge after receiving knowledge and evaluation of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement. After the seminar, it can be seen that it is consistent with [8-10, 11, 13]. These research will be discussed. Trainee Which has a lot of capabilities, there is a chance to access knowledge and maintain knowledge as well as being able to bring knowledge. Can be applied in a lot of work. Confidence that I myself have the ability (Self-EFFICACY), the more he can apply the knowledge from training in work.

3. The results of the evaluation of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement before the seminar and after the seminar, it was found that result of the score of organizing a workshop project for developing cognitive skills and improving daily life through movement before the seminar. The mean and standard deviation (4.44 ± 1.68) were at a low level. And after the seminar, the mean and standard deviation (5.25 ± 1.72) were moderate of the population. There was an average difference is .81%. The participants having some interest prior to receiving the training with some background. The evaluation of the effectiveness of the workshop project for developing cognitive skills and improving daily life through movement was not much different, consistent with [2]. The studied research on Effectiveness of Volunteer Training Program for Family Elderly at King Mongkut's College of Nursing, Phetchaburi Province found that after the training, the elderly care volunteers had higher knowledge and skills about caring for the elderly statistically significant (Z = 4.635, 4.357; p< .01).

4. The results of the analysis of knowledge application obtained from participating in the workshop project for developing cognitive skills and improving daily life through movement found that from the assessment of knowledge application of the workshop project for developing cognitive skills and improving daily life through movement of the population, it was found that from the assessment of knowledge application of the workshop project for developing cognitive skills and improving daily life through movement of the population, it was found that the percentage of trainees had the level of knowledge applied at the highest level in all aspects (97.40%) as follows: Fundamentals of movement (97.40%), Designing movement activities for brain development (98.40%), Sequence of movement activities for brain development (97.40%). Organize learning about motor activity for brain development (96.80%) and how to share the knowledge gained with others (96.80%). There was a result of applying the knowledge gained from participating in the workshop to promote ideas for life development through movement to practice in school. The results of the retrospective follow-up were consistent with [1] to study the application of the knowledge gained from the training: a case study of the metropolitan waterworks authority development programme. The results of the research showed that trainers are able to apply the knowledge from the training to work that best meets their responsibilities. Followed by able to apply knowledge in tasks that have a level of difficulty similar to the work being done that changes in behavior. The results showed that supervisors perceive behavior changes. The trainees are able to work and have better job achievements. They can bring more knowledge to integrate and have the courage to decide to include higher leadership factors in knowledge transfer. The results showed that the competence and motivation factors of the trainees had the greatest effect on knowledge transfer. And consistent with the research [7] to study in Malaysia found that the knowledge that is applied to work is low. It is
estimated that the knowledge gained from the training Less than 20 percent of the trainees are usable, and in accordance with [12] studied how effective the outcomes of investments in human development are: Requires very important knowledge especially in terms of application of knowledge gained from training (generalization) and maintaining knowledge and skills for use in work or problem solving (maintenance).

6 Recommendation

The implementation assessment should be periodically assessed. For example, 2 weeks, 1 month and 2 months.

Suggestions for the next research

1. In organizing the project, efficiency and effectiveness should be assessed at the same time.

2. There should be further training in the future and an experimental model was used in the study, or that relevant variables have been defined, such as finding urgent needs, necessity needs and the project should develop features that are lacking.

3. Project management should have a PDCA process to work in each system.

4. The efficiency and effectiveness calculation program should be applied in each systematic step.

References


The Study on Physical Activity Programs Affecting Physical Fitness in Working-Age Adults During the Coronavirus Disease 2019 Situation

Kritchapol ARSAPKDEE¹, Chairat CHOOSAKUL², Chirawut ACHARIYACHEEVIN³

{Nakrit.k1996@gmail.com¹, Chairat.c@msu.ac.th², Chirawut.a@msu.ac.th³}

Faculty of Education, Rajabhat Mahasarakham University, Thailand¹, Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand², Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand³

Abstract. This research is quasi-experimental research aiming to study the effect of a physical activity promotion program. Compare the physical activity level and physical fitness of working Adult. During the Coronavirus Disease 2019 Situation, the sample group used in the research consisted of 50 people. The research instruments were 1) Physical activity promotion program for working Adult, 2) Physical fitness test, 3) Global Physical Activity Questionnaire: GPAQ version 2 and 4) Physical activity Recording. Statistics used to compare before and after using the physical activity promotion program. Data were analyzed using Mean, Percentage, Standard Deviation, Two-Way Repeated-Measures MANOVA and Bonferroni for post-hoc procedure. The results were that 1. Physical activity level and amount of exercise of working age personnel of males were higher than females. 2. The physical fitness of the experimental group was better than the control group. Flexibility, muscles strength of hand and forearm, leg muscle strength and endurance, and cardiovascular endurance. There was Not statistically significant between the trial and 8 weeks after the trial. However, after 8 weeks and after 12 weeks the trial, there was significantly different at the statistical level of .05.

Keywords: Physical Activity, Physical Fitness, Working Adults, Corona Virus 2019 (COVID-19)

1 Introduction

This Word document can be used as a template for papers to be published in EAI Core Proceedings. Follow the text for further instructions on text formatting, tables, figures, citations and references.

Physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity refers to all movement including during leisure time, for transport to get to and from places, or as part of a person’s work. Both moderate- and vigorous-intensity physical activity improve health. Popular ways to be active include walking, cycling, wheeling,
sports, active recreation and play, and can be done at any level of skill and for enjoyment by everybody. Regular physical activity is proven to help prevent and manage noncommunicable diseases such as heart disease, stroke, diabetes and several cancers. It also helps prevent hypertension, maintain healthy body weight and can improve mental health, quality of life and well-being. (WHO, 2020)

From the epidemic situation of coronavirus disease 2019 that has entered a global pandemic (Pandemic) for Thailand The epidemic has spread to a wide area. This caused the government to announce more and more intensive countermeasures from the provincial, district, sub-district level to the village level. (National Health Commission office and Regional Policy Promoting Office, 2020) The global outbreak of COVID-19 has resulted in closure of gyms, stadiums, pools, dance and fitness studios, physiotherapy centres, parks and playgrounds. Many individuals are therefore not able to actively participate in their regular individual or group sporting or physical activities outside of their homes. Measures to cope with the spread of the coronavirus disease 2019 As a result, the government in each country announced the temporary closure of exercise facilities. whether the stadium Fitness Center Gym, swimming pool, as well as physical therapy center. As a result, people are unable to exercise or engage in normal physical activity. (Bas, Martin, Pollack and Venne, 2020)

The Physical Activity Guidelines for Americans Adults should do at least 150 minutes to 300 minutes a week of moderate-intensity, or 75 minutes to 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. They should also do muscle-strengthening activities on 2 or more days a week. (Piercy KL, Troiano RP, Ballard RM, et al, 2018) to be the model for promoting physical activity which is practiced in many countries. According to the study, physical activity can provide various health benefits (WHO, 2020 ; Bull FC, Al-Ansari SS, Biddle S, et al, 2020 ; Stamatakis E, Bull FC, 2020) i.e. physical activity may help enhance body immunity, prevent coronavirus infection, and reduce severity of symptoms and case fatality rate caused by virus infections (Nieman DC, Wentz LM, 2019; da Silveira MP, da Silva Fagundes KK, Bizuti MR, et al, 2021; Burtscher J, Millet GP, Burtscher M, 2020). Regular physical activity helps reduce and prevent risk factors for coronavirus infection which is the main culprit of lung damage from infection (Sallis JF, Adlakha D, Oyeyemi A, et al, 2019). Moreover, physical activity also promotes cardiovascular health, increases lung capacity, and improves mental health (Piercy KL, Troiano RP, Ballard RM, et al, 2020; Buitrago-Garcia D, Egli-Gany D, Counotte MJ, et al, 2020). In addition to regular physical activity which can prevent several chronic diseases and reduce severity of the COVID-19 pandemic, public spaces restriction and social distancing are important policy measures to reduce the spread of SAR-CoV-2 and protect public health. Meanwhile, half of the world's population have now been asked to stay home and avoid many public places (Honey-Roses J, Anguelovski I, Bohigas J, 2020).

In the United States, there was an absence of previous studies on the benefits of physical activity and advice on maintaining or promoting physical activity during the pandemic while the pre-epidemic physical activity level was generally inadequate. The pandemic prevention measure (Guthold R, Stevens GA, Riley LM, et al, 2018) requires people or working age groups to have knowledge and self-defense behaviors and proper protection for family members in order to be safe from Coronavirus 19 infection. However, if the community lacked the accurate knowledge and is inaccessible to the information thoroughly, this would affect their awareness in self-caring and family protection to prevent infection. The spread of the pandemic would also
increase as it can spread easily through the respiratory system in unprotecting conditions. The situation would cause people severe anxiety and panic attacks which may be likely to notably affect the decline in physical activity. Early studies indicate that physical activity levels have decreased significantly since the start of the pandemic (Ammar A, Brach M, Trabelsi K, et al., 2020; Meyer J, McDowell C, Lansing J, et al, 2020). However, living the lifestyle in the situation of coronavirus disease pandemic 2019, there are restrictions in accordance with preventive measures and social distancing along with the important role of physical activity both physically and mentally. On the other hand, the harmful social, mental and physical health and economic impacts must also be taken into account. The psychological effects of quarantine can be in abundance and have long-term effects including mood swings, depression, stress, mood swings, irritability, insomnia, post-traumatic stress and anxiety. Epidemiological studies have described that not only the act of exercising that can reduce the risks or chances of getting disease, but other physical activities in daily life that involve moderate physical efforts or exercises can also reduce the risk. (Chodzko-Zajko, et al, 2009)

Therefore, there is a great need to promote more physical activity. Under the New Normal from the study of research related to physical activity under the epidemic situation of COVID-19 found that There has been an increase in the amount of online fitness channels produced to help individuals participate in guided exercise, through a programme that is safe, simple and easy to implement (Chen et al., 2020). In some way, PA conduct at home is adapted. There is a basic assumption that the adaptations are mainly in the form of adapting equipment, space, and task difficulty, for example modifying exercises for people who are unable to jump and stand, yet the style of communication is often overlooked and not adapted. Emerging evidence emphasises a motivationally adaptive communication style is needed to improve exerciser satisfaction. (Ntoumanis, Thøgersen-Ntoumani, Quested, & Hancox, 2017), Traditional recorded media allows individuals can replay the programmes at the own convenience, but feedback from the instructor to motivate, correct or adjust can be random and it lacks the individualised methods that are typical for APA. There has been a wide uptake on programmes like Zoom for online guided exercise and instructors can give live feedback to the otherwise unidirectional online options from platform like YouTube. Specific programmes. (Kwok Ng, 2020)

For the reasons mentioned above, even in the present, there are various activities or campaigns that can promote the physical activity of working age personnel. The activities can be options for the university or the related agencies to apply for physical activity promotion among working age personnel in Thai context and help to enhance physical performance and reduce sedentary behavior of working age personnel. Additionally, it can also be useful for demonstrating essential policy directions and strategies to promote population health in terms of effectively increasing physical activity and reducing sedentary behavior among Thai populations. This is in line with health promotion, protection and health risk factors of the working-age population that should be formed by the proper lifestyle including the factors contributing to health and safety in the home, workplace, community and public places in order to reduce sickness and injury as much as possible, according to the strategic plan related to Ministry of Health Fiscal Year 2019 under the 20-Year National Strategic Plan (Public Health) and in associated with promoting health and potential of people of all ages. Therefore, physical activity promotion policies were proposed to meet the country policy and the target group, including 5 policies as follows: 1. Active School 2. Active Workplace 3. Active Community 4. National Steps Challenge 5. Tax Measures. Policy proposal to promote physical activity according to the
physical activity promotion plan in 2018-2030, subcommittee in charge of policy proposal development to promote physical activity, division of physical activity for health, department of health, ministry of public health.

We aimed to compare the effects of 12 weeks of physical fitness of working adult within the control group and the experimental group before and after 12 weeks. We hypothesized that physical activity promotion program would result in experimental group greater improvements in physical fitness measures compared to control group after 12 weeks.

2 Methods

Participants: Fifty working adults who are free of inherited illnesses and flaws that prevent them from engaging in physical exercise, such as high blood pressure, heart disease, bone disease, etc. (Control, n=25) and (Experiment, n=25). 50 individuals made up the study sample, which was split into two groups with 25 each: the experimental group and the control group.

Personnel employed at Maha Sarakham Province University who completed a total physical activity questionnaire with less than or equal to 600 MET-minutes per week were the sample group for the research study. From all participating universities, 50 respondents were chosen at random, split into two groups of 25 each using block randomized allocation, and then separated into two groups: the experimental group and the control group.

The sample size was obtained using the test power analysis and influence size, based on the study by Jort Veen et al. (2022) titled Effects of Reallocating Time Spent in Different Physical Activity Intensities on Sarcopenia Risk in Older Adults: An Isotemporal Substitution Analysis. The power of the exam is set at a level of 0.80. At least 25 participants were included in the sample because of the statistical significance threshold at the.05 level (=.05). The sample group may also have the option to abandon the trial while taking part in the research study throughout the 12-week program. The sample size was thus expanded by the researcher to 4 individuals each group (15%). 58 people made up the whole sample.

The participants were familiarized with the experimental procedure and associated risks and gave their written informed consent to participate. This study was performed in compliance with the Committee on Ethics for Research in Humans Mahasarakham University Division of Research (MSU-EC 291-233/2022).

3 Data Analyses

In evaluating mean differences on two or more dependent criteria variables at once, multivariate analysis of variance (MANOVA) is used to determine the statistical significance of the influence of one or more independent variables (Bray & Maxwell, 1985). Kolmogorov-Smirnov tests, Box’s M Test of Equality of Covariance Matrices, Wilks’ lambda (Olson, 1976; Stevens, 1979) was used to test the assumption of homogeneity of variances, and Bonferroni for the Post-hoc method were employed to ensure that all data were normal.

4 Results
1. The results of testing within the control group revealed that the resting pulse (P=0.010), strength of the hand and forearm muscles (P=0.001), and circulatory endurance (P=0.030) were substantially different (P<0.05). Comparative findings of disparities in physical fitness. Leg muscular strength and endurance (P=0.060), joint flexibility (P=0.090), and P=0.090 did not vary.

2. The results of testing withing the experimental group showed that there were statistically significant differences in the upper blood pressure (P=0.020), flexibility of the joints (P=0.001), strength of the hand and forearm muscles (P=0.001), strength and endurance of the leg muscles (P=0.001), and circulatory endurance (P=0.001). Diastolic blood pressure (P=0.080) did not vary from resting pulse (P=0.410).

3. Comparative analysis of differences in physical fitness between the control group and the experimental group revealed significant differences in resting pulse (P=0.729), upper blood pressure (P=0.832), diastolic blood pressure (P=0.210), joint flexibility (P=0.738), hand and forearm muscle strength (P=0.153), leg muscle strength and endurance (P=0.823), and circulatory endurance (P=0.394). After 12 weeks, there were no changes in these points.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>shows the mean and standard deviation of the sample's age, weight, height and body mass index.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological variables</td>
<td>N =50</td>
</tr>
<tr>
<td>1. Age (year)</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
</tr>
<tr>
<td>2. Weight (kg)</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
</tr>
<tr>
<td>3. Height (cm)</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
</tr>
<tr>
<td>4. Body Mass Index (kg/m$^2$)</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Experiment</td>
</tr>
</tbody>
</table>

From Table 1, the fundamental characteristics of the control group: The mean age is 39.96 years (SD = 7.55) weight is 61.20 kg (SD = 11.98) The average height is 162.28 cm (SD = 8.76) and the average BMI is 23.08 kg/m2 (SD = 2.83)

The fundamental characteristics of the experimental group: The mean age is 39.72 years (SD = 9.33) weight is 61.68 kg (SD = 8.83) The average height is 163.16 cm (SD = 7.25) and the average 23.16 kg/m2 (SD = 2.89)

<table>
<thead>
<tr>
<th>Table 2</th>
<th>The results of two-way repeated measure (MANOVA) of physical fitness with each group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing Results</td>
<td></td>
</tr>
</tbody>
</table>
From table 2, The control group's resting heart rate (bpm) (P=0.010), muscular strength (P=0.001), and cardiovascular endurance (P=0.030) significantly different (P<.05). However, there were no changes in systolic pressure (P=0.120), diastolic pressure (P=0.090), flexibility (P=0.090), and muscular endurance (P=0.060).

The experiments group's systolic pressure (P=0.020) flexibility (P=0.001), muscular strength (P=0.001), muscular strength (P=0.001), muscular endurance (P=0.001) and cardiovascular endurance (P=0.001) statistically differed (P<.05). However, there is no changes in resting heart rate (bpm) (P=0.0410) and diastolic pressure (P=0.080).

<table>
<thead>
<tr>
<th>Testing list</th>
<th>Before Testing</th>
<th>After 8-week trial</th>
<th>After 12-week trial</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>SD</td>
<td>x</td>
<td>SD</td>
<td>x</td>
</tr>
<tr>
<td>1. Resting Heart Rate (bpm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>84.24</td>
<td>11.93</td>
<td>79.40</td>
<td>8.45</td>
<td>78.36</td>
</tr>
<tr>
<td>Experiment</td>
<td>81.00</td>
<td>12.22</td>
<td>79.44</td>
<td>8.12</td>
<td>78.88</td>
</tr>
<tr>
<td>2. systolic pressure (mmHg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>116.68</td>
<td>25.66</td>
<td>116.68</td>
<td>14.97</td>
<td>122.84</td>
</tr>
<tr>
<td>Experiment</td>
<td>124.04</td>
<td>16.93</td>
<td>116.32</td>
<td>11.80</td>
<td>117.56</td>
</tr>
<tr>
<td>3. diastolic pressure (mmHg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>80.40</td>
<td>12.09</td>
<td>77.64</td>
<td>8.48</td>
<td>82.60</td>
</tr>
<tr>
<td>Experiment</td>
<td>79.88</td>
<td>9.67</td>
<td>75.40</td>
<td>13.56</td>
<td>75.84</td>
</tr>
<tr>
<td>4. flexibility (cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>19.70</td>
<td>8.68</td>
<td>21.10</td>
<td>7.67</td>
<td>22.70</td>
</tr>
<tr>
<td>Experiment</td>
<td>20.44</td>
<td>8.94</td>
<td>21.96</td>
<td>8.97</td>
<td>23.36</td>
</tr>
<tr>
<td>5. muscle strength (Kg/weight)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>0.48</td>
<td>0.12</td>
<td>0.53</td>
<td>0.12</td>
<td>0.52</td>
</tr>
<tr>
<td>Experiment</td>
<td>0.49</td>
<td>0.14</td>
<td>0.53</td>
<td>0.13</td>
<td>0.58</td>
</tr>
<tr>
<td>6. muscular endurance (rep)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>35.12</td>
<td>8.83</td>
<td>36.88</td>
<td>7.68</td>
<td>37.80</td>
</tr>
<tr>
<td>Experiment</td>
<td>35.80</td>
<td>10.07</td>
<td>37.72</td>
<td>7.82</td>
<td>40.08</td>
</tr>
<tr>
<td>7. cardiovascular endurance (rep)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>2.25</td>
<td>0.14</td>
<td>2.25</td>
<td>0.11</td>
<td>2.27</td>
</tr>
<tr>
<td>Experiment</td>
<td>2.20</td>
<td>0.13</td>
<td>2.30</td>
<td>0.09</td>
<td>2.34</td>
</tr>
</tbody>
</table>

* the statistical significance threshold at the.05 level (=.05).
Table 3 The findings of the two-way repeated measure (MANOVA) comparison of physical fitness differences between the control group and the experimental group

<table>
<thead>
<tr>
<th>Testing List</th>
<th>group</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Resting Heart Rate (bpm)</td>
<td>between</td>
<td>9.976</td>
<td>1</td>
<td>9.976</td>
<td>0.121</td>
<td>0.729</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>3949.49</td>
<td>48</td>
<td>82.281</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>3959.47</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. systolic pressure (mmHg)</td>
<td>between</td>
<td>6.969</td>
<td>1</td>
<td>6.969</td>
<td>0.046</td>
<td>0.832</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>7341.69</td>
<td>48</td>
<td>152.952</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>7348.66</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. diastolic pressure (mmHg)</td>
<td>between</td>
<td>125.876</td>
<td>1</td>
<td>125.876</td>
<td>1.613</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>3745.6</td>
<td>48</td>
<td>78.033</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>3871.48</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. flexibility (cm)</td>
<td>between</td>
<td>7.119</td>
<td>1</td>
<td>7.119</td>
<td>0.113</td>
<td>0.738</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>3016.83</td>
<td>48</td>
<td>62.851</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>3023.95</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. muscle strength (Kg/weight)</td>
<td>between</td>
<td>0.031</td>
<td>1</td>
<td>0.031</td>
<td>2.112</td>
<td>0.153</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>0.699</td>
<td>48</td>
<td>0.015</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>0.73</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. muscular endurance (rep)</td>
<td>between</td>
<td>2.42</td>
<td>1</td>
<td>2.42</td>
<td>0.051</td>
<td>0.823</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>2289</td>
<td>48</td>
<td>47.688</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>2291.42</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. cardiovascular endurance (rep)</td>
<td>between</td>
<td>0.007</td>
<td>1</td>
<td>0.007</td>
<td>0.74</td>
<td>0.394</td>
</tr>
<tr>
<td></td>
<td>within</td>
<td>0.434</td>
<td>48</td>
<td>0.009</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>0.441</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* the statistical significance threshold at the .05 level (=.05).

As shown in Table 3, the two-way repeated measure (MANOVA) comparison of physical fitness differences between the control group and the experimental group revealed that there were no differences in resting heart rate (P=0.729), systolic pressure (P=0.832), diastolic pressure (P=0.210), flexibility (P=0.738), muscle strength (P=0.153), muscular endurance (P=0.823), and cardiovascular endurance (P=0.394) before and after the 12-week trial.

Table 4 The results of Bonferroni for the Post-hoc procedure

| Testing Result |
Comparing table 4 to the control group using Bonferroni, there were no changes between the pre-, post-8-week, and post-12-week flexibility trials (P=0.97, 0.18, and 0.07). Also, there was no change in muscle endurance throughout all three phases (P=0.29, 0.11, and 1.00), and there was no difference in cardiovascular endurance when comparing before, after an 8-week trial, and after a 12-week trial (P=0.25, 0.06, and 0.35, respectively). In contrast, there was no difference in muscular strength between the beginning and end of the 8-week study (P=1.00). However, there was a significant difference between the 8-week and 12-week trials (P=0.04).

Using Bonferroni to compare table 4 to the experimental group, there was no change in flexibility between the start and finish of the 8-week trial (P=1.00). However, there was a statistically significant difference (P=0.04) between the 8-week and 12-week trials. Like muscular strength, there was no change between the beginning and conclusion of the 8-week trial in terms of flexibility (P=1.00). Nonetheless, there was a statistically significant difference between the 8-week and 12-week trials (P=0.03). As with muscular endurance, there was no change between the beginning and conclusion of the 8-week trial in terms of flexibility (P=0.49). However, there was a significant difference between the 12-week trials at the beginning and end (P=0.00). Conversely, there was no change in cardiovascular endurance across all three stages (P=0.00, 0.00, and 0.01 respectively).

<table>
<thead>
<tr>
<th>Testing List</th>
<th>Week 1</th>
<th>Week 8</th>
<th>Week 1</th>
<th>Week 12</th>
<th>Week 8</th>
<th>Week 12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MD</td>
<td>p-value</td>
<td>MD</td>
<td>p-value</td>
<td>MD</td>
<td>p-value</td>
</tr>
<tr>
<td>1. Resting Heart Rate (bpm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>4.84</td>
<td>0.07</td>
<td>5.880*</td>
<td>0.02</td>
<td>1.04</td>
<td>1.00</td>
</tr>
<tr>
<td>Experiment</td>
<td>1.56</td>
<td>1.00</td>
<td>2.12</td>
<td>0.52</td>
<td>0.56</td>
<td>1.00</td>
</tr>
<tr>
<td>2. systolic pressure (mmHg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.96</td>
<td>0.50</td>
<td>-2.20</td>
<td>1.00</td>
<td>-6.16</td>
<td>0.11</td>
</tr>
<tr>
<td>Experiment</td>
<td>7.720*</td>
<td>0.01</td>
<td>6.48</td>
<td>0.18</td>
<td>-1.24</td>
<td>1.00</td>
</tr>
<tr>
<td>3. diastolic pressure (mmHg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>2.76</td>
<td>0.57</td>
<td>-2.20</td>
<td>1.00</td>
<td>-9.62</td>
<td>0.08</td>
</tr>
<tr>
<td>Experiment</td>
<td>4.48</td>
<td>0.20</td>
<td>4.04</td>
<td>0.07</td>
<td>-0.44</td>
<td>1.00</td>
</tr>
<tr>
<td>4. flexibility (cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>-1.39</td>
<td>0.97</td>
<td>-3.00</td>
<td>0.18</td>
<td>-1.60</td>
<td>0.07</td>
</tr>
<tr>
<td>Experiment</td>
<td>-1.52</td>
<td>0.15</td>
<td>-2.92*</td>
<td>0.00</td>
<td>1.396*</td>
<td>0.04</td>
</tr>
<tr>
<td>5. muscle strength (Kg/weight)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>-0.01</td>
<td>1.00</td>
<td>-0.04*</td>
<td>0.01</td>
<td>-0.038*</td>
<td>0.01</td>
</tr>
<tr>
<td>Experiment</td>
<td>0.00</td>
<td>1.00</td>
<td>-0.046*</td>
<td>0.00</td>
<td>-0.048*</td>
<td>0.03</td>
</tr>
<tr>
<td>6. muscular endurance (rep)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>-3.16</td>
<td>0.29</td>
<td>-3.76</td>
<td>0.11</td>
<td>-0.60</td>
<td>1.00</td>
</tr>
<tr>
<td>Experiment</td>
<td>-1.92</td>
<td>0.49</td>
<td>4.280*</td>
<td>0.00</td>
<td>-2.36</td>
<td>0.06</td>
</tr>
<tr>
<td>7. cardiovascular endurance (rep)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>-0.05</td>
<td>0.25</td>
<td>-0.08</td>
<td>0.06</td>
<td>-0.03</td>
<td>0.35</td>
</tr>
<tr>
<td>Experiment</td>
<td>-0.97*</td>
<td>0.00</td>
<td>-1.38*</td>
<td>0.00</td>
<td>-0.041*</td>
<td>0.01</td>
</tr>
</tbody>
</table>

* the statistical significance threshold at the.05 level (=.05).
5 Discussion

Working-age personnel in the 12-week experimental group were found to have statistically significant differences in their physical fitness in the following areas: joint flexibility, strength in the hands and forearms, strength and endurance in the legs, endurance in the circulatory system, and upper blood pressure. Diastolic blood pressure and resting pulse, however, are not different. However, the resting pulse, the forearm and hand muscle strength, and the circulatory system's endurance all differ statistically significantly from the control group. The flexibility of their joints, their upper and lower blood pressure, and the strength and endurance of their leg muscles, on the other hand, are not significantly different between the groups, and it has also been demonstrated that there is no difference when comparing the groups.

But when comparing the pairs of Bonferroni, it can be seen that the strength and endurance of the leg muscles, the strength and flexibility of the joints, the strength and endurance of the muscles in the hand and forearm, and the endurance of the circulatory system of the samples did not differ between the specimens before the trial and after the 8-week trial, but when comparing the samples after the 8-week trial with the 12-week trial, there were significant differences. According to the WHO research, work-related physical activity is advantageous for physical performance and cardiovascular health. Boost muscular endurance and strength Reduced joint flexibility and improved cardiovascular endurance (WHO, 2010). at most universities in developing nations. Only students have access to the sports and fitness facilities. Many workers cannot utilize these. Even though colleges cover significant medical costs for staff members. Sturm (2002) found that the cost of medical care for overweight workers was 36% greater than the cost for non-overweight employees, and the cost of medications was 77% higher. These payments cover the cost of prescription drugs, medical expenditures, outpatient examination and treatment costs, laboratory radiology, and medical insurance premiums. Indirect expenses include lost time from higher absences and lower productivity. If we don't take advantage of this chance, we will lose it. (Strum, R. 2002) According to Lowe's (2008) research, encouraging physical exercise among people of working age may improve overall health, reduce absenteeism, and save medical costs. (Lowe, A. 2008) As a result of workplace health promotion activities, Robert and Bertera (1990) and Proper and Mechelen (2008) have produced empirical evidence of lower health care costs, decreased absenteeism, improved body wholeness and strength, and illness and sickness avoidance. According to (Proper, K., & van Mechelen, W. 2008) and (Robert L. and Bertera, D. 1990), physical activity should be a regular component of everyday life to maintain physical health. Examples of this include household chores, regular physical activity, exercise, and sports. These motions are what allow your body to build itself up to be physically fit and prepared to carry out numerous jobs effectively. However, being physically healthy is crucial in every aspect of life wherever in the globe, because being physically healthy makes people happier. Body mass index, joint flexibility, muscular strength, muscle endurance, and circulatory endurance made up the health- and fitness-related components (USDHHS, 2010). According to the American College of Sports Medicine (ACSM), exercise that was linked to performance may improve health (Chodzko-Zajko, et al, 2009). Mana Medical Associates (2019) pointed that as part of physical fitness, a healthier lifestyle may enhance quality of life, lower the chance of injury, and lengthen life expectancy. Each component of the body needs to function physically in the right way. Additionally, maintaining a healthy body and mind may lessen stress. 2020 (DU Chukwudo). To improve performance on a personal and institutional level in light of the present corona virus pandemic.
and to improve the physical fitness and health of the university's working age staff, physical exercise is crucial as part of health promotion. Additionally, higher levels of physical activity now will strengthen bodies and decrease sedentary behavior in people of working age, and it can be used to develop significant policy directions and strategies to promote population health in terms of raising physical activity levels and lowering sedentary behavior among the Thai population.

6 Acknowledgments
We would like to thank all the participants who volunteered to take part in this study. We would also like to thank the Research Assistant for their support during the data collection period.

References


Competitive Anxiety and Mindfulness

Piyachate TASING1, Chairat CHOOSAKUL2, Chirawut ACHARYACHHEEVIN3

{piyachate.t@msu.ac.th1, chairat.c@msu.ac.th2, chirawut.a@msu.ac.th3}

Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand1,
Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand2,
Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand3

Abstract. Competitive anxiety is a sport psychology theoretical widely interested and
continuously researched topic. Mostly, the research has emphasized on time preceding
competition which can be separated into one of three fields of area: the relationships of trait
and state anxiety to athlete’s performance, the effectiveness of controlling anxiety
intervention to increase performance, and precursors of anxiety. This article review
focused on elucidating potential mechanisms of competitive anxiety, which precursors is
the perception of threat. And also explained the new sport psychological training
approaches, Mindfulness is chances effective and useful for physiological and
psychological treatment, which is cognitive mechanisms that inhibit/disturb to thinking
and control in thought mechanisms in the present while there is no worry about the future,
and not worthy to the past. Consequence, uncertainty occur from competitive and outcome
importance therefore no disturbing the minds of athletes in training or during sports
competition. Summarized, there are needed for the future study in testing of the
relationships of competitive anxiety and mindfulness.

Keywords: Competitive Anxiety, State Anxiety, Trait Anxiety, Mindfulness, Meditation

1 Introduction

Competition is a social comparison process that creates uncertainty before the actual
contest because one can never be sure that performance outcome will turn out favorable
until it process is completely done.[1] In sports situations, the athletes were impacted
with many internal and external arousal factors.[2] When athletes are out of control
of stimulus and adjust properly, there is lead to disturb their emotion and thinking.[3][4]
Competitive situations, stress and anxiety can increase as time preceding competition and
time to competitive.[5] Anyhow, in the session of training program, an optimal level of
stress manipulation only has a positive effect on athletic performance,[6] but not for
anxiety. In accomplishing athlet’s performance, this can be applied for any coaches in
order to control a suitable of stress and prevent an over stress that will be caused of
anxiety. The negative affects to both athlete’s body and mind[7] can be decreased by
those concern. Therefore, in this point, the studies and research on sports psychology
are widely and continuously development. Especially, the psychological or mental skill
training is shown it effective in helping an individual to better understand their own
mental state, and playing control over the thoughts and emotions arising before or during
competition.[8][9][10] There is involves the implementation of techniques, such as goal
setting, relaxation, pre-performance routines, positive self-talk, arousal regulation, and visualization.

For the cognition approach, in fact of the past and future, which the past has already gone although feel shame and guilt cannot be changed, while the future is not arrived and it completely unknow,[11] therefore, when the athletes paying attention task at hand in the present moment infused with qualities, that result them no worry about the future, and not groan to the past.[12] Consequence, uncertainty occur from competitive and outcome importance therefore no disturbing the minds of athletes in training or during sports competition and self-confidence has increased.[13] These is accorded to the conceptual of Mindfulness Theory that leads to practice reduce competitive anxiety. However, an applying of the principles of thought and the effect of mindfulness in a sporting situation is not as easy as it seems. Even there are supported by the rated literatures.[14],[15] This article aims to describe the definition, mechanism, theory of competitive anxiety and mindfulness in sport, and its potentially relationship. It would be reflected the appropriately guid or direction in athletic training and sport psychology researching.

2 Competitive Anxiety

Anxiety means a disturbed state of mind.[16] Occurrence of anxiety has a negative effect on physiological and psychological athletes.[5] Sport anxiety is also the physiological and psychological symptom form imbalance between athletic demand and response capability.[17] Resulted athlete who sense unable to meet the demand elevated performance on both training or competition, will perceive threat.[13] Threat is a function of uncertainty multiplied by importance if either uncertainty or importance away to exist, there is no threat.[18]

Specifically, in sport competition situation, the competitive anxiety is a sport psychology theoretical widely interested form coach, athlete and researcher. Famous sports psychologist, Martens, Vealey, & Burton, (1990)[1] elucidated a precursors of sports anxiety that is perception of threat which caused in period preceding and during competition by perceived uncertainty of outcome, performance or the result in future and perceived the significance of outcome (Prapavessis, Cox & Brooks, 1996).[18]

Mostly, the research has emphasized on time preceding competition which can be separated into one of three field of area: the relationships of trait and state anxiety to athlete's performance, the effectiveness of controlling anxiety intervention to increase performance, and precursors of anxiety, which has been mentioned above to threat, the precursor of competitive anxiety and see more theoretical model[1] in Figure 1.
Competitive anxiety, there are composed of trait and state anxiety construct.[1] The trait anxiety is personally characteristic that call anxious personality,[5] which separated into three components of trait. Firstly, trait cognitive- worry is the predisposition to feel worried about competition. Secondly, trait somatic anxiety that is the general tendency to feel bodily changes of the autonomic nervous system in competitive situations for example increase heart rate, shortness of breath, tense muscle, clammy hands. Lastly, the concentration disruption that is the inability to stay focused on the task whilst competing.[18] While the state anxiety is a reflects time period focused to anxious feeling relatively to a present or future meaningful context.[5] There are three separated components of state. Firstly, cognitive state anxiety which is considered the immediate conscious awareness of unpleasant feelings (worry) about oneself or external stimuli before and/or during the sport contest. Secondary, somatic state-anxiety that is the immediate awareness of bodily symptoms of the autonomic nervous system. There is a same somatic trait symptoms before and during the competition. Thirdly, the state-confidence which is define the degree of certainty that athletes feel about their ability to be successful.[18]

In measuring competitive anxiety, the researchers developed the standardizes tests and globally used to observe its level and construct in the athletes.[19] such as the Sport Competition Anxiety Test (SCAT),[20] the Competitive State Anxiety Inventory-2 (CSAI-2),[21][22][23] and the Sport Anxiety Scale-2 (SAS-2).[24] The scales used in those questionnaires focus on the factors of cognitive anxiety, somatic anxiety and confidence. There was, then, also adapted and standardized in many language around the world.

The psychological skill training (PST) was developed and called a mental training by sport psychology researchers,[25] which includes various processes that focus on controlling emotions and thoughts considered detrimental.[26] This process is often disrupted by the human tendency to think negatively. This is not only a condition of precisely counter-intentional error, but also has the potential to increase the athlete's negative condition by encouraging athletes to explore the negative experiences.[27] This process of exploring experiences adversely affects negative thoughts and feelings that
are prominent in consciousness.\textsuperscript{[28]} Research evident are supported a positive effect of any PST techniques on competitive anxiety. Walter et al.\textsuperscript{[29]} showed that self-talk could reduce the side effect of competitive state anxiety. The same result also happened in other research, which used imagery,\textsuperscript{[30]} arousal regulation through relaxation,\textsuperscript{[31]} and goal setting as interventions.\textsuperscript{[31][32][33]} However, the sports psychologist, they are continuously trying to research and propose the effectively techniques in reducing competitive anxiety in order to serve as a versatile choice and specifically for athletes.

Therefore, in sports competitive situation, the understanding of anxiety and how to deal it by choosing the appropriately PST technique. Includes, the distinguishing the level and type of anxiety. It can be helped the athletes compete to their game with full potentially performance.

\section*{3 Mindfulness}

In the Eastern and Western cultures, mindfulness originally developed in ancient time, An Indian “Sati” word derivation, which was generally represented to awareness attention and remembering.\textsuperscript{[34][35][11]} Mindfulness is mean a flexibly paying attention on purpose in the present moment that infused with qualities like kindness, curiosity, acceptance and openness.\textsuperscript{[11]} In addition, Jon Kabat-Zinn is an initiatively researcher of scientifically mindfulness practicing in sport and chronic pain reduced,\textsuperscript{[36][37]} whose are gave a specific definition of mindfulness as a structured mind set to being aware of the present-moment experience in an accepting, non-judging, and non-avoiding way.\textsuperscript{[38]} There was then considered another mental training besides PST that include some practice of meditation and yoga.\textsuperscript{[39]} The intervention of mindfulness is effective for both psychological and physical symptoms.\textsuperscript{[35]}

For the best performance, a function of mindfulness is increase concentration, developing clear seeing and perception, guarding the mind, and balancing the mind.\textsuperscript{[37]} These functioning takes place through the following mechanisms by three axioms form which composed of intention, attention and attitude as depicted in Figure 2.\textsuperscript{[35]}

\begin{center}
\begin{tikzpicture}
    \node (intention) at (0,0) {Intention};
    \node (attention) at (-1,-1.5) {Attention};
    \node (attitude) at (1,-1.5) {Attitude};
    \path (intention) edge [->] (attention);\path (intention) edge [->] (attitude);
\end{tikzpicture}
\end{center}
The three axioms of mindfulness for each axiom can be defined that the intention is the dynamic and evolution of personal vision,\[35]\) that let them change and develop with deeper training.\[40]\) On the otherwise, the attention is a capacity in one object attending for long time periods\[41]\[42]\) and able to inhibit other thoughts.\[43]\) Finally, an attitude is quality of mind, which people around can perceive such as kindness, friendliness, openness and interest.\[44]\) All those three axioms are not separate stage, interwoven aspects of a single cyclic process, and occur simultaneously. Therefore, mindfulness is a state of mind at each moment to it moment process.\[35]\)

From the above mechanisms lead to different forms of training based on the concept of Kabat-Zinn (1994).\[38]\) Especially, Mindful Sport Performance Enhancement (MSPE) of Kaufman and his colleagues (2009).\[45]\) There are composed of six following patterns in mindfulness training; 1) raisin exercise, for this reason, while eating because most of the time people eat delicious food will quickly eat without recognizing the nature of chewing or swallowing.\[46]\) 2) body scan can be explained by the reason that used of various gestures to expand the ability to perceive one’s own body whole movement, the angle of the joint, the tension, and any changes that are happened with the body at that moment.\[47]\) 3) mindful breathing use this method to practice mindfulness while respire, can be done anywhere, anytime every situation because athletes are breathing all the time. This technique is the perceiving to know how the air enters and flows out of the lungs through the nostrils. In Buddhism, this technique is also called “Anapanasati”. This method, whenever an athlete thinks of something other than breath awareness, they need to retrospective their breathing and feeling during a number of 2 to 3 of their deep breaths. Become mindful of new breathing and usually keep doing those at the appropriate time for each individual is also recognized.\[58]\) 4) sitting meditation is a mindfulness technique that focuses on stillness and concentration in something may be perception of breathing same as mindful breathing and keep doing this by doing it in a sitting position, 5) mindful yoga use yoga as an awareness-raising activity in mindful stretching, flexing, tensing, and slow movements, with the control and perception of breathing while moving.\[47]\) and 6) walking mindfulness, it is a practice of mindfulness by walking. Athletes can adapt their walking methods to fit the context of their sport, and when practicing until proficiency will be able to use a mindful jogging method.\[49]\)

According to all six training patterns as mentioned, it can be summarized as the an appropriated of volume, frequency, time and type of training program is provides a positively results by this following suggests; the duration of mindfulness training ranged from four weeks to a long-term practice of two years, the training frequency twice a day to once a week, lasting 50-75 minutes per session. And also confirmed to various of athletes, such as cyclists, darts, hammer throwers, hockey players, hurdles athletics, fighting judo athlete, rugby football player, short/mid-range/long-distance athletics, shooters, volleyball players, swimmers, and karate athletes.\[50]\)[12]\)[13]\) As the emphasizing to the related literatures, there are not only supported for mindfulness intervention positive effect that can increase the level of athlete mindfulness, but also can decreased for athlete’s stress or anxiety.\[14]\)[15]\)[45]\)[51]\)[52]\)
Both practicing and competition situation of the athletes, the measuring and evaluating of mindfulness can be observed and employed with the following popular and standardly accepted tools, such as the Toronto Mindfulness Scale (TMS) by Lau, Bishop, Segal, Buis, Anderson, Carlson & Comody (2006). This trait mindfulness scale is composed of 13-item. The Philadelphia Mindfulness Scale (PHLMS) by Sauer et al, (2013), this state mindfulness scale is composed of 20-items. Also Mindful attention awareness scale for adolescents (MAAS-A) by Brown, West, Loverich & Biegel (2011). It is a14 items of questionnaire that used to assess trait mindfulness for teen athletes. All measured instruments mentioned above have been translated into several languages such as Spanish and Chinese. This phenomenon can be offered an accomplishment for the mindfulness knowledge and its application in real sport situation.

Therefore, the future research and practical application could be recommended. Elucidation on the effect of mindfulness practice on competitive anxiety with specifically in various sports and athletes, an appropriate practice of mindfulness must be considered for the potentially training intervention, and continued for revised it suitability scale across culture are needed to be done before that specifying application.

Reference

Confirmatory Factor Analysis of Teamwork in Organizations Using the GRPI Model

Sompong Maneesakprasert1, Arporn Popa2, Watanoo Kaewsuphan3, Anurakpop Meeton4, Vinita Kaewkua5

{62010565004@msu.ac.th1, arporn.p@msu.ac.th2, Watan_ohho@hotmail.co.th3, anurakpop.m@msu.ac.th4, vinita.kae@stou.ac.th5}

Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand1; Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand 2; Faculty of Education and Educational Innovation, Kalasin University, Thailand3; Department of Health and Sport Science, Faculty of Education, Mahasarakham University, Thailand4; Office of Registration, Records and Evaluation, Sukhothai Thammathirat Open University, Thailand5

Correspondence Author Email: arporn.p@msu.ac.th2

Abstract. The objective of this study was to analyze the confirmatory factors of organizational teamwork using the GRPI model (Beckhard R., 1972). The research tool was the GRPI questionnaire modified from Summana Simui (2010) and Nemanja Berber (2020). The questionnaire comprised 40 items in sets of 5-point rating scale with the reliability at 0.966, ranging from 0.877-0.887, which had the internal consistency at high level. The sampling group was 283 employees who worked in Korndej-Group Co., Ltd. in Surin province, and ThaiNamThip Co., Ltd. in Khonkaen province, Thailand, using simple random sampling. Research tool was validated for its reliability using Cronbach’s alpha coefficients with SPSS program and LISREL program was used for its construct validity. The results showed that the confirmatory factors and the construct validity of the developed model were fitted with the empirical data (Chi-square=68.03, df=45, p=0.015, GFI=0.961, AGFI=0.953, RMR=0.004,RMSEA=0.043)

Keywords: Confirmatory factor analysis; Teamwork; Organization; GRPI model

1 Introduction

The study of organizational teamwork has grown exponentially from the past to the present. Since the organization has seen the importance of teamwork and has adopted a more team-based approach to respond to the challenges of competitive conditions and the adaptability to create the organizational resilience. This is especially true for private organizations with a large number of employees and business competitors where the team is divided into different departments in the organization. Therefore, when teamwork is properly implemented, tasks that require collaboration can be highly productive and this is considered an invaluable resource of the organization (Hackman, 2002). The important reason why organizations try to adopt teamwork is that teamwork can be more successful than working alone (Gerard, 1995). Teamwork allows for more thoughtful decision-making than by any one individual (Manz and Sims, 1993). Further, teamwork can help to expand more skills and experience in problem-solving (Kernaghan and Cooke, 1990; Mennecke and Bradley, 1998). Based on this point, many
models have been proposed and developed for the purpose of identifying factors affecting the effectiveness of teamwork. Those models try to present the variables influencing the effectiveness of teams in a concrete way, so organizations can use different methods to manage those variables.

To develop the work process of employees in the organization, Beckhard (1972) has proposed a theory of organizational development model called the GRPI Model (Model of Team Effectiveness) which has widely used in the development of teams in organizations. According to the GRPI Model, the goals of team development are to reduce the time it takes to build a team and focuses on the initial steps that will increase the productivity of the team. This will ensure productivity, efficiency and quality while enhancing the way team members collaborate. The GRPI model describes the dimensions that characterize teams by arranging in the form of a performance priority with 4 key factors: goals, roles, processes, and interpersonal relationships. This is similar the study conducted by McEwan (2017) on the effectiveness of teamwork training on teamwork behaviors and team performance. McEwan found that the effectiveness of teamwork training depends on 3 factors: 1) objective/mission/goal setting; 2) teamwork behaviors during team performance include actions that are consistent with the communication, coordination, and cooperation of each member; and 3) critical situation monitoring and post-task assessments of the system variables and problem-solving efficiency of the team. Similarly, Berber (2020) studied the relationship between perceived teamwork effectiveness and team performance in banking sector of Serbia. The study found that there are 9 variables related to the perceived teamwork effectiveness influencing team performance in banking sector of Serbia: 1) the common goal they strive for; 2) possession of skills, knowledge in the field they study and work on; 3) development of communication channels through which information is transmitted; 4) trust between team members; 5) motivation that leads to success; 6) Joint efforts of team members to solve the task; 7) active listening and respecting the ideas of other team members; 8) flexibility and adaptation to environmental influences; and 9) existence of a leader in the team who will lead the whole team and achieve success.

From the above-mentioned studies, it can be seen that the factors influence to confirm the successful of teamwork in the private sector are still unclear. Moreover, the study contexts are also different and most of the study are related to the banks and the large corporations, but the study related to private organizations that represents the distribution of products in specific zones and having warehouses, offices, and transportation departments in economic areas has less number of studies. Therefore, applying the GRPI Model is implemented, might affect to teamwork in organization. This study was interested to conduct a study on a confirmatory factor analysis of organizational teamwork using the GRPI Model to provide guidelines for improving the organizational teamwork quality in the private organization.

2 Research Objective

To conduct a confirmatory factor analysis of organizational teamwork using the GRPI Model.
3 Research Method

Quantitative research design was used in this study. A confirmatory factor analysis of organizational teamwork using the GRPI Model was conducted according to the following steps:

3.1 Population and Sample

Population: The total population was 620 employees including 440 employees of Korndej-Group Co., Ltd. in Surin province, Thailand, and 180 employees of ThaiNamThip Co., Ltd. in Khonkaen, Thailand. The two companies are private organizations that represent the distribution of products in specific zones. They have warehouses, offices, and transportation departments in economic areas. Their products are sold at wholesale prices. The two companies have clear organizational goals, divisions of work, and decisive decision makers. There is a communication between all parties in work and has a collaborative process for all parties.

Sample: The samples consisted of 283 employees (223 males and 60 females) who work for Korndej-Group Co., Ltd. (183 employees) and ThaiNamThip Co., Ltd. (100 employees). The samples were used for a construct validity testing. The sample size was determined based on the concept of Hair et al. (2010) and the 20 samples per parameter was determined according to this present study. Owing to the study, the variable was the organizational teamwork model with four indicators. There was a total of 10 parameters to be estimated. Therefore, a suitable number of samples should be at least 20 x 10 samples or 200 samples. In order to handle missing data, the researcher increased the number of samples to 300 by using a simple random sampling method and selected only 283 respondents who answered all the questions in a questionnaire.

3.2 Research Tool

A questionnaire was constructed by conducting empirical research to review related literatures and research. The constructed questionnaire was modified from Summana Simui (2010) and Nemanja Berber (2020). It divided into 2 parts as follows: Part 1 basic information of respondents and Part 2 an assessment of the organizational teamwork using the GRPI Model. Part 1 was a check-list questionnaire asking about basic information of respondents. Part 2 was a 5-point rating scale questionnaire asking about 4 factors including: 1) goals, 2) roles, 3) processes, and 4) interpersonal relationships. The total number of question items in Part 2 was 40 question items (10 question items per each factor) (Kanlaly Vanichbuncha, 1999). The drafted questionnaire was validated by 5 qualified-experts.

The validation of content validity made by 5 qualified-experts showed that the IOC value is between 0.80-1.00. There are 34 items considering the IOC value of 1.00 and the IOC value of 0.80 for 6 items. Totally 40 question items had reached the required criteria.

The reliability of 40 question items in this questionnaire had high level with the Cronbach’s alpha coefficient in the overall reliability at .966. Considering the reliability in each factor from GRPI model show that totally of indicators was between .877-.887. The most reliable indicators were the organizational goals (0.887) and the roles (0.887) followed by the teamwork process (0.879) and the interpersonal relationships (0.877), respectively.
According to Pearson's product moment correlation coefficient analysis, it was found that the indicator of goodness had the correlation coefficient ranged from 0.813 to 0.855 at 0.01 significant level for all pairs. The result of Bartlett’s test of sphericity was equal to 1189.180 (p< .01) indicating that variables are interrelated and can be used for factor analysis. The KMO was equal to 0.869 showing that variables were very well suited for factor analysis as shown in table 1.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Goal</th>
<th>Roles</th>
<th>Proce</th>
<th>Relat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roles</td>
<td>0.849**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proce</td>
<td>0.836**</td>
<td>0.838**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inrel</td>
<td>0.813**</td>
<td>0.841**</td>
<td>0.855**</td>
<td>1</td>
</tr>
<tr>
<td>Mean</td>
<td>2.589</td>
<td>2.590</td>
<td>2.566</td>
<td>2.560</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.457</td>
<td>0.442</td>
<td>0.442</td>
<td>0.428</td>
</tr>
</tbody>
</table>

Bartlett’s Test Of Sphericity=1189.180   Df=6   P=0.000   Kmo=0.869

**Note** **p < .05**

3.3 Data Collection

The data collected by researcher and 3 research assistants who have been trained and understood the details of this study as same as the researcher. The face-to-face method of collecting data was used for 283 samples. Firstly, the researcher made a letter requesting permission for collecting data to the concerned organizations. After organizations had approved, the samples were signed the consent form for answering the questionnaire. Next, the research had explained the details of this study, objectives, and data collection process. In addition, the researcher also checked the understanding of samples about this study before collecting the data. This study had been approved the research ethics from mahasarakham university as certified ethics review number 352-337/2564 on October 25, 2021.

3.4 Data Analysis

SPSS program was used for the validation of questionnaire’s content validity and reliability. LISREL program was used to validate a construct validity of the model.

4 Finding

The results of the confirmatory factor analysis showed that the model was very fit with the empirical data (χ² = 68.03, df = 45). The chi-square value was different insignificantly from 0 indicating the fitness of the developed model and the empirical data. GFI was 0.987 and AGFI was 0.933 which was greater than 0.90 or closer to 1. The RMSEA equaled to 0.008 which was lower than 0.05. The findings showed that that the model was fit with the empirical data as shown in table 2.
Table 2. The results of first and second order confirmatory factor analysis of the organizational teamwork using the GRPI Model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Loading</th>
<th>T</th>
<th>R²</th>
<th>FS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The first order confirmatory factor analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Goals (GOALS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding of goals (UNDER)</td>
<td>0.880 0.040</td>
<td>0.840</td>
<td>-</td>
<td>0.774 0.461</td>
</tr>
<tr>
<td>Participation and acceptance of goals (PARTI)</td>
<td>0.901* (0.020) 0.877</td>
<td>21.782</td>
<td>0.808 0.578</td>
<td></td>
</tr>
<tr>
<td>Commitment to work for the goals (COMM1)</td>
<td>0.843* (0.022) 0.825</td>
<td>19.074</td>
<td>0.708 0.350</td>
<td></td>
</tr>
<tr>
<td>2) Roles (ROLES)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarity of roles (CLEAR)</td>
<td>0.772</td>
<td>0.711</td>
<td>-</td>
<td>0.594 0.257</td>
</tr>
<tr>
<td>Participation and responsibility (RESPO)</td>
<td>0.754** (0.023) 0.704</td>
<td>15.902</td>
<td>0.556 0.291</td>
<td></td>
</tr>
<tr>
<td>Commitment and perception of authority (RECOG)</td>
<td>0.781** (0.017) 0.753</td>
<td>21.548</td>
<td>0.601 0.264</td>
<td></td>
</tr>
<tr>
<td>3) Processes (PROCE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision process (DECIS)</td>
<td>0.863</td>
<td>0.832</td>
<td>-</td>
<td>0.732 0.341</td>
</tr>
<tr>
<td>Collaborative control process (CONTR)</td>
<td>0.741** (0.028) 0.703</td>
<td>14.654</td>
<td>0.546 0.253</td>
<td></td>
</tr>
<tr>
<td>Coordination and communication (COORD)</td>
<td>0.874** (0.021) 0.835</td>
<td>19.159</td>
<td>0.753 0.535</td>
<td></td>
</tr>
<tr>
<td>4) Interpersonal relationships (INREL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust and respect (TRUST)</td>
<td>0.843</td>
<td>0.812</td>
<td>-</td>
<td>0.700 0.427</td>
</tr>
<tr>
<td>Unity and cooperation (UNITY)</td>
<td>0.851** (0.023) 0.823</td>
<td>17.656</td>
<td>0.725 0.383</td>
<td></td>
</tr>
<tr>
<td>Positive attitude and good working atmosphere (POSIT)</td>
<td>0.820** (0.026) 0.803</td>
<td>15.027</td>
<td>0.674 0.419</td>
<td></td>
</tr>
<tr>
<td><strong>The second order confirmatory factor analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Components of organizational goals (GOALS)</td>
<td>0.940** (0.055) 0.912</td>
<td>17.245</td>
<td>0.903 -</td>
<td></td>
</tr>
<tr>
<td>Components of roles (ROLES)</td>
<td>0.971** (0.064) 0.935</td>
<td>16.731</td>
<td>0.982 -</td>
<td></td>
</tr>
<tr>
<td>Components of teamwork processes (PROCE)</td>
<td>0.963** (0.037) 0.928</td>
<td>17.162</td>
<td>0.957 -</td>
<td></td>
</tr>
<tr>
<td>Components of interpersonal relationship (INREL)</td>
<td>0.954** (0.059) 0.904</td>
<td>16.395</td>
<td>0.938 -</td>
<td></td>
</tr>
<tr>
<td>Chi-square = 68.03, df = 45, p-value = 0.015, GFI = 0.961, AGFI = 0.953, RMR = 0.004, RMSEA = 0.043</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From table 2, when considering the standard factor loading of each indicator in the organizational teamwork using the GRPI Model, the standard factor loading of all indicators was positive in the range of 0.741 to 0.963 at .05 (p<.05) of statistically significant level. Roles in the organization (ROLES, 0.971) was the most important indicator followed by processes (PROCE, 0.963), interpersonal relationships (INREL, 0.954), and organizational goals (GOALS, 0.940), respectively. These findings indicated that all four indicators could be significant indicators of organizational teamwork using GRPI Model. The aggregate result of indicators of organizational teamwork using the GRPI theory is shown in Fig. 1. and can be written as an equation as follows:

\[
\text{TEAM} = 0.461***(\text{UNDER}) + 0.578***(\text{PARTI}) + 0.350***(\text{COMM1}) + 0.257***(\text{CLEAR}) + 0.291***(\text{RESPO}) + 0.264***(\text{RECOG}) + 0.341***(\text{DECIS}) + 0.253***(\text{CONTR}) + 0.535***(\text{COORD}) + 0.427***(\text{TRUST}) + 0.383***(\text{UNITY}) + 0.419***(\text{POSIT})
\]
5 Conclusion and Discussion

The results of this study concluded that all four components were latent variables and correlated with the empirical data of the organizational teamwork using the GRPI Model. The roles within the organization (ROLES) were the most important factor, the second important factor was the teamwork processes (PROCE), the third important factor was the interpersonal relationships (INREL), and the fourth important factor was the organizational goals (GOALS). The important of each factor can be discussed as follows.

1. The roles within the organization (ROLES) were the most important factor for teamwork in organization. It is because working as a team must create an understanding of the work and clearly define roles and responsibilities of team members. Therefore, working as a team would be effective. The roles and responsibilities within the organization of employees can be used the model’s framework as a tool to encourage employees to work effectively as a team. As the result, the most influenced observed variable was the commitment and perception of authority, followed by the clarity of roles, and the participation and responsibility. These observed variables made collaboration between the employees easily and ultimately results in effective teamwork. This was similar to the study of Chalita Worasiri (2016) presented that the first important factor of the organizational teamwork in term of the division of labor according to knowledge and competence of Nakhon Ratchasima Highway’s staffs was awareness of roles and duties and the ability to work with others, followed by acceptance of responsibility, and achieve team goals. Moreover, the study conducted by Jirapa Janbua and Wanlee Putsom (2021)
showed that there was a positive correlation among work role, work process, work motivation, and teamwork efficiency. In addition, it was also found the significant direct influence between work roles and work motivation, work roles and work processes, work motivation and teamwork efficiency, work processes and work efficiency.

2. The processes within the organization (PROCE) were the second important factor for teamwork in organization. It is because working as a team must have the good processes of working in every organizations. It can be essential for the efficiency and effectiveness of management. The most influenced observed variable of the processes within the organization was coordination and communication. Because of the good communication lead to the same ideas and understanding for collaboration in terms of working times and activities. The second influenced variable was decision process which is a decision from the first to the last step with the correct sequence of the process. The third influenced variable was collaborative control process which is to monitor whether the performance is in accordance with the goals or objectives or not and whether the operation is in accordance with the working standards or not. The result of this study was in accordant with the study of McEwan (2017) on the effectiveness of teamwork training on teamwork behaviors and team performance. McEwan found that the effectiveness of teamwork training related to the teamwork behaviors during working together with the team including actions, communication, coordination, and cooperation of each member. In addition, Carpini, Parker and Griffin (2017) mentioned that the processes of working as a team needed to be clear and the efficiency of teamwork relied on the adaptation of the team members.

3. The interpersonal relationships within the organization (INREL) were the third important factor for teamwork in organization. Because of working as a team need to work together with happily and effectively, it also helps to create cooperation and trust, so the work will be smooth without problems and make the organization successful. The most influenced observed variable of the interpersonal relationships within the organization was unity and cooperation which is an attempt to understand the behavior of the people who work together and to enable them to learn and to analyze problems. The second influenced variable was trust and respect which is about trusting and treating everyone equally no matter how much that person helps to benefit the team. This is the importance aspect of teamwork. The third influenced variable was positive attitude and good working atmosphere which means using a positive attitude to create a positive working atmosphere. It is learning with positive thinking that will result in a good and productive work life. Lencioni (2005) proposed the Five Dysfunctions of a team model that presents the team components in the form of mistakes that can occur from teamwork. The form of mistakes might start with having inappropriate team members, team members are reluctant to be vulnerable with one another and are unwilling to admit their mistakes, weaknesses, or need for help. As a result, without a certain comfort level among team members, a foundation of trust is not possible. Teams that are lacking trust are incapable of engaging in unfiltered and passionate debate about key issues; therefore, it creates situations where team conflict can easily turn into veiled discussions and back-channel comments. In a work setting where team members do not openly air their opinions, inferior decisions are a result. Further, there is also a lack of clarity in assigning tasks and responsibilities; as a result, the team member who assigned to the task may evade the task and the team member will not be interested in the team's outcome. Moreover, Pachsarinya Pongpaew et al. (2020) mentioned that the high-performance teamwork components of the municipality schools consisted of 5 components which are trust, respect, common goals, communication, and cooperation building.
4. The goals within the organization (INREL) were the fourth important factor for teamwork in organization. It is because the goals are the first thing to be clear for working as a team and everyone in organization need to have a commitment for a success of the organization. According to the study, the organizational goals had a very good structural correlation with the empirical data. The organizational goals define what we want to get or what we want to do or whatever needs that we are determined to achieve. Organizational goals are a very important aspect of teamwork for success. The most influenced observed variable was participation and acceptance of goals which is a role in goal setting so that everyone can recognize their common goals for quality work. The second influenced variable was understanding of goals which is the determination of external and internal factors related to the purpose of the organization and its impact on the organization's ability to achieve results based on achievement. The third influenced variable was commitment to work for the goals which is the commitment to work for the organizational goals. It is the intention and diligence to work to achieve the best goals and standards set by the organization. This was similar to Summana Simui (2010) who found that the determination process of the team’s tasks and goals was as follows: (1) employees accept and perform according to the tasks and goals that have been set; (2) employees focus on collective goals rather than personal goals; (3) the goals of the organization help your operations be successful; (4) executives and employees collaboratively set tasks and goals in order to monitor the success of the work within the specified time; (5) a clear understanding of the objectives and goals of the plan at every step, (6) meeting together every time when the action plan is updated and amended; (7) employees in the organization have the opportunity to participate to set the goals of the team; (8) executives and employees work together to plan the work to determine the direction of the organization's operations; (9) executives always motivate employees to perform their duties; and (10) executives and employees have to monitor and assess the determined tasks and goals together. Further, Swansburg & Swansburg (2002) said that the goal of the team was the destination and something that is intended to happen or something that must be made to appear. The task targeting activities take place when operational feedback is considered and provided. Personnel will bring the goals and objectives of the work to a meeting to discuss which is an exchange of opinions between each other.

In conclusion, the confirmatory factor analysis of teamwork in organizations using the GRPI model can improve and develop the more effective organizational teamwork system. Moreover, the results of this study is able to apply according to the context of each organization. In addition, the GRPI model can also to implement through cooperation of administrator and employees to determine the process of teamwork in the organization effectively according to the goles of that organizations.

6 Recommendation

6.1 Recommendation for the Implementation of Research Findings

Organizations in the private sector and related agencies can apply the study of organizational teamwork using GRPI model as a basis for developing relationships and teamwork in the organization.
6.2 Recommendation for Future Research

The current study had focus on only the private organizations that represents the distribution of products in specific zones, having warehouses, offices, and transportation departments in economic areas. The future research should study about organizational teamwork using GRPI model in different sectors.

References

Competitive Anxiety In Athletes With Disabilities: A Systematic Review

Walailak Pumpuang1, Chairat Chusakul2, Arporn Popa3

{{walailak.pum@mahidol.ac.th1, chairat.c@msu.ac.th2, arporn.p@msu.ac.th3}

Department of Health and Sport science, Faculty of Education, Mahasarakham University, Thailand1, Department of Health and Sport science, Faculty of Education, Mahasarakham University, Thailand2, Department of Health and Sport science, Faculty of Education, Mahasarakham University, Thailand3

Abstract. The aim of this systematic review was to identify personal profiles and type of sports associated with competitive anxiety in spots. For this purpose, a systematic review was carried out from database. The published articles between 2007 and 2022 were selected for analysis after applying the inclusion criteria. The results show that gender, age, competitive level and educational level are associated with competitive anxiety. The individual sports and team sports are different in competitive anxiety. This review can be great help for coaches to consider these factors to design individualized psychological intervention for eliminating anxiety of athletes with disabilities.

Keywords: Competitive anxiety, Disability, Sport, Systematic review

1 Introduction

Sport competition cause athlete’s stress and anxiety in both individual and team sports. Especially, anxiety is one important factor in sport psychology area. It can effect on the results of sport competition. Many researchers have defined the definition of anxiety. Weinberg & Gould (2011)1 had described anxiety as a negative psychological state associated with arousal of the body. Similarly, Cheng, Hardly, and Markland (2009)2 and Cox (2007)3 had defined the anxiety in the same as a common unpleasant emotional state in response to stressful competitive situations, that athletes at all levels of performance experience. In sport, competition stimulate athletes to perform their very best, but there is under intense pressure, which cause elevated levels of anxiety, triggering athlete’s physical and mental changes. For physical changes, athletes may experience tremors, muscles tension, increased heart rate, high blood pressure, sweating, rapid breathing, headaches, and disturbed sleep pattern and mental changes, athletes may show as nervous, negative self-talk, worried about performance, images of failure, inability to concentrate, and difficulty in making decision.4-5

According to the multidimensional theory of competitive anxiety6, competitive anxiety has several components, including cognitive anxiety, somatic anxiety, and self-confidence, and
these components affect performance. Cognitive anxiety represents the mental aspect of anxiety characterized by negative thoughts and expectations about a competitive event, and their performance and level of cognitive anxiety can predict performance. Somatic anxiety represents the physical aspects of anxiety characterized by nervousness and tension, and somatic anxiety is associated with inverted U-shaped functioning. In other words, the best performance could be achieved with an average level of somatic anxiety. When somatic anxiety levels were too low or too high, athletes experienced poor performance. Self-confidence refers to an individual's belief in their ability to control themselves and their environment, and self-confidence is positively related to performance. This theory has been used to measure multiple components of anxiety, helping researchers determine the directional effects of anxiety symptoms that increase or decrease athletic performance.

According to the multidimensional theory of competitive anxiety, competitive anxiety has several components, including cognitive anxiety, somatic anxiety, and self-confidence, and these components affect performance. Cognitive anxiety represents the mental aspect of anxiety characterized by negative thoughts and expectations about a competitive event, and their performance and level of cognitive anxiety can predict performance. Somatic anxiety represents the physical aspects of anxiety characterized by nervousness and tension, and somatic anxiety is associated with inverted U-shaped functioning. In other words, the best performance could be achieved with an average level of somatic anxiety. When somatic anxiety levels were too low or too high, athletes experienced poor performance. Self-confidence refers to an individual's belief in their ability to control themselves and their environment, and self-confidence is positively related to performance. This theory has been used to measure multiple components of anxiety, helping researchers determine the directional effects of anxiety symptoms that increase or decrease athletic performance.

However, most of the previous studies have emphasized on competitive anxiety of athletes without disabilities, while ignoring less athletes with disabilities. Nowadays, athletes with disabilities are divided into three groups including the deaf, people with physical disabilities and people with intellectual disabilities and involve in many kinds of disabled sports including racket sports, team sports, track and field sports, and scoring sports. Similar to able athletes, disabled athletes are prepared for the best performance in sport competition leading to increase in competitive anxiety. A study of Srinivasan (2013) compared psychological variables such as anxiety and self-confidence between athletes with and without disabilities and found that there was no significantly different between the two groups. Similar to results of Halawani (2012), athletes with disabilities had no differences in levels of competitive anxiety between athletes with and without disabilities in competition.

Anxiety in the competition of disabled athletes must be taken care of. Due to stressful competitive situations, disabled athletes may question their confidence to perform at a high level and achieve what disabled athletes are capable of. These doubts can affect their performance in sport. As for the sources of disabilities, they can be described as the consequences of congenital or congenital defect or disease. People with congenital disabilities feel little disability and get used to their limitations, which cause gradual stress, while people with disabilities due to accident, illness or medical error can endure more stress due to rapid life changes, fitness and developmental achievements. People with sports disabilities seems to be a means to reduce disability-related stigma and discrimination, reduce gender stereotypes and negative perceptions of women with disabilities, and strengthen the rights of disabled people.
to realize their full potential\textsuperscript{18}. However, a study by Olive and others (2021)\textsuperscript{19} showed that the self-esteem of disabled athletes is weaker than that of non-disabled athletes due to the weakened factor. Therefore, it may be better to understand the barriers affecting athletes with disabilities to optimize their performance in sports and develop mental skills programs to reduce competitive anxiety in athletes.

Thus, the aims of this study was to perform a systematic review to investigate levels of competitive anxiety of athletes with disabilities and to determine possible associations between competitive anxiety, personal profiles and sports contexts between athletes with and without disabilities.

2 Method

2.1 Search Strategies

Electronic database comprising of PubMed and Google Scholar was searched from 2007-2022. Keywords searched included ‘competitive anxiety’ AND ‘athlete’ OR ‘para-athlete’ OR ‘disable athlete’ OR ‘athlete with disability’ AND ‘sports’.

2.2 Inclusion/Exclusion Criteria

For studies to be included In this review they were: a) Research articles that consists of research studies relevant to athletes with disabilities and compared between athletes with and without disabilities, b) Studies were between 2007 to 2022, published in English c) Studies aimed to investigate levels of competitive anxiety and studies related to personal profiles and sports context on anxiety in competition. Studies were excluded if there were a) review articles, book chapters, and conference abstract b) full text of the article was not available.

2.3 Instruments

The measures of competitive anxiety used in the studies in this review varied, including the Sports Anxiety Scale (SAS-2; Smith et al., 2006), the Competitive Anxiety Inventory-2 (CSAI-2; Martens et al., 1990), Illions. Anxiety and Self-Confidence Questionnaire (Srinivasan, 2013), a modified version of the Flemish Sports Competition Anxiety Scale (SAS-2-FL-ID, Biesen et al., 2019)\textsuperscript{20} and the most used or disabled athletes were the CSAI-2 according to Table 1.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Instruments</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biesen et al (2019)</td>
<td>Revised version of the Flanders Sports Competition Anxiety Scale (SAS-2-FL-ID) (Ramis et al., 2015; Smith et al., 2006)</td>
<td>The SAS-S-FL-ID contains 15 SAS-2 items that have been slightly modified to increase feasibility, validity, and reliability when used with ID holders. Cronbach’s alpha was acceptable (somatic anxiety = 0.68; anxiety = 0.76; attention deficit disorder = 0.75)</td>
</tr>
</tbody>
</table>
Srinivasan (2013) Ilions Anxiety and Self-Confidence Questionnaire Not report

Baćanac (2014)²¹ Sports Competition Anxiety Test (SCAT r) (Baćanac et al, 2011) Qualitative Questionnaire SCATr is an extended version of Martens’ SCAT. It contains 10 original Martens items and 20 new measures of somatic and cognitive stress. Reliability and concurrent validity of the SCATr have been accepted in several studies.

Halawani (2012) Sport Anxiety Scale (SAS-2, Smith et al., 2006) The SAS-2 consists of 15-items containing 3 subscales of somatic, worry, and concentration disruption. Total score alpha coefficients was .89

Ferreira & Chatzisarantis (2007) Competitive Anxiety Inventory-2 (CSAI-2; Martens et al., 1990) The CSAI-2 has 27 items measuring cognitive anxiety, somatic anxiety, and self-confidence. Cronbach’s alpha for the CSAI-2 ranges from .76-.90.

Boeschen (2010)²² Competitive State Anxiety Inventory-2 (CSAI-2; Martens et al., 1990) The same

Jeong & Park (2013)²³ Competitive State Anxiety Inventory II (CSAI-2; Martens et al., 1990), Korean version The same

Paraabas et al (2019)²⁴ Competitive State Anxiety Inventory–2 (CSAI-2; Martens et al., 1990) The same

Marín-González (2022) Competitive State Anxiety Inventory—2R (CSAI-2R), Spanish version The same

2.4 Design & Sample

Most of research design of the studies were cross-sectional design. The participants were athletes with and without athletes from 9 countries from western countries including Columbia (n=1), Belgium (n=1), Portugal (n=1), USA (n=1), and from Asian countries such as Serbia (n=1) Malaysia (n=1), Saudi Arabian (n=1) and Korea (n=1). Athletes with disabilities included physical and intellectual disabilities. Various types of sports such as individual sports and team sports and sport modality such as nation, international, Olympic, and Paralympic were included.

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Country</th>
<th>Design</th>
<th>Sample &amp; Sports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Baćanac (2014)</td>
<td>Serbia</td>
<td>E</td>
<td>24 top athletes with and without disability; age athletes with disabilities (28.58±5.71 years), and athletes without disabilities (26.21±6.36)</td>
</tr>
</tbody>
</table>
3. Srinivasan (2013) India


CS= cross-sectional design; Experimental design

3 Results

A total of 9 studies were included in this review. Most studies were cross-sectional and targeted. The studies varied in sample size from 2 to 33 participants, as shown in Table 2. In terms of methodology, most studies used multidimensional scales to assess competitive anxiety, as shown in Table 1. The CSAI-2 was frequently used in five of the nine studies to measure both disabled and disabled components of competitive anxiety in athletes. Specifically for ID athletes, the SAS instrument was slightly modified to maintain reliability, validity, and feasibility. To measure anxiety, the athletes were asked to fill out a questionnaire before the start of the competition or to fill out the questionnaire independently online. Regarding personality, the assistants collected it through personal interviews. Most studies confirm approval by ethics committees. Two-way analysis of variance (ANCOVA), independent t-test, or non-parametric independent sample t-test was performed to compare disability and disability groups or individual and sports such as women and men or individual and team groups. The variables were categorized into a) level of anxiety, b) athlete profiles & sport context and c) comparison between groups. Full details of the studies are reported in Table 3.

a) Levels of anxiety

All studies presented levels of competitive anxiety among athletes with and without disabilities. Five studies investigated athletes with disabilities via the self-report or online questionnaire of Competitive State Anxiety Inventory which divided into three dimensions, namely cognitive anxiety, somatic anxiety, and self-confidence. The study of Parnabas et al, reported that swimming athletes had lower levels of cognitive anxiety, F (3, 166) = 14.443, p < .01. Another study used this questionnaire was a study of Fuentes-Garcia et al (2022) and found
that cognitive anxiety and self-confidence between the pre-and post-match of winners were different from losers.

The second measure was the SAS-2 (Sports Anxiety Scale) used in two studies. A modified version of the SAS-2 was used to assess competitive anxiety in athletes with developmental disabilities (ID) in a study by Bisen et al. (2019) and found that athletes with ID had higher levels of anxiety (9.36 x 2, 62) than their companions. ID ((7.58 2.), F = 26.95, pandlt; 0.001). Athletes with ID had a significantly lower overall level of competitive anxiety compared to athletes without ID (F=27.10, pandlt;.001).

b) Personal profiles & Sports context

Many studies have examined the personal profiles of athletes with disabilities, including gender, age, educational level and other professional occupations, and the influence of personal characteristics on competition anxiety. A study by Marín-González et al (2022) found that males had higher self-esteem than females, and younger athletes had higher levels of cognitive and somatic anxiety.

Competitive anxiety was influenced by the athletic context of individual and team sports. Some studies report a higher prevalence of somatic anxiety in athletes with disabilities. A study by Marín-XGonzález et al (2022) showed that athletes in individual sports had higher somatic anxiety than those in team sports.

c) Comparison between groups

There were some studies compared between athletes with and without disabilities. The results found that there were no difference in components of competitive anxiety.

<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Country</th>
<th>Purpose</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Biesen et al (2019) Belgium</td>
<td>Examining the level of competitive anxiety in Flemish young adults ID</td>
<td>The overall level of competitive anxiety in all subscales was significantly lower compared to athletes without ID.</td>
<td></td>
</tr>
<tr>
<td>2. Bačanac (2014) Serbia</td>
<td>Tests the positive effect of movement on the mental health of disabled people</td>
<td>Disabled athletes significantly differed from non-disabled athletes in only one psychological coping ability. There are significant differences in the competitive anxiety of young and older disabled athletes in sports.</td>
<td></td>
</tr>
<tr>
<td>3. Srinivasan (2013) India</td>
<td>To investigate the analysis of selected psychological variables among athletes and athletes with disabilities.</td>
<td>Cognitive anxiety, somatic anxiety, self-confidence and motivation were non-significant between athletes and disabled athletes.</td>
<td></td>
</tr>
<tr>
<td>4. Halawani (2012) Saudi Arabian</td>
<td>To compare whether there were significant differences in competition levels of somatic anxiety, anxiety and attention deficit disorder between disabled and non-disabled Saudi Arabian national team players.</td>
<td>There are no statistically significant differences between disabled and non-disabled athletes or individual and team sports regarding somatic anxiety, restlessness and decreased concentration.</td>
<td></td>
</tr>
<tr>
<td>5. Ferreira &amp; Chatzisarantis (2007) Portugal</td>
<td>Learn competitive anxiety and confidence.</td>
<td>National athletes had higher cognitive anxiety and somatic anxiety scores and lower self-esteem than international athletes at three different time points (1 week, 2 hours and 20 min). The analysis showed that</td>
<td></td>
</tr>
</tbody>
</table>
6. Boeschen (2010) USA Examining the competitive status of Paralympic athletes and their family members or significant others

Significant difference in mean score on the cognitive CSAI-2 subscore of Paralympic athletes compared to published scale norms such that the mean score of the Paralympic athlete was lower. If these norms are compared with the average of the somatic subscores of Paralympic athletes, no significant differences were found.

7. Jeong & Park (2013) Korea to investigate the differences in participation motivation and competition anxiety between Korean and non-Korean wheelchair tennis players and to determine the relationship between participation motivation and competition anxiety in each group,

non-Korean players showed higher cognitive anxiety and self-confidence than Koreans. . . . . . players In addition, physical stress is negatively correlated with learning, health and pleasure motivation in Korean players. On the other hand, only self-confidence was significantly related to learning motivation and adjustment in non-Korean players.


swimmers had lower cognitive anxiety, F (3, 166) = 1.3, p andlt; .01. The result also showed that removing the negative correlation between cognitive anxiety and athletic performance among athletes (r = -0.81; pandlt;0.05).

9. Marin-González et al (2022) Columbia To examine the effects of gender, age, sport, sport, other occupation, and level of competition on competitive anxiety symptoms and self-confidence in elite athletes,

men had higher levels of self-confidence than women. Younger athletes had higher cognitive and somatic anxiety. Individual athletes had higher somatic anxiety than team athletes. .elite athletes had lower cognitive and somatic anxiety scores and higher self-esteem.

4 Discussion

This review included the 9 studies published between 2007 and 2022 from PubMed and Google scholar databases. This review found that levels of competitive anxiety of athletes with disabilities were inconsistent before or during competition. Based on the multidimensional theory of anxiety, three components including cognitive, somatic and self-esteem were assessed mainly by the CASI-2 and in some studies by the SAS-2. The competition in sports cause anxiety as noticed with the increase in the dimensions of anxiety. This psychological response may affect by the athletic characteristics including gender, age, educational level, competitive level, other professional occupation, and type of sport.

According to this study, female athletes tend to have higher competition anxiety scores than male athletes and lower self-confidence. This may be due to physical, sociocultural and psychological factors that contribute to gender differences in performance. Due to the physiological, anatomical, neuromuscular, biomechanical structure and opportunities of women, and their participation in sports, women can anticipate fewer opportunities, less acceptance and support, therefore they have less motivation to play sports. These conditions can also to anticipate . affects a woman under pressure. in sports and increases competitive anxiety and weakens self-confidence. This is consistent with a previous review showing that women are more concerned than men as a coping strategy when they face stress, especially
expressiveness, commitment to sports and fear of failure instead of focusing on success (Rocha et al, 2018).

Compared with age, younger athletes had higher levels of competitive anxiety, including higher levels of cognitive anxiety and somatic anxiety. Due to differences in growth and development, older athletes are more likely to experience maturation associated with improved speed, strength and muscular endurance, decision-making, motivation, stress management and emotional regulation compared to the younger group and peak age. For example, men tend to be older, with an average age of 27 and women with an average age of 26 (Chomik and Jacinto, 2021). This is explained as similar to Rocha et al (2018) about maturity in which young age may feel insecurity, be emotional dependency, and use inappropriate coping strategies to solve their stressful pressure.

As for education and other professional occupation, these characteristics were suggested in the study of Marin-Gonzalez (2022) in which athletes with disabilities who studied in university level and did other professional occupation had lower cognitive anxiety. This dimension of anxiety focuses on athletes’ thought. If they think positively, they will perform well. Thus, education and life experience from doing occupation will increase this dimension.

In relation to sport, both individual and team sports can affect an athlete's competitive anxiety. Most of the studies that found individual athletes in the same row had significantly higher competitive anxiety than team athletes. This may be because individual sports require responsibility for their own performance, while team sports often share that responsibility with other team members. In addition, Kemarat et al. (2022) found that individual players exhibited neuroticism, associated with low stress tolerance and more emotional responses to stress, whereas team players reported agreeable attitudes, which are generally warm, polite, gentle, trustworthy, and reliable. Personality differences between groups of athletes affect how they behave or react to stressors. In addition, comparing non-disabled and non-disabled athletes, Studies showed no difference in competitive anxiety on cognitive anxiety and somatic anxiety dimensions. However, the study of Marin-Gonzalez was inconsistent with the study of Ferreira and Chatzisarantis in the dimension of self-confidence. This difference may explain why elite Paralympic athletes may have experience of overcoming life's difficulties and great achievements at the international sports level, which would increase self-confidence. Thus, Paralympic athletes may have higher self-esteem than Olympic athletes or national athletes.

This review found that most of the study design was quantitative design especially the cross-sectional design, not included qualitative study or experimental study. Thus, results from the studies may not in-depth in the causal reasons of competitive anxiety occurred among athletes with disabilities. In addition, the sample size of the studies included from 2007-2022 was not much for explanation. These may be the limitation of this review.

5 Conclusion and suggestion

This study analyzed competitive anxiety in athletes with disabilities as a function of personal profile and sport context. The personal profiles and sports context of athletes can be sources of evaluation. Some studies have shown that men had higher self-esteem than women, younger athletes had more somatic anxiety than older athletes, athletes participating in individual sports had more somatic anxiety than team sports, Paralympic athletes had more self-confidence than Olympic athletes. athletes and elementary-level athletes had higher levels of cognitive anxiety
than college-level athletes. There were no differences in competitive anxiety between disabled and non-disabled athletes. Specifically for athletes with ID, researchers can use feasibility, validity, and reliability instruments such as the SAS-S-ID.

This review suggests that a sport-specific feature be created for tracking that allows us to know athletes' strengths and weaknesses in relation to competitive anxiety and self-confidence. In addition, in order to reduce competition anxiety and promote the mental health of athletes, disabled athletes should be offered education, occupation and individual activities.

References

Lifestyle and Academic Performance Among The Students During COVID-19 Pandemic

Vanessa S. Maghanoy1, Myiella R. Adolfo2

{vanessa.salomon-maghanoy@g.msuiit.edu.ph1, myiella.adolfo@g.msuiit.edu.ph2}

Professor, Mindanao State University-Iligan Institute of Technology, Philippines, Professor, Mindanao State University-Iligan Institute of Technology, Philippines

Abstract. This study investigates the relationship between the student's academic performance and lifestyle as it may impact their health and behavior during their online studies. This study used quantitative correlational research to determine the academic performance and lifestyle among the respondents during COVID-19. Stratified sampling was used in this study to select the research respondents, and standardized questionnaires were distributed through a google form. Findings reveal no significant relationship between the respondents' lifestyle and academic performance since the p-values are more significant than the 0.05 level. This means that the student's academic performance is not significantly related to their lifestyle. However, there is a significant difference in the students' lifestyles when grouped according to profile in terms of personality type. This means that the students' lifestyles differ according to their personality types.

Keywords: Lifestyle, Academic Performance, Students, COVID-19

1 Introduction

The COVID-19 Pandemic, also known as the coronavirus disease, has significantly increased morbidity and mortality. Numerous people were impacted, and the worldwide healthcare systems were changed (Garry et al., 2020). To stop disease transmission and the COVID-19 outbreak, the majority of nations implemented restrictive measures such as shutting down businesses, banning social gatherings, placing people in their homes, and other lockdown procedures (Lippi et al., 2019). Despite the fact that these restrictions stopped the virus from spreading, they have led to a number of new risky behaviors (Lopez-Bueno et al., 2020).

Accordingly, educational institutions were forcibly shut down, which forced the use of online schooling as required by social distancing norms. In particular, without any chance for teacher or student preparation, the Philippine education system was forced to adopt the new standard and move to online learning. It is especially concerning that the outbreak has had an impact on student's academic performance in addition to their social interactions, eating patterns, sleep schedules, and mental and physical health (Ammar et al., 2020). Numerous technological advancements have been made, requiring both university students and faculty to be extremely adaptable (Elmer et al., 2020). On another note, this compromised the students' chance of a whole university experience. On top of the fact that academic study has been
compromised, it also prevented learners from benefiting from social support. It would have been essential to overcoming the challenges of the university atmosphere (Sun et al., 2020).

Institutions of higher learning are increasingly conscious of the impact these developments have on their students. They understand that it affects their present and future health in addition to their academic performance (Colomer-Pérez, 2019). Additionally, they have used transversal salutogenic-based educational practices more and more (Mayer & Boness C, 2011). Implementing health-promoting schools (HPS) is being used as a multifactorial intervention, to be more precise (Furley, 2017; Valencia, 2016).

It is a fact for everyone, not just students, that the Pandemic has altered and limited our food choices and movement. We have also grown dependent on the technology that has kept us connected to the outside world for so long. Our main source of information and means of communication now comes from technology. It's also probable that during this terrible time, people became dependent on substances like alcohol, cigarettes, and possibly even drugs. This is important since healthy lifestyles may have an impact on academic achievement (Kristjánsson et al., 2010). Numerous research have revealed a correlation between the two that is favorable (Ibarra-Mora, 2019).

As a result, the researcher is interested in learning more about how the COVID-19 Pandemic affected the student’s academic performance and way of life. Students from MSU-IIT, College of Education make up the subjects. The researchers want to examine how the learners’ particular lifestyle choices—such as exercise, eating habits, and other relevant vices—can affect how well they perform academically. This study can evaluate how the participants’ personality qualities changed their perceptions and coping mechanisms in response to crises and academic performance. Additionally, their GPA from the first semester of the third or fourth year (AY 2019–2020) and the second semester (AY 2020–2021) are taken into account.

2 Methodology

This study used a descriptive-quantitative method of research to determine the academic performance and lifestyle among the students of MSU-IIT during the COVID-19 pandemic. Stratified sampling was used in this study to select research participants, and questionnaires were distributed through google Forms to be used in the data gathering of the researchers. Due to COVID-19 Pandemic, the researchers strictly followed the health protocols for the safety of the respondents. A standardized questionnaire was distributed through google Forms for data gathering of the study. The instrument has two (2) parts. First, the questionnaire on lifestyle. Second, the academic performance of the students. The population of this study is the 3rd-4th-year college students in the College of Education at Mindanao State University-Iligan Institute of Technology (MSU-IIT).

Descriptive statistics were used in the first part of the analysis for the computation of mean, standard deviation, and percentages to describe the participants’ characteristics. The analysis of paired t-test statistical sometimes called the dependent sample test, is a procedure used to determine whether the mean difference between two sets of observations is zero. In a paired sample t-test, each subject or entity is measured twice, resulting in pairs of observations. In this study, it was used to determine the difference in the academic performance of the respondents and their lifestyles.
To guarantee that ethical considerations were taken into account, the participants' confidentiality and anonymity were maintained as they were given the choice of filling in their names. The researchers provided informed consent to the respondents ahead of time to ensure their approval of participation during the data collection.

3 Results and Discussion

3.1 The Lifestyle of the Respondents

Table 1. The lifestyle of the Respondents

<table>
<thead>
<tr>
<th>Lifestyle</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhealthy</td>
<td>17</td>
<td>8.5</td>
</tr>
<tr>
<td>Fairly healthy</td>
<td>152</td>
<td>76.0</td>
</tr>
<tr>
<td>Healthy</td>
<td>31</td>
<td>15.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 presents the lifestyle of the respondents. 76% or 152 of the students have a fairly healthy lifestyle, 15.5% or 31 of the students have a healthy lifestyle, while 8.5% or 17 of them say they have an unhealthy lifestyle. Moreover, most of the students have a fairly healthy lifestyle. The results can be linked to the findings of McIsaac et al. (2015) that a healthy lifestyle is significant to students' well-being and academic performance.

3.2 The Academic Performance of the Respondents

(1) GPA of the Respondents last 1st Semester AY 2019-2020

Table 2. GPA of the Respondents last 1st Semester AY 2019-2020

<table>
<thead>
<tr>
<th>GPA</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00-1.25</td>
<td>44</td>
<td>22.0</td>
</tr>
<tr>
<td>1.26-1.50</td>
<td>107</td>
<td>53.5</td>
</tr>
<tr>
<td>1.51-1.75</td>
<td>34</td>
<td>17.0</td>
</tr>
<tr>
<td>1.76-2.00</td>
<td>14</td>
<td>7.0</td>
</tr>
<tr>
<td>2.01-2.25</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 2 presents the GPA of the respondent’s last first semester, AY 2019-2020. 22% or 44 respondents have a GPA of 1.00-1.25 or excellent. 53.5% or 107 respondents, have a GPA belonging to the range of 1.26-1.50, and 17% or 34 respondents with a GPA of 1.51-1.75 or equivalent to very good, while one (1) respondent has a GPA belonging to the range of 2.01-2.25 or good. In other words, most of the students have excellent to very good academic performance despite the Pandemic. It can be supported by the findings of Raskind et al. (2019) that sufficient food access leads to a healthy lifestyle and higher grade output for college and university students.

3.3 The Academic Performance of the Respondents

(2) GPA of the Respondents last 2nd Semester AY 2020-2021

Table 3 GPA of the Respondents last 2nd Semester AY 2020-2021

<table>
<thead>
<tr>
<th>GPA</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00-1.25</td>
<td>66</td>
<td>33.0</td>
</tr>
<tr>
<td>1.26-1.50</td>
<td>95</td>
<td>47.5</td>
</tr>
<tr>
<td>1.51-1.75</td>
<td>27</td>
<td>13.5</td>
</tr>
<tr>
<td>1.76-2.00</td>
<td>10</td>
<td>5.0</td>
</tr>
<tr>
<td>2.01-2.25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.26-2.50</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>2.51-2.75</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3 presents the GPA of the respondent’s last-second semester AY 2020- 2021. 33% or 66 respondents belong to the range 1.00-1.25 or excellent, 47.5% or 95 of the students have GPAs belonging to the range 1.26-1.50 or very good, while two (2) respondents have GPAs belonging to the range 2.26-2.75. A good number of students have GPA. This means that they have excellent to very good academic performance despite the onset of the COVID-19 Pandemic. It can also be supported by the same findings of Raskind et al. (2019).

3.4 Significant Relationship Between the Lifestyle and Academic Performance of the Respondents.

Table 4. Analysis on the Relationship between the Lifestyle of the Respondents and their Academic Performance
Table 4 reveals the analysis of the relationship between the lifestyle of the respondents and their academic performance. Findings indicate that lifestyle has a low negative correlation/relationship with the student’s academic performance. The negative values of the correlation coefficients are due to the fact that the smaller the numerical value of GPA, the better the performance. In consequence, there is no significant relationship between lifestyle and the student’s academic performance since the p-values are greater than the 0.05 level of significance. This means that the student's academic performance is not significantly related to their lifestyle. Shaw (2015) states that unhealthy children are more prone to poor academic performance with the risk of school failure, dropping out, and grade retention.

4 Conclusion

This study examines the lifestyle of the students, such as exercise participation, food intake, and vice indulgence, and also the academic performance of the students, which is to investigate their grades in 1st Semester 2019-2020 and their 2nd Semester 2020-2021. Based on the result of the study, it reveals that most MSU-IIT students are fairly healthy. Furthermore, the study shows that both the analysis of the Difference in the Academic Performance of the Respondents and the analysis of the Relationship between the Lifestyle of the Respondents and their Academic Performance has resulted that there is no significant difference.

Therefore, there is no relationship between the lifestyle and academic performance of the students at MSU-IIT. This means that their grades have nothing to do with their lifestyle, but their personality type might affect their lifestyle. The researchers conclude that lifestyle and academic performance do not correlate.
5 Recommendations

The following recommendations were made based on the findings of this study. **Student Counseling.** It is beneficial to pay attention to your student's ideas and comments. They will process and recall information better if they listen. **Consultation Hours.** It is also advised that we have this honest conversation with our students, especially those who have been particularly impacted by the current situation. It will look excellent to have a consultation. Additionally, you will learn more about each of your students and have a greater chance to comprehend their strengths and limitations. **Webinar on Stress and Coping.** Some students are not really expressive with what they really feel because some are too shy to tell. Goals for our health and quality of life will be hampered by stress. It may result in emotional eating, restless nights, and the development of more sedentary habits. You must be able to control your stress levels if you want to lead a better lifestyle. Your stress-reduction plan you develop is a terrific place to start. **Personality Development.** Even in our personal lives, it is crucial because it aids in achieving social acceptability and acknowledgment from those around us. As a result, it will make a person more disciplined, reliable, and valuable to their employer. **Promotion of a Healthy Lifestyle.** Feeling better will equally result in doing better. **Physical Activity Engagement.** Any physical exercise is preferable to none, although 150 minutes per week (or 2 hours and 30 minutes) at intervals of at least 10 minutes is advised. An excellent tool for tracking your physical activity and staying on track is a pedometer.

References


Students’ Attitudes And Academic Performance In Physical Education

Buena D. Calunsag¹, Chiedel Joan G. San Diego²

¹calunsagbuena@gmail.com, chiedel.sandiego@g.msuit.edu.ph
²JH Cerilles State College Dumingag Campus Dumingag, Zamboanga del Sur, Mindanao State University – Iligan Institute of Technology Tibanga, Iligan City

Abstract. This study aimed to find out the relationship of the students’ attitudes and academic performance in PE. Descriptive-correlation of research using standardized questionnaire were used. The respondents were college students who had taken PE 1, 2, 3 and 4. Respondents who have good PE academic performance have positive attitudes towards PE. There was a significant relationship between attitudes towards the activities, curriculum, and academic performance in PE. While teacher, facilities and academic performance have no significant relationship. There was no significant difference in respondents’ attitudes and PE academic performance in terms of gender. However, according to course, there was a significant difference. Thus, academic performance in PE is greatly affected by attitudes of students. Attitudes influence their actions to engage in academic work. It is recommended that the PE teachers may design and give physical activities that are interesting that would help and make the students more active and participative.

Keywords: academic performance, attitudes, physical education

1 Introduction

The Commission on Higher Education (CHED) (2017) emphasized that the Physical Education subject has a big responsibility for the total human development of students. It is an inclusive subject that has a wide range of physical activities that are appropriate to all learners of all abilities and ages. The subject involves a developmentally appropriate process since students engage in activities based on their growth and maturation, as well as their changing activity patterns.

Physical Education is an essential factor for the physical, social, and moral well-being of an individual. It is an integral part of the educational program designed to promote the optimum development of the individual physically, socially, emotionally, and mentally through total body movements in the performance of properly selected physical activities. A program contributes to the holistic development of the individual (Andin, 1988). Physically, it develops and maintains good health and a high level of physical fitness; socially, it provides opportunities for
the development of desirable traits needed for adjustments to the social life in general; emotionally, it offers opportunities for self-expression and emotional mastery; and mentally, it develops the mental capacities of the individual as he learns the mechanical principles underlying movement, acquires knowledge and understanding of rules and strategies of games and sports and discovers as ways of improving his movement in dance and gymnastics. More so, it enhances physiological and motor skills development, and develops fair play, socially desirable behavior, and self-esteem. It serves as a vehicle for helping the students to develop the knowledge, attitudes, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles. Aras (2013) revealed that a physically active student has a higher level of academic motivation. Heper (2012) emphasized that this subject is an effective way of providing and maintaining physical coherence. Physical Education and its programs help maintain and improve the person’s total human development: physically, mentally, socially, and psychologically (Acak, 2006).

One factor that influences the academic performance of a person is his/her attitude. These are the basics that significantly affect the life of a person in different aspects and areas (Keskin, Herguner, Donmez, Berisha & Ucan, 2017). Additionally, Marttinen, Fredrick, and Silverman (2018) explained that attitudes control a person’s behavior. It is one of the factors in every school subject across the curriculum. Rikard and Banville (2006) also explained that attitudes derived from beliefs about himself or herself help shape one’s behavior and determine one’s involvement. Studies conducted about PE revealed that the attitudes of the students to the subject affected their academic performance. Hunuk (2006) and Sproule and Wang (2007) added that the motivation and awareness of the subject were significantly affected by students’ attitudes. On the other hand, Figley (2013) reported that PE contributed to the empowerment of student’s health and the development of positive attitudes.

Another factor to consider is the designed curriculum of the subject. Bernstein, Philips, and Silverman (2011), Dismore and Bailey (2011), and Subramanian and Silverman (2007) revealed that learners felt a tedious experience in PE when the designed curriculum consisted of repetitive and lack of challenging activities. The school PE program plays a very significant part in developing students’ attitudes and awareness of sports and physical activities. What the students learn from these PE activities will be a part of their daily life even outside the school (Al-Oun & Al-leheebey, 2015; Al-shinawi, 2006). Hence, PE teachers should design and conduct activities that will help the students develop holistically. Al-tamimi (2009) stressed that the most effective method in ensuring a high level of learning, especially in PE subjects, is to come up with an excellent curriculum and equip teachers with adequate teaching competencies.

Hence, the aim of this study is to identify the factors that influence an individual’s attitude toward and performance in Physical Education. Also, it aims to determine the relationship between students’ attitudes and their academic performance toward the subject.

2 Methods

This study used a descriptive-correlational research design. It aimed to present the respondents’ gender, course, attitudes toward PE, and their academic performance. It also aimed to determine whether a significant relationship exists between attitudes and academic performance. This study was conducted at Josefina Herrera Cerilles State College (JHCSC) Dumingag Campus.
The 60 respondents who were officially enrolled in the second semester for the academic year 2019-2020 had taken PE 1, 2, 3, and 4 subjects. A purposive random sampling technique was utilized in the study. The researcher used a researcher-modified questionnaire adapted from the study of Lam (2005), Sanes (2008), Aros, Caranto, and David (2015), Junio and Liwag (2016), and Ricacho, Arpon and Ampong (2019). The survey questionnaire was pilot tested to ensure its reliability and validity. To analyze the gathered data, the 4-point Likert scale was used. To analyze the data, the researcher employed the following statistical treatment; frequency and percentage, mean, analysis of variance, Post Hoc test, t-test, Pearson r, and Levene’s Test.

3 Results and Discussion

Respondents Profile

Table 1 shows the gender and course demographics of the respondents.

<table>
<thead>
<tr>
<th>Course</th>
<th>Male Frequency</th>
<th>Male Percent</th>
<th>Female Frequency</th>
<th>Female Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEED</td>
<td>2</td>
<td>3.3</td>
<td>10</td>
<td>16.7</td>
<td>12</td>
</tr>
<tr>
<td>BSED</td>
<td>2</td>
<td>3.3</td>
<td>10</td>
<td>16.7</td>
<td>12</td>
</tr>
<tr>
<td>BPED</td>
<td>2</td>
<td>3.3</td>
<td>10</td>
<td>16.7</td>
<td>12</td>
</tr>
<tr>
<td>BSIT</td>
<td>4</td>
<td>6.7</td>
<td>8</td>
<td>13.3</td>
<td>12</td>
</tr>
<tr>
<td>BSAG</td>
<td>5</td>
<td>8.4</td>
<td>7</td>
<td>11.6</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15</td>
<td>25</td>
<td>45</td>
<td>75</td>
<td>60</td>
</tr>
</tbody>
</table>

It is shown in Table 1 that there are 15 male respondents and 45 female respondents. In this study, majority are female respondents. It also shows that there is an equal number of respondents per program.

Respondents’ Attitudes towards Physical Education

Table 2 presents the students’ attitudes toward physical education in terms of the subject.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Weighted Mean</th>
<th>Verbal Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like PE because it helps me stay away from destructive habits: smoking, drinking alcoholic beverages, and spending much time on social media.</td>
<td>3.87</td>
<td>Very Positive</td>
</tr>
<tr>
<td>2. I like PE because it helps me develop the spirit of sportsmanship.</td>
<td>3.82</td>
<td>Very Positive</td>
</tr>
<tr>
<td>3. I am happy with my PE class.</td>
<td>3.73</td>
<td>Very Positive</td>
</tr>
<tr>
<td>4. I like PE because it helps develop personal discipline.</td>
<td>3.67</td>
<td>Very Positive</td>
</tr>
<tr>
<td>5. I believe that PE subject improves my self-esteem.</td>
<td>3.62</td>
<td>Very Positive</td>
</tr>
<tr>
<td>6. I believe that PE improves my physical life.</td>
<td>3.63</td>
<td>Very Positive</td>
</tr>
<tr>
<td>7. I enjoy my PE classes.</td>
<td>3.60</td>
<td>Very Positive</td>
</tr>
</tbody>
</table>
It is revealed in Table 2 that the respondents have a very positive attitude toward PE, with an average weighted mean of 3.60. Top among their answers are the subject helps them to stay away from destructive habits, develops the spirit of sportsmanship, develops personal discipline, and improves self-esteem and physical life. They enjoyed their class and were excited to attend their PE classes. The subject does not only focus on one aspect of life but the total human formation. This implies that Physical Education has a very positive impact on the lives of students.

The result is analogous to the study of Obeda (2018) that Physical Education is viewed as an important means of promoting health and wellness that may, in return, influence students to lead physically active lifestyles. The same is true of what Villones (2015) also said quality Physical Education promotes lifelong physical activities because students acquire the physical skills and attitudes necessary to remain active for life.

Table 3 presents the students’ attitudes towards physical education in terms of the activities.

Table 3 Respondents’ Attitudes towards Physical Education in terms of the Activities

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Weighted Mean</th>
<th>Verbal Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like to participate in PE class because it prevents me from hypokinetic diseases like obesity, diabetes, stroke, and heart disease.</td>
<td>3.85</td>
<td>Very Positive</td>
</tr>
<tr>
<td>2. The two hours a week PE class is not enough for the different physical activities.</td>
<td>3.43</td>
<td>Very Positive</td>
</tr>
<tr>
<td>3. I love to attend PE classes because I want to exert too much effort.</td>
<td>3.40</td>
<td>Very Positive</td>
</tr>
<tr>
<td>4. I like PE activities that are strenuous or require great exertion.</td>
<td>3.38</td>
<td>Very Positive</td>
</tr>
<tr>
<td>5. I like PE activities because I am not forced to do activities that I hate most.</td>
<td>3.37</td>
<td>Very Positive</td>
</tr>
<tr>
<td>6. I like PE because every time I join activities, I feel I belong.</td>
<td>3.22</td>
<td>Very Positive</td>
</tr>
<tr>
<td>7. I enjoy PE because of the varied physical activities I can participate in.</td>
<td>3.30</td>
<td>Very Positive</td>
</tr>
<tr>
<td>8. I am not bored attending PE class because of the repeated activities are done.</td>
<td>3.08</td>
<td>Very Positive</td>
</tr>
</tbody>
</table>

Average Weighted Mean 3.38 Very Positive

It is revealed that the respondents have a very positive attitude towards PE in terms of activities, with an average weighted mean of 3.38. They believed that participating in PE activities helps prevent hypokinetic diseases; spending 2 hours in PE classes is not enough to do the activities, and exerting much effort would allow them to be physically fit and healthy. The result implies that the respondents are physically active in that they love to do activities that require much physical exertion.
These results are affirmed by the study of Zhang, Solomon, and Gu (2012) that students were bound to exert much effort and even concentrate on PE subjects because they believed that the subject is a significant, exciting, and helpful school subject and perceived self-rule and capability. It is also supported in the study of Sanes (2008) that physical education helps students prepare to become active, healthy adults and build social skills as well as physical strength and coordination. Students felt that PE subject offered an enjoyable and exciting environment in which students learned how to handle success and failures. Kayani et al., (2018) also clearly explained that physical education activities have much interest in the potential benefits in the development of cognitive abilities, and it is strongly recommended as an effective instrument for building psychological well-being. Hillman et al., (2008) also emphasized that physical activity has an impact on increasing cognitive abilities and Hamer (2008) disclosed that physical activity is linked with a subsequent decrease in mental problems, including depression and insanity. Tomporowski (2003) added that properly managed physical activities are important for processing information, particularly in adults.

Table 4 presents the students’ attitudes towards physical education in terms of the teachers.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Weighted Mean</th>
<th>Verbal Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shows concern to those students who cannot perform the activities well.</td>
<td>3.75</td>
<td>Very Positive</td>
</tr>
<tr>
<td>2. Encourages me when I make mistakes in executing the exercises.</td>
<td>3.72</td>
<td>Very Positive</td>
</tr>
<tr>
<td>3. Encourages everyone to participate in the activity by serving as a model.</td>
<td>3.68</td>
<td>Very Positive</td>
</tr>
<tr>
<td>4. Is always on time.</td>
<td>3.67</td>
<td>Very Positive</td>
</tr>
<tr>
<td>5. Is physically fit.</td>
<td>3.63</td>
<td>Very Positive</td>
</tr>
<tr>
<td>6. Is frequently present in class.</td>
<td>3.60</td>
<td>Very Positive</td>
</tr>
<tr>
<td>7. Is an expert in PE.</td>
<td>3.58</td>
<td>Very Positive</td>
</tr>
<tr>
<td>8. Supervises the physical activities conducted.</td>
<td>3.58</td>
<td>Very Positive</td>
</tr>
<tr>
<td>9. Can teach well even if there are limited facilities and equipment.</td>
<td>3.53</td>
<td>Very Positive</td>
</tr>
<tr>
<td>10. Has enthusiasm in teaching the subject.</td>
<td>3.48</td>
<td>Very Positive</td>
</tr>
<tr>
<td>11. States the objectives of the lesson.</td>
<td>3.40</td>
<td>Very Positive</td>
</tr>
<tr>
<td><strong>Average Weighted Mean</strong></td>
<td><strong>3.60</strong></td>
<td><strong>Very Positive</strong></td>
</tr>
</tbody>
</table>
gestures, attitudes, and words can go a long way in the life of each person. Cariaga (2014), opined that teachers would need to address positive issues that are affecting their schools and the students. Teachers are accountable for student learning in all disciplines and for providing programs to meet the needs of all students.

Table 5 presents the students’ attitudes toward physical education in terms of the Curriculum.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Weighted Mean</th>
<th>Verbal Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PE classes empower and challenge students to take responsibility for</td>
<td>3.88</td>
<td>Very Positive</td>
</tr>
<tr>
<td>his or her own ability to lead and live an active lifestyle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. PE classes promote an understanding of the importance of movement in</td>
<td>3.82</td>
<td>Very Positive</td>
</tr>
<tr>
<td>their daily lives.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. PE should remain in the curriculum because it improves the person</td>
<td>3.75</td>
<td>Very Positive</td>
</tr>
<tr>
<td>physically, mentally, and emotionally.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. PE provides opportunities for social interaction.</td>
<td>3.65</td>
<td>Very Positive</td>
</tr>
<tr>
<td>5. PE provides activities that can develop attitudes, such as endurance</td>
<td>3.65</td>
<td>Very Positive</td>
</tr>
<tr>
<td>and teamwork.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. PE class is designed for two hours per week only, which is not</td>
<td>3.58</td>
<td>Very Positive</td>
</tr>
<tr>
<td>enough for the different physical activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. PE classes promote a way of life in which physical activity is</td>
<td>3.55</td>
<td>Very Positive</td>
</tr>
<tr>
<td>valued, enjoyed, and integrated into daily life.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Average Weighted Mean 3.70 Very Positive

It is revealed in Table 5 that the respondents have a very positive attitude towards PE in terms of the curriculum, with an average weighted mean of 3.70. The PE curriculum, for them, has benefits for their lifestyle, empowering themselves physically, socially, mentally, and emotionally. Moreover, values of endurance, teamwork, and socialization are developed. It also contributes to forming of national integrity and a healthy society. Physical education curriculum develops students’ self-esteem, which becomes a central part of their lives in and outside of school. Moreover, it broadens one’s perspective in learning, interacting, and maintaining a harmonious relationship with others in society and helps develop interpersonal and intercultural relationships in the national and world community. A high-quality physical education is the cornerstone of the school’s physical activity program.

The result is supported by Junio and Liwag (2016) and Figley (1985), who emphasized that curriculum plays an extremely important role in determining college students’ attitudes toward physical education. Orlanda (2015) also added that a rich curriculum would bring better and richer content, strategies, and objectives which will be implemented by the PE instructors. Sanes (2008) and Standish (2005) also emphasized that in the planning of the physical education curriculum, consideration should be given on an equitable basis to the needs and interests of the learners helping to build positive attitudes towards all activities.

Table 6 presents the students’ attitudes towards physical education in terms of the facilities.

Table 6 Respondents’ Attitudes towards Physical Education in terms of the Facilities
Table 7 presents the summary of the respondents' attitudes toward PE.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Weighted Mean</th>
<th>Verbal Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There is always available sanitary drinking water.</td>
<td>3.67</td>
<td>Very Positive</td>
</tr>
<tr>
<td>2. There are safety features for all areas of sports activities, including first aid facilities.</td>
<td>3.45</td>
<td>Very Positive</td>
</tr>
<tr>
<td>3. There is an adequate storage room for facilities and equipment.</td>
<td>3.42</td>
<td>Very Positive</td>
</tr>
<tr>
<td>4. The gym is spacious enough to maximize learning.</td>
<td>3.30</td>
<td>Very Positive</td>
</tr>
<tr>
<td>5. There are dressing and shower rooms for students and teachers.</td>
<td>3.05</td>
<td>Positive</td>
</tr>
<tr>
<td>6. The equipment is new.</td>
<td>2.90</td>
<td>Positive</td>
</tr>
<tr>
<td>7. The facilities are upgraded.</td>
<td>2.87</td>
<td>Positive</td>
</tr>
<tr>
<td>8. There is sufficient quantity and variety of PE supplies for the class like balls, raquets, and net.</td>
<td>2.68</td>
<td>Positive</td>
</tr>
<tr>
<td>9. There is a venue for athletic activities that can be conducted during rainy weather.</td>
<td>1.83</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**Average Mean**: 3.02, **Positive**

The respondents have a positive attitude towards PE in terms of the facilities, with an average weighted mean of 3.02. It is revealed that sanitary drinking water is available on campus, and there are safety features for all areas of sports activities, including first aid facilities. The campus gym is spacious enough to maximize learning. However, the respondents reported that the campus has no venue for athletic activities that can be conducted during rainy weather.

The study of Valdez (2012) emphasized that it is important that facilities are available, adequate, and in good running condition to better facilitate learning. The result affirmed what Limon (2016) stressed, that the most overlooked factor that influences the knowledge and skills acquisition of learners is the physical school facility. Flores et al., (2015) also stressed that facilities are one of the factors that affect students’ academic performance. Gulhe (2014) and Pate et al., (1997) also emphasized that it might be impossible to achieve satisfactory results from students whose training facilities and equipment are inadequate or substandard. Facilities make teaching and learning more interesting and effective in various PE activities since massive participation is expected if there are enough available facilities to be used by the students. It was supported by Hardman (1998) that the failures to reconstruct/ replace/maintain (out) dated and /or provide new facilities have had negative impacts on the state of physical education. Ravizza and Stratton (2007); Submaranian and Silverman (2007); Ding and Yugiyama 2018 said that if students were provided with a comfortable learning environment, their enjoyment of PE would be increased, and their learning would be impacted. Thus, this would imply that school facility is an essential factor in the teaching and learning process.
Among the five variables, curriculum got the highest mean of 3.70, and facilities got the lowest mean of 3.02. This implies that curriculum really plays significant in shaping the attitudes of the students. The result is supported by Marttinen, R, Fredrick III R. & Silverman, S. (2018), that attitude is a factor in just about every school subject across the curriculum.

Respondents’ Academic Performance in PE

Table 8 shows the general point average of the respondents’ grades in Physical Education 1 to 4.

Table 8 Respondents’ Academic Performance in Physical Education

<table>
<thead>
<tr>
<th>Grades</th>
<th>Equivalent Grades</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>97-100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.25</td>
<td>94-96</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>1.50</td>
<td>91-93</td>
<td>21</td>
<td>35</td>
</tr>
<tr>
<td>1.75</td>
<td>88-90</td>
<td>20</td>
<td>33.3</td>
</tr>
<tr>
<td>2.00</td>
<td>85-87</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>2.25</td>
<td>82-84</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>2.50</td>
<td>79-81</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>2.75</td>
<td>76-78</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.00</td>
<td>75</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Out of the 60 respondents, 44 (73.30%) have grades from 1.75 to 1.25, while 16 (26.70%) have grades lower than 1.75. The numerical number 44 was taken from the number of respondents who got a grade of 1.75 to 1.25, which earned 73.3%. Based on the computation dividing the number of students who got grades of 1.75 to 1.25 by the total number of respondents multiplied by 100. The result of this data shows the performance of students in physical education, and it is important since these measures their ability and the development they acquired. A byproduct of their participation in all activities and the main goal of every curriculum.

Table 9 presents the respondents’ grade descriptive.

Table 9 Respondents’ Grades Descriptive

<table>
<thead>
<tr>
<th>Descriptive</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Mean</td>
<td>87.57</td>
</tr>
<tr>
<td>95% Confidence Interval</td>
<td>Lower Bound</td>
</tr>
<tr>
<td>For Mean</td>
<td>Upper Bound</td>
</tr>
</tbody>
</table>

As shown in Table 9, the average grade of the respondents is 87.57, which is interpreted as good. A 95% confidence interval for the true value of the average grade shows a minimum value of 84.49 and a maximum value of 90.65. This implies that the students are performing good enough in PE since none of them got a grade which is below 80.

Relationship between Respondents’ Attitudes and Academic Performance in PE
Table 10 presents the significant relationship between respondents’ attitudes toward PE in terms of the subject and their academic performance in Physical Education.

Table 10 Relationship between Respondents’ Attitudes towards PE and their Academic Performance

<table>
<thead>
<tr>
<th>Variables</th>
<th>Standardized Coefficients</th>
<th>r</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>-.030</td>
<td>0.045</td>
<td>.878</td>
</tr>
<tr>
<td>Activities</td>
<td>.412</td>
<td>0.338</td>
<td>.007</td>
</tr>
<tr>
<td>Teacher</td>
<td>.065</td>
<td>0.097</td>
<td>.744</td>
</tr>
<tr>
<td>Curriculum</td>
<td>.242</td>
<td>0.597</td>
<td>.034</td>
</tr>
<tr>
<td>Facilities</td>
<td>.119</td>
<td>0.0291</td>
<td>.073</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

Out of the 5 variables, activities and curriculum are found to have a significant relationship with their academic performance. The remaining three variables, namely subject, teacher, and facilities, have no significant relationship with their academic performance. Activities and curriculum play a significant role in the academic performance of the respondents. This result is supported by Orlanda (2015) that an enhanced curriculum will draw on appealing and compelling content, design, and goals. Ferguson et al., (2014) specifies that if physical education programs are designed to promote students’ attitudes, they can increase their perception about the importance of physical activity and the need to exercise through physical education program.

Difference in the Academic Performance in PE when the Respondents were grouped according to Gender and Course

Table 11 presents the academic performance of the respondents when grouped according to gender and course. An Independent t-Test was used in the differences in grades according to gender.

Table 11 Respondents’ Academic Performance when Grouped according to Gender

<table>
<thead>
<tr>
<th>Levene’s Test for Quality of Variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Grade</td>
</tr>
<tr>
<td>Equal variances assumed</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>.411</td>
</tr>
<tr>
<td>.524</td>
</tr>
<tr>
<td>.302</td>
</tr>
<tr>
<td>58</td>
</tr>
<tr>
<td>.764</td>
</tr>
</tbody>
</table>

Levene’s test shows a p-value of 0.524, proving that the population has equal variances. It also indicates a p-value of 0.764, which is greater than 0.05. This signifies that the grades of males and females are not significantly different because they have the same academic performance at 0.05 degree of confidence.

The result of the study is supported by Subramanian and Silverman (2007). They also found that there was no gender difference in attitudes between men and women toward physical
education. Moreover, the study by Sanes (2008) also reported that there was no significant difference in the attitude toward PE between the men and women respondents. In the study of Goni, Wali, Ali, and Bularafa (2015), it was also revealed that there were no significant differences exist between gender and academic performance in the participation in activities. Also, the study by Zeng, Hipsher, and Leung (2011) found that both men and women respondents show positive and similar attitudes toward physical activity. Ricacho et al., (2019) concluded that both men and women have a positive response toward physical education and the performance of physical education activities.

Table 12 presents the analysis of variance in the differences in grades when the respondents are grouped according to their course.

### Table 12 Analysis of Variance in the Differences in Grades according to Course

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1543.384</td>
<td>4</td>
<td>385.846</td>
<td>3.108</td>
<td>.022</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6828.403</td>
<td>55</td>
<td>124.153</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>8371.787</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance shows a p-value of 0.022, which is less than 0.05. The result signifies that there is a variation in the grades of the respondents when grouped according to the course. This implies that students from different courses have different learning preferences and performances. The result proves what Junio and Liwag (2016), Duke, (2000), and Eamon (2005) explained that there was recognition of the existence of different learning preferences among people even in the early times. Lorenzo A & Lorenzo, B. 2013 implied that teachers should provide learning activities that will meet the varied preferences of the students. Grasha (1972) emphasized that the goal of instruction is to help students identify and assess their learning styles.

Table 13 shows the descriptive of the grades of respondents when grouped according to courses.

### Table 13 Descriptives of the Grades of Respondents when Grouped according to Course

<table>
<thead>
<tr>
<th>Course</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEED</td>
<td>12</td>
<td>91.30</td>
</tr>
<tr>
<td>BPED</td>
<td>12</td>
<td>90.33</td>
</tr>
<tr>
<td>BSED</td>
<td>12</td>
<td>90.08</td>
</tr>
<tr>
<td>BSAG</td>
<td>12</td>
<td>88.56</td>
</tr>
<tr>
<td>BSIT</td>
<td>12</td>
<td>77.58</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>60</strong></td>
<td><strong>87.57</strong></td>
</tr>
</tbody>
</table>

It is revealed in Table 13 that the BEED got the highest mean among the five courses with a mean of 91.3, followed by BPED with a mean of 90.33, BSED with a mean of 90.08, and BSAG
with a mean of 88.56. Among the five courses, BSIT got the lowest mean of 77.58. The study proves on what Lorenzo A. and Lorenzo B. (2013) explained that teacher education students are persistent in their studies, and they prefer to be told exactly what and how to do things.

Table 14 shows the Post Hoc Analysis of the significant differences in the grades of the respondents when grouped according to courses.

Table 14 Post Hoc Analysis for Grades when Grouped according to Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Courses</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEED</td>
<td>BSED</td>
<td>.789</td>
</tr>
<tr>
<td></td>
<td>BPED</td>
<td>.832</td>
</tr>
<tr>
<td></td>
<td>BSIT</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>BSAG</td>
<td>.549</td>
</tr>
<tr>
<td>BSED</td>
<td>BEED</td>
<td>.789</td>
</tr>
<tr>
<td></td>
<td>BPED</td>
<td>.956</td>
</tr>
<tr>
<td></td>
<td>BSIT</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>BSAG</td>
<td>.739</td>
</tr>
<tr>
<td>BPED</td>
<td>BEED</td>
<td>.832</td>
</tr>
<tr>
<td></td>
<td>BSED</td>
<td>.956</td>
</tr>
<tr>
<td></td>
<td>BSIT</td>
<td>.007</td>
</tr>
<tr>
<td></td>
<td>BSAG</td>
<td>.699</td>
</tr>
<tr>
<td>BSIT</td>
<td>BEED</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>BSED</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>BPED</td>
<td>.007</td>
</tr>
<tr>
<td></td>
<td>BSAG</td>
<td>.019</td>
</tr>
<tr>
<td>BSAG</td>
<td>BEED</td>
<td>.549</td>
</tr>
<tr>
<td></td>
<td>BSED</td>
<td>.739</td>
</tr>
<tr>
<td></td>
<td>BPED</td>
<td>.699</td>
</tr>
<tr>
<td></td>
<td>BSIT</td>
<td>.019</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

As shown in the Post Hoc Analysis in Table 14, when the BEED grades are compared to the four other courses, it is revealed that the BSIT has a significant difference with a p-value of 0.004. The researcher is 95% confident that the grades of BEED are significantly higher than those of BSIT. The same results were revealed when the grades of the BSED, BPED, and BSAG were compared; still, the BSIT got a mean difference that is lower than 0.05, which means that the BSED, BPED, and BSAG grades are significantly higher than those of BSIT. When the grades of the BSIT are compared to the four courses, it reveals a significant difference between all courses. This would mean that the BSIT grades are significantly different from the other courses. However, the rest of the courses show no significant differences. BSIT is different among the five programs since it is the only course that got a low performance compared to the four programs in terms of their attitudes toward physical education. Only this course got a grade of 2.5 or 79-81 compared to other courses, whose grades range from 1.75-1.25.
The difference in the Attitudes towards PE when the Respondents were grouped according to Gender and Course

Table 15 shows the significant difference in the attitudes towards PE when grouped according to gender. An Independent t-test was used to determine if there was a significant difference in the respondents’ attitudes toward PE when grouped according to gender.

Table 15 Significant Difference in the Respondents’ Attitudes towards PE when Grouped according to Gender

<table>
<thead>
<tr>
<th>Respondents’ Attitudes</th>
<th>Equal variances</th>
<th>Levene’s Test for Quality of Variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>assumed</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.953</td>
</tr>
</tbody>
</table>

The Levene’s test for equality of variances in Table 15 shows a p-value of 0.333, which is less than 0.05; therefore, the population where the data was collected is assumed to have equal variances. It also shows a p-value of 0.070, which is greater than 0.05; therefore, the attitudes of the male and female respondents are not significantly different, but they have the same attitudes towards PE at a 0.05 level of significance. This result is similar to the study of Antonio et al., (2006). They found that there was no gender difference on attitudes. Villiones (2015) added that there is no significant difference found on the male and female respondents on their attitudes in physical education. Moreover, Eagly (2007) found that engaging oneself in any worthwhile physical activities was content in both genders. On the contrary, in the study of Birthwistle and Brodie (2003) found that there is a significant difference in the attitudes towards physical activity; women were proven to have a higher attitude towards physical activity than men.

Table 16 presents the analysis of variance in the differences in attitudes toward PE when the respondents are grouped according to their course.

The analysis of variance shows a p-value of 0.0014, which is less than 0.05. Therefore, there is a variation in the attitudes of the respondents towards PE when grouped according to the course.

Table 16 Analysis of Variance in the Differences of the Respondents’ Attitudes towards PE according to Course

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>.246</td>
<td>4</td>
<td>.062</td>
<td>14.094</td>
<td>.00014</td>
</tr>
<tr>
<td>Within Groups</td>
<td>.240</td>
<td>55</td>
<td>.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>.486</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result shows that respondents who are from different courses signify varied attitudes towards PE. As explained by Magulod (2018), students who are taking BS Industrial
Technology and BS Information Technology learn best through visual, collaborative, and experiential learning, while Teacher Education students prefer to work independently without being reminded of their activities, prefer to study in a quiet, well lighted, cool, relax, comfortable and informal setting environment (Lorenzo, A. & Lorenzo B., 2013).

Table 17 shows the descriptive of the respondents’ attitudes toward PE.

<table>
<thead>
<tr>
<th>Course</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEED</td>
<td>12</td>
<td>3.2417</td>
</tr>
<tr>
<td>BSED</td>
<td>12</td>
<td>3.2417</td>
</tr>
<tr>
<td>BPED</td>
<td>12</td>
<td>3.1417</td>
</tr>
<tr>
<td>BSAG</td>
<td>12</td>
<td>3.1500</td>
</tr>
<tr>
<td>BSIT</td>
<td>12</td>
<td>3.0750</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>3.1700</td>
</tr>
</tbody>
</table>

It is revealed in Table 17 that among the five programs, the BEED and BSED got the highest mean of 3.24 and followed by the BSAG and BPED, which means that these four courses have a good attitude towards PE. BSIT got the lowest mean of 3.07 which means that among the five programs, BSIT has the lowest level of attitudes toward PE.

Lorenzo, A. and Lorenzo, B. (2013), affirmed that education students motivated themselves persistently, preferred to do task at a time, and preferred to study independently. The results also confirmed the study of Magulod (2018) that most of the students from Information Technology and Industrial Technology courses were inclined to hands on activities which require strong skills to learn, operate, control properly and safely an extensive range of equipment tools and system used.

Table 18 shows the Post Hoc Analysis on the significant differences of the attitudes of the respondents when grouped according to courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Courses</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEED</td>
<td>BSED</td>
<td>1.0001</td>
</tr>
<tr>
<td></td>
<td>BPED</td>
<td>.0001</td>
</tr>
<tr>
<td></td>
<td>BSIT</td>
<td>.0301</td>
</tr>
<tr>
<td></td>
<td>BSAG</td>
<td>.0016</td>
</tr>
<tr>
<td>BSED</td>
<td>BEED</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>BPED</td>
<td>.0201</td>
</tr>
<tr>
<td></td>
<td>BSIT</td>
<td>.0003</td>
</tr>
<tr>
<td></td>
<td>BSAG</td>
<td>.0018</td>
</tr>
</tbody>
</table>
The Post Hoc Analysis in Table 18 shows the following results: There is no significant difference in the attitude of BEED respondents and BSED respondents towards attitude in PE with a p-value of 1.001. There is a significant difference in the attitude of BEED respondents and BPED respondents towards attitude in PE, with a p-value of 0.001. As shown in Table 18, BEED got a higher mean of 3.2417 compared to that BPED, with a mean of 3.147. There is a significant difference in the attitude of BEED respondents and BSIT respondents towards attitude in PE, with a p-value of 0.0301. As shown in Table 18, BEED got a higher mean of 3.2417 compared to that BSIT, with a mean of 3.0750. There is a significant difference in the attitude of BEED respondents and BSAG respondents towards PE, with a p-value of 0.0016. As shown in Table 18, BEED got a higher mean of 3.2417 compared to that BSAG, with a mean of 3.150.

On the other hand, when the attitudes of the BPED respondents towards PE were compared to the four programs, it was revealed that only the BSAG respondents had no significant difference in their attitudes toward PE. In contrast, the three other courses, namely BEED, BSED, and BSIT, have a significant difference. As illustrated in Table 18, BSAG respondents got a higher mean compared to the BPED respondents. The same result is illustrated in the BSAG respondents’ attitudes toward PE were compared to the BPED respondents and to the three courses.

Lastly, when the attitude of the BSIT respondents toward PE was compared to the four programs, it was revealed that the BEED, BSED, BPED, and BSAG respondents have significant differences in their attitudes toward PE. This is signified in the results shown in Table 18, that among the five programs, BSIT respondents got the lowest mean.

Lorenzo, A. and Lorenzo, B. (2013) affirmed that education students preferred to study in the morning with less break and movement and the majority were analytic, or they preferred to learn sequentially and took time to take decisions. While Magulod (2018) revealed in his study that most of the students from Information Technology and Industrial Technology courses preferred visual and kinesthetic learning. Renwick, J., and Foltz, B. (2011) supported that Information technology students exhibit a high level of preference for kinesthetic learning.
4 Conclusion and Recommendations

Academic performance in PE is greatly affected by the attitudes of students. Attitudes influence their actions to engage in academic work. Hence, teachers must continually motivate and devise ways to keep the students engaged in Physical Education so that their positive attitudes will be sustained.

The course is a differentiating factor in the respondents’ academic performance in PE and attitudes toward PE. The nature of the course that requires activity and experiential learning could explain the difference.

Gender is not a differentiating factor since both male and female respondents have positive attitudes toward the subject. The benefits of PE to their lives are felt by both respondents.

5 Recommendations

Based on the results of the study, here are some recommendations:

1. That the parents, most especially from the BSIT program, may encourage their sons/daughters to participate in the different Physical Education activities by having constant follow-up on their performance and providing moral support to the activities done by their children.

2. In the orientation of PE classes, the students may be informed of the importance of attitudes towards any given work or activity.

3. That the PE teachers may design and give more physical activities that are interesting to the students, which would help and make them more active and participative. The student’s active participation would develop their potential and improve their performances. In addition, teachers may ensure equality in terms of treating the students, especially academically challenged individuals, and give extra mile effort and proper attention to them to help develop appropriate study habits and practices inside and outside the classroom.

4. That the Curriculum Designers may include varied teaching strategies and appropriate PE activities that will suit the needs of the students in accordance with their course.

5. That Future Researchers may use the gathered data as a basis for conducting further studies related to this topic, and they can benefit from this study by considering this study as one of their future references.

References


[58] Lam, Nicola (2005). An Investigation into the relationship between attitudes towards physical education and participation rates in extracurricular physical activity.

[69] Osborne, R., Belmont RS. & Azevedo, IO., Paiva de Carvalho, A. Rs Peixoto, RP. (2016). Obstacles for physical education teachers in publis schools: unsustainable situation (google scholar)
[71] Pate, D.W., Moffit, ET & Fuget, D. (1997). Currect treat in case, design/constructionand finishing of sports facilities-sports marketing quarterly, s(4.9-14) (google scholar)
[80] Sahin, K. & Imamoglu, V. (2011). The structural analysis of physical; education and Sports Systems in the Turkish republic of Northern Cyprus; social and behavioral sciences, 89 (10), 772-780


Mental Health Assessment of Teachers in Thailand during Blended Learning

Dunhill Dufrens

{dunhill.dufrens@g.msuiit.edu.ph}

MSU-IIT, Andres Bonifacio Ave, Iligan City, 9200 Lanao del Norte, Philippines

Abstract. This paper looks at the educator's psychological well-being during mixed growth opportunity in Thailand. Mixed Learning is an e-advancing course for instructors that makes sense of and shows intelligent exercises done both up close and personal and internet opportunities for growth. This paper presents the examination discoveries of poll studies of educators in Thailand who are right now doing mixed learning in their homeroom setting and to figure out the degree of comprehension of mixed advancing by educators. The scientist made poll about mixed learning and emotional wellness surveys (WHO-5, Stray 7, PHQ-9, and SF-12) were shipped off educators in Thailand through irregular testing. The example remembered 221 educator respondents who work for Thailand participated in a web-based review. The psychological well-being results shows that they have unfortunate prosperity (N=221, Generally Mean=3.07, By and large sexually transmitted disease. Dev.=1.123), gentle tension with (N=221, Generally Mean=1.09, By and large sexually transmitted disease. Dev.= 0.03), and gentle melancholy (N=221, Generally speaking Mean=0.95, By and large sexually transmitted disease. Dev.= 0.06). This will likewise explore the degree of comprehension of the members about mixed learning through a scientist made survey agenda. That's what the outcomes showed "Mixed Learning is the joining of eye to eye and internet learning" got the most elevated recurrence of (f=196, N=221, Percentile=88.7%).

Keywords: Mental Health, Face-to-Face Learning, Online Learning, Blended Learning.

1 Introduction

Most history articles or expositions that talk about distance learning will make reference to mail, yet frequently quickly plunge into how radio, TV, and PCs have upset the configuration (Phipps and Merisotis 1999; Sherry 1995) (1)(2). At the point when we consider Mixed Learning, we generally ponder the utilization of PCs which was created during the 1940s by German innovator and designer Konrad Zuse finishes his Z3 machine, the world's earliest computerized PC, as per Gerard O'Regan's book "A Concise History of Figuring" (Springer, 2021). Much to our dismay that there was once an English teacher and distributer who got all inclusive recognition and knighthood for his improvement of a phonetic shorthand transcription (Lotha 1998)(3).
Pitman's course evolved in a genuinely natural manner. Initially, after Pitman completed his shorthand framework in 1837, he and his sibling Benn went the nation over as voyaging teachers and mentors (Pitman 2017)(4). By May of 1840, the mailing station had definitely marked down costs, chose to charge mail by weight rather than distance, and progressed into permitting the source to pay for bundles rather than the beneficiary. They additionally started monitoring installments through postage stamps. In the long run, they fostered a cunning fast conveyance framework that used rail lines and railroad vehicles by regarding them as voyaging mail depots (Simmons and Biddle 1997)(5). By 1845, Pitman detailed he was getting 10,000 phonographic letters a year — that midpoints to more than 27 every day! During this time span, he likewise created printed duplicates of his ten early on addresses as a kind of introduction for those new to shorthand. Roughly 1,000 individuals from the Comparing Society effectively dispersed these talks to new clients (Dough puncher 1919)(6).

Quick forward to 2020 during the pandemic, the schooling system has changed and scholastic organizations across the world look at changed educational ways to deal with oblige the advancing requirements of understudies. The presentation of mixed learning (mix of up close and personal and web based educating and learning) drives is important for these advancements yet its take-up, particularly in the creating scene faces difficulties for it to be a successful development in instructing and learning (Kintu, Zhu, Kagambe 2017)(7). As far as mixed realizing, there are still a ton of fundamental factors that posture difficulties to the two students and instructors. One major test is the means by which clients can effectively utilize the innovation and guarantee members' responsibility given the singular student qualities and experiences with innovation (Hofmann, 2014)(8). Hofmann adds that clients getting into troubles with innovation might bring about forsaking learning and possible disappointment of mechanical applications. The fundamental reason for this study is To get the fundamental information, information, and data about the emotional well-being of educators in Thailand during mixed learning, To understand the mixed growth opportunity of instructors in Thailand, and To propose emotional wellness mediations for educators in Thailand.

We anticipated the degrees of profound side effects (level of prosperity, level of tension, and level of misery) will be higher. The psychological well-being results shows that they have unfortunate prosperity (N=221, In general Mean=3.07, By and large sexually transmitted disease. Dev.=1.123), gentle tension with (N=221, Generally Mean=1.09, By and large sexually transmitted disease. Dev.= 0.03), and gentle melancholy (N=221, By and large Mean=0.95, Generally sexually transmitted disease. Dev.= 0.06). This can be because of developing family obligations (Kausal et.al. 2021)(9), neglected work over-burden, delayed home restriction, a feeling of vulnerability over work and life, loss of friends and family during the Coronavirus pandemic as well as relentless openness to pessimistic news on friendly and electronic media (Santamaria et.al. 2021)(10). We expected to view that as "mixed learning is the reconciliation of eye to eye learning and web based learning" to have a high reaction rate as mixed learning has been executed in schools for quite a while. That's what the outcomes showed "Mixed Learning is the coordination of up close and personal and web based learning" got the most noteworthy recurrence of (f=196, N=221, Percentile=88.7%). Our discoveries recommend that we really want to emphatically impact the instructors regarding psychological wellness so they can be successful teachers by giving consistent encouragement and equilibrium, and life fulfillment. Schools in Thailand ought to
have areas of strength for an and directing project to help the psychological and profound requirements of our educators. These can be defensive elements for additional examination.

2 Methods

Participants

In this cross-sectional review, graphic measurements were utilized and information were gathered through arbitrary testing utilizing Google structure. Members are current educators in Thailand who showed mixed getting the hang of during the Coronavirus pandemic. Of the 221 respondents, 79 members were male and 143 were female with the greater part of the respondents from the age gathering of 30-39 years of age.

Instrumentation

Members were gotten some information about fundamental segment data (orientation, age, insight in instructing, and instructive level). Side effects of uneasiness and sadness were evaluated with the Overall Nervousness Issue 7 (Stray 7) and Patient Wellbeing Survey (PHQ-9). Stray 7 is a 7-thing tension scale (Stray 7) with a 4-point Likert scale to self-report and assess the respondents’ nervousness levels. PHQ-9 is a multipurpose instrument with a 9-thing discouragement scale (PHQ-9) for screening, diagnosing, checking, and estimating the seriousness of misery among respondents with a 4-point Likert scale to get oneself report about their downturn level. The prosperity of the respondents was likewise estimated utilizing the World Wellbeing Association (WHO-5) prosperity poll that actions current mental prosperity. Initially created to evaluate both positive and negative prosperity, this five-question rendition utilize just emphatically expressed inquiries to keep away from side effect related language (WHO-5 1998).

Procedure

Members were completely educated regarding the reason for the review and the privacy of their interest as the Individual Information Security Act B.E. 2562 (2019) (“PDPA”) of Thailand has been placed into regulation to communicate their assent for the specialists to gather, record, sort out, update or alter, recover, counsel, use, combine, block, delete or destruct my own information as a feature of my data. Furthermore, members attested the option to be educated, object to handling, access and amend, suspend or pull out their own information, and to get repayment for harms, as specified in the Individual Information Security Act B.E. 2562 (2019) (“PDPA”) of Thailand. Prior to giving assent, members were educated that their own data would be put away on an internet based stage and that main specialists and study examiners would approach it. Paper-based documents have not been utilized in this review.

Data Analysis

All measurable examinations were performed utilizing SPSS. Information examinations included unmistakable insights with recurrence and rates for the profile of the respondents. Mean and portrayals were utilized for understanding the prosperity (WHO-5) of the members, nervousness level (Stray 7), and gloom level (PHQ-9) of the respondents.
Table 1. Profile of the Respondents

<table>
<thead>
<tr>
<th>Profile</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>79</td>
<td>35.7</td>
</tr>
<tr>
<td>Female</td>
<td>142</td>
<td>64.3</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>61</td>
<td>27.6</td>
</tr>
<tr>
<td>30-39</td>
<td>114</td>
<td>51.6</td>
</tr>
<tr>
<td>40-49</td>
<td>33</td>
<td>14.9</td>
</tr>
<tr>
<td>50-59</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>60-69</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td>83</td>
<td>37.6</td>
</tr>
<tr>
<td>6-10 years</td>
<td>86</td>
<td>38.9</td>
</tr>
<tr>
<td>11-15 years</td>
<td>32</td>
<td>14.5</td>
</tr>
<tr>
<td>16-20 years</td>
<td>11</td>
<td>5.0</td>
</tr>
<tr>
<td>more than 20 years</td>
<td>9</td>
<td>4.1</td>
</tr>
<tr>
<td>Educational Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>165</td>
<td>74.7</td>
</tr>
<tr>
<td>Master’s</td>
<td>53</td>
<td>24.0</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>3</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 1 presents the profile of the respondents. Altogether, 221 respondents were overviewed, with 142 (64.3%) ladies and 79 (35.7%) men matured 30-39. At the hour of the exploration, a large portion of the respondents’ involvement with instructing was 1-5 years of age (37.6%) and 6-10 years of age (38.9) with the majority of the respondents 165 (74.7%) being four year college education holders.

The effect of mixed learning fluctuates between orientation (male and female educators). The connection between mixed learning and respondents’ profiles uncovered that most females have more noteworthy impact during on the web study interest. Ladies will quite often be bound to self-select to take part in web-based overviews. It’s a reality (Smith 2009)(11). Another conceivable clarification for the perceptions is that ladies are by and large bound to add to review reactions is perfect. Ladies will more often than not be profoundly drawn in members (Royall 2020)(12). One more significant element of this study is that the vast majority of the respondents were in the 30-39 age bunch. Many examinations have found that youthful grown-ups like to answer by means of the web while more established people favor non-web modes. For instance, (Millar et al. 2009)(13) tracked down that respondents to mail reviews were more established than web respondents.
Table 2. Respondents’ Knowledge about Blended Learning

<table>
<thead>
<tr>
<th>Blended Learning</th>
<th>Frequency</th>
<th>Percentile</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blended learning is the integration of face-to-face and online learning.</td>
<td>196</td>
<td>88.7%</td>
<td>1</td>
</tr>
<tr>
<td>Blended learning combines online learning with other modes of instructional delivery.</td>
<td>158</td>
<td>71.5%</td>
<td>2</td>
</tr>
<tr>
<td>Blended learning is a shift in instructional strategy.</td>
<td>108</td>
<td>48.9%</td>
<td>3</td>
</tr>
<tr>
<td>Blended learning involved some element of student control over time, place, path, or pace.</td>
<td>95</td>
<td>43%</td>
<td>4</td>
</tr>
<tr>
<td>Blended learning integrates formative and summative assessment.</td>
<td>87</td>
<td>39.4%</td>
<td>5</td>
</tr>
<tr>
<td>Blended learning models place value on teachers' face-to-face interactions with students.</td>
<td>82</td>
<td>37.1%</td>
<td>6</td>
</tr>
<tr>
<td>Blended learning is student-centered instruction.</td>
<td>77</td>
<td>34.8%</td>
<td>7</td>
</tr>
<tr>
<td>Blended learning helps to customize individualized instruction.</td>
<td>75</td>
<td>33.9%</td>
<td>8</td>
</tr>
<tr>
<td>Blended learning provides more interaction than traditional classrooms.</td>
<td>69</td>
<td>31.2%</td>
<td>9</td>
</tr>
<tr>
<td>Blended learning needs complex ICT infrastructure.</td>
<td>61</td>
<td>27.6%</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2 presents the respondents’ knowledge of blended learning. Blended learning being an integration of face-to-face and online learning was the most common knowledge since it ranked first among the statements. Studies comparing blended learning with traditional face-to-face have indicated that learners perform equally well in blended learning and their performance is unaffected by the delivery method (Kwak, Menezes, & Sherwood, 2013)(14). In another study, learning experience and performance are known to improve when traditional course delivery is integrated with online learning (Stacey & Gerbic, 2007)(15). The idea that blended learning needs complex ICT infrastructure was the least common knowledge since it ranked last among the statements. This idea is also backed up by a study conducted by Shraim and Khlaif (2010)(16) that 72% of teachers were lacking in skills to utilize ICT-based learning components due to insufficient skills and experience in computer and internet applications and this may lead to failure in e-learning and blended learning.

Table 3. The well-being of the Respondents Encountered during Blended Learning

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>Cronbach’s Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.874</td>
<td>.875</td>
<td>5</td>
</tr>
<tr>
<td>Issues</td>
<td>Mean</td>
<td>Std. Dev.</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>------</td>
<td>-----------</td>
</tr>
<tr>
<td>1. I have felt cheerful and in good spirits.</td>
<td>3.13</td>
<td>1.123</td>
</tr>
<tr>
<td>2. I have felt calm and relaxed.</td>
<td>3.18</td>
<td>1.186</td>
</tr>
<tr>
<td>3. I have felt active and vigorous.</td>
<td>3.00</td>
<td>1.218</td>
</tr>
<tr>
<td>4. I woke up feeling fresh and rested.</td>
<td>2.99</td>
<td>1.323</td>
</tr>
<tr>
<td>5. My daily life has been filled with things that interest me.</td>
<td>3.05</td>
<td>1.203</td>
</tr>
</tbody>
</table>

| Overall Mean                                                          | 3.07 | α: 0.06   | Poor well-being  |

Legend: 0.00–1.66 (Worse well-being); 1.67–3.32 (Poor well-being); 3.33–5.00 (Good well-being)

Table 3 presents the well-being of the respondents encountered during blended learning in the last 14 days. On average, the respondents encountered the abovementioned issues regarding blended learning with poor well-being. The overall mean signifies the same findings and implications. With a Cronbach's Alpha of .874, this questionnaire in Thailand is valid and reliable and considered to have good internal consistency. The importance of psychological well-being denotes positive functioning and flourishing in life (Keyes, Shmotkin, and Ryff 2022)(18). This was also characterized by autonomy, environmental mastery, personal growth, positive relationships with peers, purpose in life, and self-acceptance (Ryff and Keyes 1995)(19) to entail a person’s potential for development and growth and includes feelings of personal expressiveness and accomplishment(Keyes, Shmotkin, and Ryff 2022)(18).

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>Cronbach’s Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.921</td>
<td>.921</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 4 presents the anxiety level of the respondents during blended learning encountered during blended learning in the last 14 days. Blended learning issues were encountered with mild anxiety by most respondents. The overall mean signifies the same findings and implications. Teachers in Thailand were asked about their anxiety levels based on the GAD7 questionnaire. The data shows that most of the participants' anxiety levels are mild anxiety. With a Cronbach's Alpha of .921, this questionnaire in Thailand is valid and reliable and considered to have an excellent internal consistency. In this sense, high-stress levels have been reported among teachers during the COVID-19 pandemic, along with anxiety, depression, domestic violence, and divorce, all impacting their capacity for proper teaching (Lizana and Lera 2022)(20). Increased anxiety rates among teachers have also been reported, with women presenting higher rates than men (Li et.al 2020)(21).

<table>
<thead>
<tr>
<th>Issues</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeling nervous, anxious, on edge</td>
<td>1.06</td>
<td>.868</td>
<td>Mild Anxiety</td>
</tr>
<tr>
<td>2. Not being able to stop or control worrying</td>
<td>1.09</td>
<td>.886</td>
<td>Mild Anxiety</td>
</tr>
<tr>
<td>3. Worrying too much about different things</td>
<td>1.22</td>
<td>.950</td>
<td>Mild Anxiety</td>
</tr>
<tr>
<td>4. Trouble relaxing</td>
<td>1.12</td>
<td>.953</td>
<td>Mild Anxiety</td>
</tr>
<tr>
<td>5. Being so restless that it is hard to sit still</td>
<td>0.91</td>
<td>.931</td>
<td>Mild Anxiety</td>
</tr>
<tr>
<td>6. Becoming easily annoyed or irritable</td>
<td>1.24</td>
<td>.943</td>
<td>Mild Anxiety</td>
</tr>
<tr>
<td>7. Feeling afraid as if something awful might happen</td>
<td>1.02</td>
<td>.938</td>
<td>Mild Anxiety</td>
</tr>
</tbody>
</table>

Overall Mean 1.09 α: 0.03 Mild Anxiety

Legend: 0.00–0.74 (Minimal Anxiety); 0.75–1.49 (Mild Anxiety); 1.50–2.24 (Moderate Anxiety); 2.25–3.00 (Severe Anxiety)
Table 5. Depression Level of the Respondents during Blended Learning

<table>
<thead>
<tr>
<th>Problems</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>1.03</td>
<td>.895</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0.90</td>
<td>.882</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>1.14</td>
<td>1.015</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>1.32</td>
<td>.957</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0.97</td>
<td>1.009</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>6. Feeling bad about yourself - or that you are a failure or have let yourself or your family down</td>
<td>0.99</td>
<td>.995</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>7. Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0.99</td>
<td>.979</td>
<td>Mild Depression</td>
</tr>
<tr>
<td>8. Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual</td>
<td>0.72</td>
<td>.849</td>
<td>Minimal Depression</td>
</tr>
<tr>
<td>9. Thoughts that you would be better off dead or hurting yourself in some way</td>
<td>0.52</td>
<td>.870</td>
<td>Minimal Depression</td>
</tr>
<tr>
<td>Overall</td>
<td>0.95</td>
<td>σ: 0.06</td>
<td>Mild Depression</td>
</tr>
</tbody>
</table>

Legend: 0.00–0.74 (Minimal Depression); 0.75–1.49 (Mild Depression); 1.50–2.24 (Moderate Depression); 2.25–3.00 (Severe Depression)

Table 5 presents the level of depression encountered by the respondents in response during blended learning over the last 14 days. On average, the respondents encountered most of the abovementioned problems with minimal depression. They did not encounter moving or speaking so slowly that other people could have noticed or the opposite and having thoughts that they would be better off dead or hurting themselves in some way. The overall mean signifies that on average the respondents encountered most of the abovementioned problems for several days. With a Cronbach's Alpha of .929, this questionnaire in Thailand is valid and reliable and considered to have an excellent internal consistency. There was also a recent meta-analysis of the emotional impact of COVID-19 on teachers concludes that 17% experience anxiety, 19% depression, and 33% stress (Etxebarria et.al. 2021)(22). Teaching is considered to be a highly stressful profession because teachers have to cope with work overload, emotion management, and conflict mediation in the classroom on a daily basis (Tamarit et.al. 2019)(23).

4 Discussion

The purpose of this study was to assess teachers' mental health during blended learning in Thailand from June to July 2022. The purpose of this study is to better understand how we can assist teachers during this time so they can continue to provide valuable educational services to our learners.

First, we expected to find the mental health assessment of teachers in Thailand to experience moderate levels of emotional symptoms (degree of well-being, level of anxiety, and level of
depression). These findings are pioneer data that measure, analyze, and organize the emotional distress due to blended learning in Thailand.

In addition, this study proves that "blended learning is the integration of face-to-face and online learning" ranks first, with 196 out of 221 respondents saying they are familiar with it.

In sum, our findings suggest that we need to positively influence the teachers in terms of mental health so they can be effective educators by giving emotional support and balance, and life satisfaction. These can be protective factors for further research.

This research is the first of its kind in Thailand in terms of blended learning and mental health. First, our findings in the study sample may not be generalizable to the general population because of the distribution of data, which is through an online survey. The researcher also believes that the uneven sample size in terms of gender is another limitation of the study as it may affect the overall result of the study. In future research, the researcher would like to include mixed methods (qualitative and quantitative data) in order to compare and contrast the information about teachers’ mental health.

5 Conclusion

This study makes an important contribution to the body of knowledge as it is the first study conducted in Thailand about teachers’ mental health during blended learning. These and other factors of the psychological impact of blended learning on teachers are crucial factors to promote mental health integration and innovation to strengthen their mental health and wellness.

6 References

[4] Pitman’s course developed in a fairly organic way. Originally, after Pitman finished his shorthand system in 1837, he and his brother Benn went across the country as travelling lecturers and tutors (Pitman 2017).


Perceived Stress During Covid-19 Pandemic: Its Relationship To The Academic Performance Of Students

Karyl Mitzi Anne D. Demetillo¹, Kristine Joy A. Melitant², Edna B. Nabua³

{edna.nabua@g.msuiit.edu.ph¹, karyldemetilla@g.msuiit.edu.ph², kristinejoy@g.msuiit.edu.ph³}

Mindanao State University-Iligan Institute of Technology¹, Mindanao State, University-Iligan Institute of Technology², Mindanao State, University-Iligan Institute of Technology³

Abstract. This study investigated the relationship between the COVID-19 perceived stress levels and the Science academic performance of the 3rd year secondary Science education students of MSU-IIT for the academic year 2020-2021. The researchers adopted a quantitative purposive sampling method with a total sample of seventy-five (75) students. Results showed that students experienced high levels of COVID-19 perceived stress. The emotional stress domain was the most experienced wherein feelings of anxiety, irritation, forgetfulness and disorganization, sweaty palms, and sleeping problems were the common stress indicators. Moreover, the perceived stress indicators were almost always experienced throughout the academic year 2020 - 2021. Lastly, the study found no credible evidence supporting the correlations between the students’ Science academic performance and COVID-19 perceived stress levels. Further research is recommended with a larger sample size for more relevant results. The researchers also suggest that university administrators provide online mental health consultations and time management webinars to help improve academic performance and minimize stress.

Keywords: Academic Performance, COVID-19 Perceived Stress, Undergraduate Students

1 Introduction

The coronavirus pandemic rapidly swept around the world and caused a physical and emotional toll due to the abrupt lifestyle change. While the majority of schools and colleges have moved to online class delivery and evaluation to avoid disruptions in educational services, the digital learning platform is still uncharted territory. Currently, the use of digital resources, particularly in mainstream education, has remained largely unexplored. College students doing “flexible learning,” or a combination of online and offline programs, scramble to acquire digital devices and a stable internet connection. The disparity of access becomes a harbinger of academic stress in students who would find themselves unable to avail online classes or submit their assignments, thus falling behind their peers in their curriculum. This has led to reports of symptoms of depression, anxiety, and in severe cases, suicidal attempts in children and...
adolescents triggered by academic stress and apprehensions regarding the future (Fegert et al., 2020). This study identified which major stressors associated with the COVID-19 pandemic affect the students the most. This is to understand the level of manifestation and relationship to the student’s academic performance, which refers to the average Science course grades of a 3rd-year undergraduate student, and determine how these stressors manifest in a student on an academic-year basis. This could help in the early recognition of those students who require tailored intervention to foster their well-being. Specifically, this study aims to answer the following problem: (1) What is the level of COVID-19 perceived stress experienced by the following programs; (a.) 3rd year BSEd Biology, (b.) 3rd year BSEd Chemistry, (c.) 3rd year BSEd Physics? (2) Which stress domains and stress indicators manifest the most in the student’s well-being? (3) How often do the stress indicators affect a student's well-being on an academic year basis? (4) What is the relationship between the level of perceived stress experienced by the Junior Science Education undergraduate (BSEd Biology, BSEd Chemistry, BSEd Physics) students towards their average grade in the following courses; (a.) Analytical Chemistry, (b.) Cell and Molecular Biology, (c.) Waves and Optics.

2 Methods

The study used a quantitative research method to systematically investigate the gathered quantifiable data and performed statistical techniques to satisfy the research problems. The researchers employed a correlational research design to ascertain the magnitude of the relationship between the two variables, namely the level of perceived stress due to the COVID-19 pandemic and the significant relevance to the respondents' science academic performance. The researchers chose a specific sample group that suited the study's needs: the 3rd Secondary BSEd Chemistry, BSEd Biology, and BSEd Physics students. The study had a total of seventy-five (75) respondents; thirty-two (32) came from BSED- Chemistry, twenty (20) from BSED-Biology, and twenty-three (23) from BSE D-Physics programs. These respondents were enrolled in the Analytical chemistry lecture, Cell and Molecular Biology lecture, and Waves and Optics lecture during the academic year 2020-2021. A modified-adapted questionnaire was utilized for data gathering, via purposive sampling, with 32 items on a 4-point Likert Scale. It was sectioned into four parts: the demographic profile of the student and their GPA, the Level of COVID-19 Stress, the Perceived Effects of COVID-19 Stress, and the Frequency of Perceived COVID-19 Stress. Each item was developed to cover domains that could have been subject to variations due to the COVID-19 pandemic lockdown, and, therefore, that may be potentially perceived as sources of stress (i.e., risk of contagion; social isolation; relationship with colleagues; relationship with professors; academic studying; romantic and family relationship). The questionnaire included: (A) Demographic Profile of the respondent; (B) Level of COVID-19 Stress Scale (CSSQ) was a modified questionnaire from Zurlo et al., 2020. This was developed to measure the psychological impact of COVID-19 in terms of danger and contamination fears; fears about economic consequences, xenophobia, compulsive checking and reassurance-seeking, and traumatic stress symptoms. The instrument specifically addressed the impact of the COVID-19 outbreak in terms of psychological outcomes without addressing and identifying specific sources of stress related to relational and daily life changes induced by the COVID-19 pandemic lockdown. The 6-item questionnaire was based on three factors, Relationship and Academic Life, Isolation, and Fear of contagion; (C) The Perceived Effects of
COVID-19 Stress Scale four domains of stress indicators identified in this study namely; behavioral, cognitive, emotional, and physiological stress indicators. Each domain had four stress indicators, respectively, which were sourced through a preliminary survey, and was answered using a 4-point Likert scale. Each domain's stress indicators were then ranked according to the highest average computed; (D) The Frequency of Perceived Stress Scale questionnaire is a modified stress assessment instrument from Stanley Cohen. Data was collected online by utilizing google forms.

3 Results And Discussion

This study examined the level of perceived stress experienced by the 3rd year BSEd Science students. Presented also in the study are the stress domains and stress indicators that manifested the most in the students. Including how often these stress factors affect the students on an academic year basis, and the relationship between the perceived level of stress towards the science academic performance of the students.

Level of Perceived Stress among 3rd year BSEd Biology, BSEd Chemistry, and BSEd Physics students.

Table 1 Perceived Stress Level of 3rd Year BSEd Biology, BSEd Chemistry, and BSEd Physics students

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>BSEd-Biology</th>
<th>BSEd-Chemistry</th>
<th>BSEd-Physics</th>
<th>Interpretation (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 How do you perceive the risk of contagion during this period of COVID-19 pandemic?</td>
<td>2.90</td>
<td>2.9</td>
<td>2.6</td>
<td>High</td>
</tr>
<tr>
<td>2 How do you perceive the condition of social isolation imposed during this period of COVID-19 pandemic?</td>
<td>2.60</td>
<td>2.8</td>
<td>2.8</td>
<td>High</td>
</tr>
<tr>
<td>3 How do you perceive the relationships with your relatives during this period of COVID-19 pandemic?</td>
<td>2.15</td>
<td>2.4</td>
<td>2.2</td>
<td>Low</td>
</tr>
<tr>
<td>4 How do you perceive the relationships with your university colleagues during this period of COVID-19</td>
<td>2.25</td>
<td>2.6</td>
<td>1.9</td>
<td>Low</td>
</tr>
</tbody>
</table>
pandemic?

5 How do you perceive the relationships with your university professors during this period of COVID-19 pandemic? 2.65 2.7 2.3 High

6 How do you perceive your academic studying experience during this period of COVID-19 pandemic? 3.10 2.0 2.8 High

Legend: 1-1.75 (Very Low); 1.76-2.5 (Low); 2.51-3.25 (High); 3.26-4 (Very High)

Students from BSEd Biology and BSEd Chemistry showed high levels of induced COVID-19 perceived stress. This is in contrast to the average mean score of the students from BSEd Physics which implies that they experienced low perceived stress levels. Overall (Table 2), the results showed that the students have high perceived stress towards the fear of contagion, isolation, relationship, and academic life. Fear contagion had the highest mean among the three factors. This implied that this stressor had the highest contribution to respondents’ stress levels.

Table 2 Summary of Perceived Stress Level among 3rd Year Science Education students

<table>
<thead>
<tr>
<th>COVID-19 Stress Factors</th>
<th>Biology</th>
<th>Chemistry</th>
<th>Physics</th>
<th>Mean</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of Contagion</td>
<td>2.90</td>
<td>2.97</td>
<td>2.6</td>
<td>2.83</td>
<td>High</td>
</tr>
<tr>
<td>Isolation</td>
<td>2.60</td>
<td>2.89</td>
<td>2.8</td>
<td>2.77</td>
<td>High</td>
</tr>
<tr>
<td>Relationship and Academic Life</td>
<td>2.54</td>
<td>2.71</td>
<td>2.3</td>
<td>2.53</td>
<td>High</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>2.68</td>
<td>2.86</td>
<td>2.6</td>
<td>2.71</td>
<td>High</td>
</tr>
</tbody>
</table>

Legend: 1-1.75 (Very Low); 1.76-2.5 (Low); 2.51-3.25 (High); 3.26-4 (Very High)

The first COVID-19 stress factor is fear of contagion. It bears the highest mean (2.83), which interprets a high level of stress among the 3rd-year Science Education students. With the continuous rise of COVID-19 cases in the Philippines, it is evident that the fear of contagion is clouding the minds of most respondents, as the data shown in table 2. In line with this, one study
recorded that more than one-third of their participants reported fear of contagion for themselves, and two-thirds reported fear for family members (Cori et al., 2021) which could probably mean that fear is linked with stress and anxiety. The second COVID-19 stress factor is isolation. Results show a high level (2.77) of stress among the 3rd year Science Education students. Zhong et al. (2021) sustained that social interaction and relationships are essential for mental well-being throughout the lifespan. Thus, its absence due to the COVID-19 pandemic can significantly affect the lives of individuals. Similarly, Stevens (1997) discussed that friendships could foster a sense of well-being and self-esteem within the lifespan. Corollary to this, Umberson and Montez (2010) concluded that social relations influence health over the lifespan. Consequently, social isolation contributes to stress.

The last COVID-19 stress factor is relationships and academic life. Based on the results, it has the lowest mean (2.53) among the other factors; however, it implies that there was a high level of stress among the 3rd year Science Education students. Under this factor is the academic studying experience of the respondents during the pandemic, which was discussed from the previous tables 1, 2, and 3 bearing the highest mean. Upon categorizing, the mean of the four questions was calculated, resulting in a much lower mean (2.53) than the other factors. Nevertheless, this implies that there is a high level of stress among the 3rd year Science Education students. This is supported by Cao et al. (2020), stipulating that 25% of their respondents experienced anxiety symptoms due to the impact of COVID-19 on students’ education and well-being. Such finding is similar to the present study, which shows a high level of stress on their academic endeavors. The results gave an insight that academic life and relationships with family, colleagues, and friends have a significant relation to each other; thus, balancing the two equally essential things may reduce stress and make it more bearable during difficult times.

Stress domains and Stress indicators that manifest the most in the 3rd year BSED Science Education students’ well-being.

A. Emotional Stress
Two of the emotional stress indicators on the list have the highest mean score (3.15): anxiety and irritation. The result is consistent with the study conducted by Huang and Zhao (2020), which stated that anxiety, one of the main evaluated subjects, has been significantly increasing in society during this pandemic. Li et al. (2020) added that he found an increase in words that mirror negative emotions, including anxiety, depression, and anger.

B. Cognitive Stress
The result shows forgetfulness and disorganization have the highest mean (3.33) among the other stress indicators. Forgetfulness or memory loss that disrupts daily life may be a symptom of Alzheimer’s or other dementia (WHO, 2021). Moreover, poor concentration, mental blocks, and overthinking are top listed as cognitive stress indicators manifested by students during the pandemic. Overthinking is one of the most mentioned stressors in social media today; loneliness triggers overthinking.

B. Physiological Stress
The result shows that sweaty palms have the highest mean score (3.23) among the other physiological stress indicators. Sweaty palms, as experienced by many, once become
uncontrollable, may develop into a medical condition called palmar hyperhidrosis. This is a highly stressful, embarrassing, and confidence-wrecking problem and is reported to negatively impact social life, education, and career (SweatHelp Organization, 2020). Furthermore, the last stressor on the list is experiencing fatigue. Fatigue is more than just tiredness. Hans et al. (2003) defined fatigue as a physiological state of reduced mental or physical capability, which may develop due to sleep loss or extended wakefulness, disrupted circadian rhythm, or increased workload.

C. Behavioral Stress

In the ranking of behavioral stress indicators, the result showed that sleeping problems (3.21) is the highest indicator manifested by the students. The high prevalence of sleep problems found in the present review can be explained by fear of COVID-19 and sleep-related factors, such as the changes in sleep-wake habits with delayed bedtime, lights off time, and sleep onset time due to quarantine and lockdown (Alimoradi et al., 2021). It demonstrated that individuals might experience sleep problems when they experience major public health threats. Moreover, the next on the list is experiencing changes in eating and drinking habits and difficulty completing tasks. Unlike previous academic years, online learning modality required students to stay and attend classes at home; some say they even lost track of time to eat. Lastly is excessive crying, which is associated with anxiety and stress.

Manifested Stress Domains of the 3rd year Science Education Students

The study also showed that among the stress domains, emotional stress had the highest mean score followed by cognitive stress, physiological stress, and behavioral stress. This corresponds to emotional stress indicators in the domain being the most experienced by the respondents among other domains.

Person-environment fit theory focuses on the interaction between the individual's characteristics and the environment, suggesting a reciprocal relationship between people and environments (Holland, 1997). In line with the theory, the results reveal that the three primary environments of a person: home, peer, and school, were vividly seen as stressors contributing to a high level of stress in the 3rd-year Science Education students. When not appropriately managed, chronic stress leads to emotional and psychosomatic consequences. It manifests through physical, cognitive, and emotional exhaustion and depersonalization, resulting in lowered academic efficiency (Wirkus et al., 2021). As noted by Walter Mischel, one cannot take a person out of personality, but, at the same time, one cannot ignore the fact that environments influence behavior and well-being.

Frequency of Stress Indicators affecting the student's well-being on an academic year basis

Table 3 shows the frequency of the stressors experienced by the respondents during the academic year 2020-2021. According to the results, during the academic year 2020-2021, students were almost always upset because of something unexpected that happened. They were almost always angered because of the instances outside their control, almost always felt that they were unable to control the important things in their respective lives, and almost always felt that difficulties were piling up so high and that they could not overcome them anymore.

Similarly, the results also showed that the students are almost always feeling nervous and stressed, and found that they could not cope with all the things they had to do. Additionally, the
respondents almost never felt that things were going their way and almost never felt that they were on top of things. Various studies have shown that the mental health of the population is significantly affected when faced with public health emergencies, and university students are no exception to this fact. This showed similar results with a study by Malik & Javed (2021) which showed that COVID-19 induced online learning has a negative impact on the mental health of university students in terms of perceived stress. However, despite the circumstances, results also showed that students almost always felt confident about their ability to handle personal problems and almost always have been able to control irritations in their life for the past academic year. This is similar to what the Stress Buffering Model by Pressman & Cohen (2005) suggested that participants who reported higher stress have a stronger association with higher positive affect. The students pose a high sense of control of themselves and not be swayed by the negative effects of stress.

As previously discussed, stress is the body's response to pressure (Mental Health Organization, 2021). It is our body’s fight-or-flight response to any challenges encountered that cause a disturbance to the overall well-being of the individual. In relation to our study, we are all aware of the recent changes in the educational setting to cope with the pandemic. To ensure teaching and learning continuity, higher education institutions transitioned to flexible teaching and learning modalities that significantly caused a shift in the students’ academic well-being. The MHO discussed that sometimes, this stress response can be useful: it can help push through fear or pain and overcome any hurdles. The stress hormones will usually go back to normal quickly once the stressful event is over, and there won’t be any lasting effects. However, too much stress can cause negative effects. It can leave a permanent stage of fight or flight, leaving the overwhelmed or unable to cope. In the long term, this can affect physical and mental health. Furthermore, the stressor–strain theory (Fox, Spector, & Miles, 2001; Spector, 1998) posits that frequent exposure to stressors can negatively impact individuals’ health, resulting in behavioral, physical, or psychological strains (Jex & Beehr, 1991).

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable (Academic Performance)</th>
<th>Correlation Coefficient</th>
<th>Significance Value</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Stress</td>
<td>Cell and Molecular Biology</td>
<td>0.192</td>
<td>0.099</td>
<td>Not significant (Very weak positive correlation)</td>
</tr>
<tr>
<td>Level Experienced</td>
<td>Waves and Optics</td>
<td>-0.083</td>
<td>0.479</td>
<td>Not significant (Negative correlation)</td>
</tr>
</tbody>
</table>

H0: There is no significant relationship between the perceived stress and the science academic performance of 3rd year BSEd Science students during the Covid-19 pandemic.

The independent variable, the COVID-19 perceived stress level experienced by the students, showed a statistically nonsignificant relationship with the students' grades in Analytical Chemistry, Cell and Molecular Biology, and in Waves and Optics, and is not substantial with
the correlation coefficient values of 0.219, 0.192, and -0.083, respectively. With no sufficient statistical proof that the variables have an association with each other, the alternate hypothesis is rejected. This finding concurs with similar results by Awofodu & Emi (2011). Their correlation of respondents’ scores on the stress scale with their Grade point average shows that there is no relationship between the amount of stress perceived by biology students and their Grade point average. A study by Womble (2003) was also unable to show a significant correlation between the students’ amount of perceived stress in a given semester and their GPAs. Thus, the study retains the null hypothesis stating that there is no significant relationship between the perceived stress and the science academic performance of 3rd year BSEd Science students during the Covid-19 pandemic. This result is supported by various studies suggesting that interactions between personality and environmental factors are a rather complex process, implying that academic achievement can be achieved in quite diverse ways (Usman & Madudili, 2019; Hayat & et al., 2020). Womble (2003) also suggested that survey population size also plays a role in gaining these results, thus a higher population size is recommended. A common misconception among the general public is that a higher stress level would pose a negative impact on the students’ GPA. However, laboratory research findings from the University of California, Berkeley showed that as acute stress happens on a regular basis, it will keep the animal more alert. This implies that stress can be something that makes an individual better. Professor Kaufer, head researcher at UC Berkeley, further suggested that certain amounts of stress are good for achieving optimal alertness and behavioral and cognitive performance (Sanders, 2015). It is also worth noting that education-based initiatives that focus on increasing students’ skills and ability to cope with stress have been previously demonstrated to directly and positively influence educational achievement and decrease health risks (Hanson & Austin, 2002; Perry et al., 2017; Weare & Gray, 2003).

4 Conclusion And Recommendation

This study examined the relationship between COVID-19 perceived stress and the students’ science academic performance. The study has ranked the top-provoking indicators of COVID-19-induced stress and its frequency among the secondary science education students of Mindanao State University - Iligan Institute of Technology. However, the present study was unable to provide statistical proof for a significant relationship between the two factors. But the proportions of the stress levels, stress factors, and the frequency of the perceived stress were relatively high. This calls for changes in measures to increase students’ stress management skills and abilities and social changes relating to the COVID-19 response. Understanding the source of the different stress domains would enable professionals in the field to tailor-make interventions for students by combining the most effective strategies. Improving a student's holistic well-being would eventually be beneficial not just to the individual but also to the total productivity of the institution.

The researchers would like to recommend that similar studies may be conducted with a large-scale population to statistically analyze and obtain a more precise interpretation. The initial limitation of students who are reluctant to provide their grades or might have manipulated their actual grades can be overcome by confirming the data from their respective advisers. Furthermore, the researchers also suggest that the university may consider offering online services such as time and stress management to help students manage their time wisely and
coping strategies through counseling programs for students during their studies. Such strategies would probably empower university students to manage stress and may prove beneficial. Lastly, further research focusing on developing and evaluating the effects of stress-reducing strategies among students is also recommended.

References


[38] Hans P.A. Van Dongen, PhD, Greg Maislin, MS, MA, Janet M. Mullington, PhD, David F. Dinges, PhD. The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation. Sleep, Volume 26, Issue 2, March 2003, Pages 117–126. https://doi.org/10.1093/sleep/26.2.117


Pandemic After Marawi Siege: Effects And Coping Strategies Of Internally Displaced Persons (Idp’s) In Government Transitory Shelters In Marawi City

Marilou F. Siton Nanaman¹, Irene A. Estrada²

{marilou.namanan@g.msuiit.edu.ph¹, irene.estrada@g.msuiit.edu.ph²}

Department of Political Science, CASS, MSUIT¹, Department of Research, OVCRE, MSUIT²

Abstract. The main purpose of this study is to examine the effects of the COVID-19 Pandemic on the internally displaced persons (IDPs) who survived in the 2017 Marawi siege and how they cope and become resilient during the successive turmoil in their lives. Although the IDPs are among the most affected, it is very interesting to know their coping strategies that address the effects of the health crises. This inquiry employs Riley & Masten’s (2005) and Zaura, Hall & Murray (2008) formulation of resiliency theory focusing on the coping strategies of the IDPs as means of resiliency recovery from very complex man-made and health crises such as the Marawi siege and the COVID-19 pandemic. Focus Group Discussion (FGD), Survey, and Key Informant Interviews were used, to generate data on the current situation of 863 IDPs located in government transitional shelters situated in Marawi City namely - Sagonsongan, Boganga, Rorogagus and Dulay Proper. Highlights of the findings revealed that the farther the distance of transitory shelters from the city center, the more the IDPs experienced difficulty in accessing the market, schools, hospitals and other basic services, and most of all, difficulty in acquiring the source of livelihood and engaging in business due to higher transportation costs from the resettlement sites to Marawi City, and lack of capital to engage in business.

Keywords: Resiliency of IDPs, Internally displaced persons (IDPs), Covid-19 & Coping strategies

1 Introduction

The 5-month long siege in Marawi in 2017 led to the massive displacement of 98 percent of the City’s 207,000 civilian population and nearby municipalities. (Amnesty International, 2017; UNHCR, Philippines; Marawi City Culture & Arts, 2020) Tejero, & Mancia, Jose Dennis (2021) observed that the said conflict caused the displaced to lose their homes, social support, and means of livelihood and was unable to resort to traditional coping capacities. The IDPs lost some of their family members and neighbors and were left with the ruins of their homes, Mosques, and schools, with no access to food and water. In this state, they have become
economically, spiritually, politically, culturally, ecologically and most of all, mentally vulnerable (Weiss & Korn, 2006).

It should be noted that before the siege, the way of life of the Meranaws revolved with their families, in trading and small business, and in practicing their faith. Van Breda (2001) and Kretzmann, J. & McKnight, J. (1993) advanced that people and communities who are displaced by conflict manifest resiliency by counting on their assets and strengths. Thus, despite being victims of this violent and dire circumstance (Arya, 2007), the IDPs of Marawi regain normalcy in their lives through trading and engaging in small business. With a meager capital, they try to take a grip of any opportunity to be able to engage in buying and selling the business at the temporary shelters where they currently reside.

Unfortunately, due to the COVID-19 pandemic and lockdowns, the earnings from their business were depleted as they used it to provide for their basic necessities such as food, transportation, and health needs.

It is on the above premise that this caveat is pursued, to gain knowledge and information on the effects of the Covid-19 pandemic on these IDPs and how they cope and become resilient in these times of successive turmoil in their lives. The findings of the study will lead us to appropriate and sustainable interventions that will address their priority need/s during this time of the pandemic.

1.1 Objectives of the Study

This study examined how the pandemic has affected the Internally Displaced Persons (IDPs) of Marawi City and the coping strategies that they utilized in order to withstand such debacles. Moreover, this systematic inquiry specifically probed the following:

1. The socio-economic profile and the current situation of the IDPs at the present temporary resettlement sites in terms of the location and type of shelter, their access to basic necessities and services such as water, power, health center, mosque, and school.

2. The understanding of the IDPs on the Coronavirus Pandemic and safety protocols

3. The effects of Covid-19 Pandemic on the IDPs

4. The priority needs, problems, and challenges brought by COVID-19 that need to be addressed.

5. The coping strategies of the IDPs for resilience during this Pandemic

1.2 Framework of the Study

Figure 1. Conceptual and Theoretical Framework
In this study, the internally displaced persons (IDPs) as the main research participants have been in a state of vulnerability because they had to flee due to violent extremism in Marawi. Weiss & Korn 2006 posit that the context of the IDP’s displacement resulted in the deprivation of their homes, community, and their source of income reducing their condition to being vulnerable.

As the pandemic also pervades in their transitional relocation sites, their narrative is explored through their notion of the COVID-19, what health protocols they practice in this regard and how has such disease affected them and their community. Masten (1994), Southwick, Steven M., George A. Bonanno, Ann S. Masten, Catherine Panter-Brick & Rachel Yehuda. 2014 & Zaura, Hall & Murray’s (2008) formulation of resiliency theory is employed in this inquiry. Resilience theory primarily delves into the complex context of the vulnerability of the IDPs as a consequence of past and present adversities such as the displacement due to conflict and current - COVID-19 (Araya, 2007) As the most affected people, they have a crucial role in bringing about strategies that address the effects of the said complex crises and challenges in their community.

Finally, their assets such as skills and positive outlook are delved into on how they were employed in coping with challenges encountered by them while regaining their lives at the current site where they are temporarily relocated (Seguin & Roberts, 2015).

2 Methodology

2.1 Research Design

This study employs a qualitative design that describes and assesses the effects of the COVID-19 pandemic and the coping strategies for resiliency among the internally displaced persons of the Marawi siege.

In order to determine the underlying factors, multiple source of evidence such as survey, focus group discussion and key informant interview were used, to ensure that the information gathered is substantive and produce a deeper understanding. The use of multiple sources of data or triangulation was explained by Bamberger (2006), which states that the evaluation of findings are strengthened when several pieces of evidence point in the same direction or come to a broadly the same conclusion.
On the other hand, Maria Fenech Adami & Alice Kiger (2005), define triangulation in research as the use of multiple techniques for gathering and/or handling data within a single study. The original purpose was to seek confirmation of apparent findings and appears to support the second purpose, the completeness of the findings.

2.2 Subject Participants and Locale of Study

Based on the updated list of IDPs from the Task Force Bangon Marawi (TFBM) dated April 15, 2021, and in reference to the Table in Determining Sample Size for Social Science Research Activities authored by Robert V. Krejcie and Daryl W. Morgan (1970), Eight Hundred Sixty-Three (863) IDP’s should be included in the study at .95% level of confidence and .05% margin of error. We use the proportional allocation of sample per area as reflected in the table below:

<table>
<thead>
<tr>
<th>Location of Government Temporary Shelters</th>
<th>No. of IDP Families as of April 21, 2021</th>
<th>Sample Population Size at 95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brgy. Sagonsongan</td>
<td>1178</td>
<td>293</td>
</tr>
<tr>
<td>Brgy. Boganga</td>
<td>1500</td>
<td>318</td>
</tr>
<tr>
<td>Brgy. Rogongon</td>
<td>350</td>
<td>186</td>
</tr>
<tr>
<td>Brgy. Dulay</td>
<td>79</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td>3,107</td>
<td>863</td>
</tr>
</tbody>
</table>

Source: TFBM Report 2021

The research participants in the study are resettled in different government transitory shelters located in Marawi City particularly in Barangays Sagonsongan, Boganga, Dulay, and Rorogagus.

![Figure 2 Map of Marawi City](http://maps.google.com)

The subject participants in the study are the Internally Displaced Persons (IDP’s) resettled in different government transitory shelters located in Barangays Sagonsongan, Boganga, Dulay and Rorogagus, Marawi City. Barangay Sagonsonga is 3.6 kilometers from Marawi City. This is the nearest temporary resettlement site for IDPs and Barangay Dulay is the farthest...
resettlement site for the IDPs wherein it has a distance of 7.6 kilometers from the city proper. Barangasy Rorogaus and Barangay Boganga have almost the same distance from Marawi City but still quite far from the city proper with a distance of 5.3 kilometers and 5.8 kilometers respectively.

2.3 Data Gathering Procedure

In order to determine the underlying factors, multiple sources of evidence for this qualitative study. Surveys, focus group discussions, and key informant interviews were used to gather information from the 863 research participants. Also, this study employs multiple sources of data or triangulation. It is explained by Bamberger (2006), which states that the evaluation of findings is strengthened when several pieces of evidence point in the same direction or come to broadly the same conclusion.

Table 2 Data Gathering Tools

<table>
<thead>
<tr>
<th>Information Gathered</th>
<th>Data Gathering Tools</th>
<th>Subject Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Socio-economic profile of the subject participants</td>
<td>Survey Method</td>
<td>IDPs</td>
</tr>
<tr>
<td>2. Current situation of the IDPs in the present government transitory shelters</td>
<td>Survey Method, Focus Group Discussion, Observation</td>
<td>IDPs, 4 IDP Chapter Presidents, 3 women and 1 youth leader</td>
</tr>
<tr>
<td>3. Understanding Corona Virus Pandemic and safety protocols</td>
<td>Survey Method, Observation</td>
<td>IDPs</td>
</tr>
<tr>
<td>4. Needs, problems and challenges brought by COVID-19 that needs to be addressed.</td>
<td>Survey, Focus Group Discussion, Key Informant Interview</td>
<td>IDPs, 4 IDP Chapter Presidents, 3 women and 1 youth leader</td>
</tr>
<tr>
<td>5. IDPs coping strategies during this Pandemic</td>
<td>Survey Method, Focus Group Discussion, Interview, Observation</td>
<td>IDPs, 4 IDP Chapter Presidents, 3 women and 1 youth leader</td>
</tr>
<tr>
<td>6. Suggestions and recommendations to avoid if not minimize the spread of Corona Virus in the barangays, in the city, and in</td>
<td>Survey, Key Informant Interview, Focus Group Discussion</td>
<td>IDPs, Block Leaders, 4 IDP Chapter Presidents, 3</td>
</tr>
</tbody>
</table>
2.4 Data Analysis

Qualitative information is analyzed using content analysis to capture the perspective of the participants and thematic approach, especially on the current condition and coping strategies of the IDPs. Descriptive statistics such as frequency counts, percentages, and mean shall be used to describe quantitative data.

3 Results And Discussion

3.1 Socio-Economic Profile and the Current Situation of IDPs

Findings reveal that the majority of the IDPs residing at the government transitory shelter sites in Marawi City are female, married, have high school and for some college education and belong to the 19-39 age range. Their level of Arabic education on the other hand is at the Kinder and Primary levels. Almost all of them are Meranao with only very few among who are Cebuano, Maguindanao, Tausug, Ilonggo & Zamboangeno. 34.88% of the women IDPs have no source of income before the siege still remain to have currently no income. But those women who were aming then were engaged in small business such as running a Sari-sari store.

On the aspect of the current situation of the IDPs, data indicate that the shelters provided at the selected transitory sites are small in size (at 4 by 6 meters) for an average family of six. There is very little space for living, dining and sleeping. Because of this, some family members have to sleep next to the toilet at night. Despite the small dimension of the shelters, IDPs at Boganga and Dulay proper are content with it. The shelters are concrete at Sagonsongan, Dulay proper and Boganga. But the shelters at Rorogagus are made of plywood, with no provision for drainage and service for garbage collection. Moreover, the resettlement sites has poor drainage and sanitation conditions due the presence of uncemented and uncovered canals, small septic tanks that are shared between two families and poor garbage service. Only Action Against Hunger, an International Non- governmental Organization distributed containers to the residents of Sagonsongan for waste segregation.

3.2 Access to Food, Water and Power Supply

In terms of food and its access, the IDPs are not able to eat nutritious food and their meals are reduced to twice a day at the site. The relief assistance was helpful to them only when they first resided at the site. They have lost the capital of their small business due to the high costs of food at the site. Any small income and their capital had been used for buying food for their families.

Water supply is adequate in some areas in Sagonsongan, Boganga and Dulay proper because of the reservoir and water pumps. But in other areas in the same site water supply does not reach some of the IDPs, water for drinking is bought from private sources. Their source for laundry use is mainly the rain. At Rorogagus on the other hand, water is quite adequate because the site has a reservoir and is located beside the river.
Power supply at the sites on the other hand, is free since it is connected with the main power grid of the National Power Corporation grid at the Municipality of Saguiaran, Lanao del Norte.

3.3 Access to Transportation Facilities

The cost of transportation varies depending on the distance of the site from the city center of Marawi. The only type of transportation available to the IDPs is the tricycle with sidecar. The cost of transportation for the IDPs of Sagonsongan, Roroagus and Dulay proper is Php 50.00 while for those living at Boganga, it costs them Php 150.00 per trip.

3.4 Livelihood

There was relief and livelihood assistance from one International non-governmental organization, the Catholic Family Services Inc. wherein some of the IDPs had to choose from the following items so that they could have a livelihood at the site. They were made to choose from having a cow, a refrigeration unit, a sidecar, a caderia (no capital was provided - only pots for cooking), a sewing machine, a sari sari store (15k pero 7,500 worth of grocery), or selling school supplies.

The IDPs that selected the sidecar, had to sell the unit eventually because they had no capacity to buy a motorcycle. Some of those engaged in selling at their Sari-sari stores had closed them due to the depletion of their capital. Those at Roroagus that were provided training to become construction workers, found it difficult to find a job due to high transportation costs from their site to Marawi City proper.

3.5 Access to Education

There are two types of education that the children of IDPs are enrolled in: the Madrasah and elementary and high school at public schools near their site. During the pandemic, for those children who were enrolled in the elementary, they had modules to comply with at home and then submit it to their teachers on a weekly basis. In Sagonsongan, the IDPs build their temporary Madrasah school made of bamboo and wood for their children. During the conduct of this study the muslims are not allowed to worship in mosque and so they just pray inside their temporary homes.

3.6 Health and Sanitation

Only Sogonsongan and Rorogagus have a health center but the two other sites do not have one. The health personnel at the center are scheduled to be at the site every Wednesday and Thursday but they seldom visit. It has been their request to have the centers properly manned for the other two sites to have a functional health center that will attend to the health and sanitation needs of the community.

3.7 Community Organization

At Sagonsongan they have a community organization among IDPs which they name as Jamah organization. This organization is composed of block leaders who help those IDPs whose family member has just died. At Boganga, their community organization monitors the situation of IDPs at the site. There is no community organization at Dulay proper and Rorogagus.

3.8 Vaccination
Ninety percent (90%) of the IDPs of Sagonsongan are vaccinated. The LGU gave 10 kilos of rice and P500 as incentives to IDPs who were vaccinated. At Boganga, Dulay Proper and Rorogagus, only 30% are vaccinated. Seventy percent (70%) of the IDPs are afraid due to some information that the vaccines cause infertility, cancer, will turn them into zombies or death. Those having co-morbidities as asthma are also scared to get the vaccine.

The situation of IDPs at government transitory settlements in Marawi are dismal and vulnerable which validates the findings on IDPs in the settlements of Bangladesh and other areas by Roberta Cohen (November 11, 1998, Lokshin Yemtsov (2004), Kannapa Pongponrat & Kayoko Ishii (2011), Perecm an (2005) & Collado (2019), Abdel Raouf Suleiman Bello, hadia A.M. Daoud & Mirza B. Baig (2014), Lokshin & Yemtsov, (2004) and Stephen Ojo (2017). At the site, IDPs in Marawi are confronted with multiple challenges such as limited access to assistance, low level of literacy rates, large numbers of dependents, very low income, shortage of food supply at their settlements.

Density and poor infrastructure of the transitory site exacerbates the crisis brought about by the danger of transmission of COVID19 among the IDPs. This is similar to what Bile, K.M., Shadoul, A.F., Raaijmakers, H., Altaf, S. & Shabib, K. (2010) and Aylett-Bullock et. al., (2021) which found out among the displaced persons in settlements at Cox’s Bazar in Bangladesh. Indeed, this makes the IDPs in Marawi susceptible to the transmission of Covid-19.

Such conditions of hardships, Bello, et. al., (2014) & Collado (2019) adds, increase their vulnerability because of poor sanitation and health care and lack of security of having their own permanent home. Moreover, because of these, displaced women in Marawi accept low paying temporary jobs in the informal sector just to meet the essential needs of their families such as sales lady (tindera), for males, they became helpers in business establishments, repair shops among others.

4. The Effects of COVID-19 Pandemic on the IDPs

COV ID19 has affected the IDPs at the various levels:

At the personal level, the IDPs feel that they are being victimized twice -the siege and now the pandemic. The latter has made them less in control of themselves mentally, ‘mawawala sa isip’ due to the fact that it is quite hard for them to comprehend the crisis resulting from the COVID19 virus and as to why it is happening to them in their community. This contradicts the observation of Roberta Cohen (1998) because most of the IDPs understand the reason why they left their homes at ground zero in Marawi. They had to flee to seek a safer area away from the site of the violent confrontation between the Maute Group and the Philippine army.

The lockdowns and the pervasiveness of the virus has drastically limited their physical mobility to the confines of the home. It has also frozen the economic activities at the site causing them to lose their sources of livelihood. On top of this is the lack of food supply at the site. This condition affects not only economically, socially, politically, but worst physically and mentally.

Due to the fear of being infected with the virus, the IDPs feel helpless and insecure. If infected with Covid19, they are afraid to be treated at the hospital. For those who have symptoms like cough, fever, colds and body pains, they opt to pray instead, safety at home and apply herbal
medicines, the most common herbs they treat for coughs and colds or symptoms of COVID-19 is Oregano or “Kapal” in Meranao dialect. With the very small shelters, the families of the IDPs with members as many as 9 are quite packed.

To prevent the transmission of COVID-19 in their community, the LGU of Marawi City strictly implements health protocols and prohibits all types of public gathering, worshiping at Mosques and visiting the neighbors. This has heavily prevented the IDPs from dutifully observing social obligations during family events such as birthdays, weddings and ‘Tibaw’ (attending a gathering when a family member dies) and the traditional Maranao social greetings of beso-beso for the women and handshake for the males had all been replaced with ‘fist bump.’

Life of the IDPs has worsened with the pandemic. In the report of Fonbuena (2020) entitled “Life Doubly Harder in Marawi Settlements as Coronavirus Grounds Aid Groups”, pointed out that IDPs find it hard to follow precautions against the novel coronavirus disease when relief goods are limited and water trucks are reducing trips, and local authorities say they do not have enough resources to feed people for an extended period and they need outside help. Much more, their financial support from families and relatives outside Marawi are also affected unlike during the Marawi siege wherein they were supported by their families and relatives who have businesses outside Marawi. Besides, they have no mobile signal and so they cannot contact their families and relatives. They also experience shortage of food and flooding at the site resulting in muddy roads.

5. The Priority Needs, Problems and Challenges of the IDPs

All the IDPs indicate a common priority concern, that of a permanent shelter preferably at their old address at ground zero. The one that they are now residing at is just temporary which does not provide security for them and their families. This is followed by the need for livelihood assistance, water supply, road repairs, compensation for the damages of the victims of the siege, education and educational allowance for the children. Thus, shelter, livelihood and water supply are the top priority needs of the IDPs. This does not support the findings of Collado (2019) wherein he claimed that food supply, sanitation and health care, security, and the proper handling of rape and abuses in the camp are the priorities of the IDPs at the site.

The findings above is supported also by the result of Key Informant Interviews and FGD results. All of the leaders who attended identified the top priority needs of IDPs of which No. 1 ranks the most top priority: 1.) Permanent Shelter, and if possible back to the place of origin; 2.) Source of Livelihood/ Livelihood Capital; 3.) Adequate Water Supply in some transitory areas /road repair in Boganga Transitory Shelter; 4.) Educational Allowance for Children; 5.) Compensation for damages during the Marawi siege (note: during the conduct of this study the proposed Compensation Bill was not signed yet.

5. Coping Strategies for Resiliency during Pandemic

To cope with the financial and social hardships and their struggles with physical and mental health during this pandemic, the IDPs are noted to employ manifold means.

Among the modes that they used to cope with their financial problems are by accessing loans from the family or loan assistance from NGOs and government agencies. The IDPs stated that some of their family and relatives have helped them through donating food and other basic
necessities. Moreover, their family extends sympathy during social events such as birthdays and during times of crisis, through a representative, virtual and monetary assistance. Government agencies and NGOs extended financial intervention to the IDPs at transitional shelters. This is what Cohen (1998) and Collado (2019) deem as the onset of resiliency.

The amount from loans serves as their capital in reviving their livelihood. The said capital was used by the IDPs for online selling, consignment, carenderia and sewing curtains. The second means is to practice thrift and tighten their family budget. Most IDPs stretch their monthly family budget to three (3) months and for some, eat once a day only. The operation of a community pantry and gardening at the site somehow alleviated their family’s access to food. And the last is for them to get a permanent job or as an extra as a sales person, laundry worker, driver or skilled laborer, sales ladies, sales boys and helpers in some machine shops. For those IDPs whose shelters are located at a site near the coast of the lake, they engage in fishing as their livelihood.

Among the social practices that were altered by the pandemic, were the handshake gesture among Meranao men and Beso-beso among Maranao women. Both are substituted with waving Salaam, the fist bump or elbow to elbow gestures in this time of pandemic. Such traditional gestures are avoided in order to comply with the prevailing sanitation and health protocol guidelines of the IATF and the LGU.

With regards to addressing the mental and physical problems that they face during this pandemic, they indicate that they comply with the health protocols imposed. They cope with mental issues by having a positive attitude through practicing their faith through praying and being patient. They connect with their family through virtual means when they can go to the city center as this keeps them abreast with the socio-cultural activities of their clan and the community.

To complement their compliance with the health protocols which includes the wearing of masks, most of the IDPs indicated that regular indoor exercise keeps them physically fit and mobile. However, a few of them do not exercise, have maintenance medicines and some with major ailments are hospitalized. Since they cannot visit the sick at the hospital, they only pay a visit once the patient is discharged. For minor ailments, the IDPs resort to non-pharmaceutical means. They include treatment using herbal medicines and applying ‘hiot’ (traditional massage) as the case may be. The only health intervention that is accessible to them is the scheduled free consultation administered by the health personnel in their community.

In the midst of preventing exposure to the risks and consequences of the pandemic, they adapt physically and socially. They exercise indoors, communicate virtually with their family and apply the fist bump and waving socially instead of the traditional Maranao greetings. Riley and Masten (2005) & Masten, A. S., & Powell, J. L. (2003) believes that adapting is the only way to overcome adversities, however complex. Coping for IDPs in this time of pandemic takes in the forms of social adaptation such as securing loans from their relatives, continuing to support each other at family and cultural activities, albeit virtually and substituting the traditional greetings of the Maranao tribe with the safer modes of fist bump, waving and greeting ‘Salaam.’

In this vein, Cohen (1998) and Collado (2019) argue that IDPs, despite living in harsh conditions, adapt and cope with crises primarily through their social capital and connection.
particularly the strong support from their family and cultural community as Maranao despite mandated restrictions as physical distance during lockdown. The means that they employ to earn their livelihood in various ways such as trading, street vending to performing any type of job can be inferred as indicators of early stages of adjustment and leading to resiliency. Being adaptive and flexible despite the complexity of their situation support Schwartz (1997) notion of resiliency, and in this case the resiliency of IDPs at selected transitional shelters in Marawi City.

While access to health services in the midst of has been limited due to its cost and intermittent delivery of service at the health center, and only a number of them had been vaccinated, the IDPs can also be deemed to have relied on one of their assets, that is their knowledge on indigenous method of dealing with minor ailments, that of herbal medicine. Kretzmann & McKnight (1993) & Van Breda (2001) deems this manner to manifest their effort to recover and rebuild their community.

6. Suggestions And Recommendations

It's been more than four years after the Marawi Siege and majority of the IDPs are still living in the transitory shelters experiencing hardships in their lives. We would like to recommend to fasten the provision of permanent shelters, job opportunities for them to have a source of livelihood, and to hasten the implementation of Compensation Bill, for the IDPs to be able to rebuild their lives.

While in transitory shelters, septic tanks should be dislodged and canals should be repaired as it emits foul odor and it is not good for the health of everybody. Another suggestion is to monitor and control the expensive fare from transitory sites to Marawi City, and if possible a government vehicle should be assigned and scheduled trips in transitory sites for IDPS during marketing and in submitting the modules of their children among others.

Health workers who are assigned for vaccination should make themselves available to the IDPs by going to the areas to disseminate exact information about the vaccine and conduct the vaccination of IDPs particularly in areas where majority have not been vaccinated.

Slope protection should be done to avoid soil erosion during heavy rains in some parts of Boganga Transitory shelter. The eroded muddy soil flows down to the houses of some IDPs.

Garbage collection should be done regularly and proper waste disposal should be imposed. Burning of garbage should be strictly prohibited to protect the environment.

Furthermore, the IDPs suggested that to regain normalcy in their lives at the transitory shelter, all of them should strengthen the practice of their faith by praying the ‘Sunnah’ and reading the Qur’an. Since data show that more women had been employed despite the pandemic, both male and female IDPs must opt to work together to undertake various ways to earn livelihood. Planting flowering plants, gardening, producing cement flower pots, recycling junk food wrappers, and sewing masks, long dresses, curtains are productive endeavors that can earn steady income which helps them provide their families with food and other basic essentials.

All of these suggestions reveal that they draw strength from their faith by praying to Allah. Besides, they see the need for partnership among the male and the female IDPs in terms of being economically productive, and the belief in diverse possible options for livelihood just to be able
to provide for their family’s needs. These are simple solutions but it really helps in the present situation of the IDPs and reduced the burdens that the IDPs are experiencing now.

4 Conclusions

The internally displaced persons (IDPs) at government transitory sites in Marawi City at this time of pandemic have become more vulnerable and are confronted with multifarious challenges at the personal, family and community levels.

They had been from the lower income level when the siege forced them to flee and have remained poor if not poorer with the lockdowns. The IDPs share the common attributes of finding refuge in cramped, small dwellings with their families, with only a low level of education and without a source of income.

Basic needs such as food and services, water, and connectivity are quite sparse, limited and prohibitive. And because of the distance of the sites of the transitory shelters, transportation cost is quite high. Aside from surviving in small units, some IDPs are housed in units made of light construction materials. Their need for food was only temporarily abated with the relief assistance that was extended to them when they first resided at the site. Water supply for the IDPs is only adequate in one site, that of Roroagus, as it is situated near the river. But it is of limited access to the IDPs living at the other sites. As for livelihood assistance, not all IDPs were given this opportunity by Non-governmental organizations and government agencies.

Education for their children and health services on the other hand, were rendered limited with the lockdowns. The Madrasah and the public elementary schools were conducted through the use of modules. Check ups by medical personnel assigned at the health centers are only available once or twice a week.

Community organization at the site composed of block leaders functions to attend to the situation of the IDPs and coordinate with agencies that visit and partner with them.

Vaccination turnout for the IDPs is high to those who reside closer to the city proper and very low for the rest of the sites. It can also be inferred that the low vaccine turnout is borne out of the fear of the dangers of the vaccine from false information circulating in their community.

In terms of the personal effects of the health crisis, both difficulty in comprehending the pandemic and constricted physical mobility are felt by the IDPs. Furthermore, the mandated health protocols have confined them and their families in their respective homes, which have kept them distant from the rest of their relatives and their community. It has also affected their ability to perform their traditional social functions during celebrations and sad occasions.

Residing at transitory shelters in dire conditions, has made them aspire for a permanent shelter which they can call their home and gainful livelihood. Given these as their priorities, and in order to surmount their hardships, they are noted to employ diverse means.

The social and financial modalities of the IDPs are drawn from their families and the vast opportunities afforded to them once they concluded the livelihood training at the site and the city proper of Marawi by NGOs and government agencies.
5 Acknowledgments

We would like to express our wholehearted appreciation to the MSU-Iligan Institute of Technology and to the Department of Research of the Office of the Vice Chancellor for Research and Extension, for the financial support that was provided, to enable us to undertake this timely inquiry on how the pandemic has impinged the plight of the already marginalized Internally Displaced Persons (IDPs), and how they were able to overcome and face such a huge challenge from 2017 until the time that this study was conducted in 2021.

Our heartfelt thanks and gratitude to the Task Force Bangon Marawi (TFBM) and Local Government Units of Marawi City for granting us the permission to conduct the research project despite the critical situation due to the pandemic.

Our special thanks and gratitude to the IDPs, for their patience and cooperation during the data gathering, and also to those people who shared their observations, insights, suggestions, and recommendations that contributed to the completeness of the findings of this study.

Finally, we acknowledge the untiring support of our Research Assistant Ms. Queenie E. Benito, for helping us in the administrative matters that contributed to the smooth implementation of the project. We are also thankful for the services extended to us by Ms. Jessyl M. Espinol our SPSS Encoder.

Above all, our heartfelt thanks to our Almighty God, for protecting us during our travels in the midst of a health crisis, and for giving us the wisdom to complete the study.

Considering the impacts of the siege followed by the harsh effect of the pandemic in the lives of the IDPs, it is our hope that this report will be of great contribution to guide our policymakers, providers, and implementers in planning for programs, interventions and other initiatives, and by understanding in a wider perspective the real situation of the IDPs. We hope that the findings of this study will be utilized in the design of relevant and appropriate interventions and encourage future inquiries that respond to the critical issues confronting Mindanao and its people.

References

Precompetitive Mood Among Futsal Players in Relation to Team Performance

Jay Carlo S. Bagayas

{jaycarlobagayas@gmail.com}

Mindanao State University-Iligan Institute of Technology, Iligan City, Philippines

Abstract. This study determined the relationship between Precompetitive Mood Among Futsal Players in Relation To Team Performance. The participants in the SPEAR 108 Futsal Tournament at Mindanao State University in Marawi City were the subjects of the study. The questionnaire consisted of three (3) main parts, namely: the demographic profile of the Futsal players such as age, gender, ethnicity. Second is the Profile Mood States (POMS) Questionnaire by McNair et al. (1971). The questionnaire contains a 65-item inventory designed to measure a person’s mood states on six subscales: anger, depression, fatigue, confusion, vigor, tension and Total Mood Disturbance. Team performance was determined based on their overall ranking. It reveals that the majority of the players who participated in the SPEAR 108 Futsal tournament attained high levels of precompetitive mood or were affected by the total mood disturbance. Furthermore, it is concluded that teams’ performance is not influenced by their precompetitive mood.

Keywords: Precompetitive Mood, Futsal, Team Performance.

1 Introduction

The curiosities of human beings led to the creation of things which brought forth importance and provided greater impact on our daily living. The human body thrives on movement, which brings pleasure and stimulates creativity. Physical exercise stimulates blood flow and tissue growth in muscle and bone. Exercise should be considered an important tool for the prevention and treatment of disease. However, the capacity for free, comfortable movement is a foundation of well-being that most healthy people take for granted. A person must have to be physically fit and mentally active for them to survive and cope up with nature. Sport can be regarded as the most universal aspect of popular culture which has captivated participants and consumers from all over the world. Football is the world’s most popular sport with approximately 4.1% of the world’s population playing the game professionally. In 1930 the sport “Futsal” was played for the first time in Uruguay. “Futsal” is another sport derived from Football which also had almost the same rules and played only by five players on the pitch or court. The popularity and commercialization of futsal has led to numerous research topics related to football. Within the medical and scientific world of futsal, there has been a focus on...
physical and performance related aspects. However, studies have shown that elite sportspersons have higher levels of depression and different moods that affect their performance. There are many sports that exist, before it started requiring only two participants, though to those with numerous participants, it could also be in teams or individuals. It is usually governed by a set of rules or costumes, to ensure fairness in competition, and to allow a clear declaration of winners. According to Coackley (1978), sport is an institutionalized competitive activity that involves vigorous physical exertion and mental skills by individuals whose participation is motivated by a combination of intrinsic and extrinsic satisfaction or reward earned through participation. It implies that many have engaged in sport because it is one of the means by which excellence or outstanding accomplishment can be sought and can even attain. In sports there are a lot of factors that affect the athlete’s performance. One of those is the mood state of an athlete. Mood state is believed to be a situation specific, somewhat transient. It is also said to be a psychological response to an environmental stimulus (Cox, 1941). Mood is a state of emotion. People typically speak of being in a good or bad mood. Clinical depression and bipolar disorder are considered mood disorders which indicate long term disturbances. Mood is also an internal state but sometimes it can be seen from posture and other behaviors. But this study focuses on precompetitive mood in Football in relation to athletic performance. Precompetitive mood is defined as an athlete’s mood immediately before a competitive event (Cox, 1941). Athletes are exposed to many types of stress during the athletic event itself (14,49) that are accompanied by psycho-physiological changes, if not controlled, may become negative factors reducing the athletes’ performance. Studying the pre-competitive mood of athletes in Football can be possible if this will be conducted in May during entitled “Precompetitive Mood Among Futsal Players In Relation To Team Performance”. The researcher tries to study the athlete’s mood before an event would happen to know whether mood affects an athlete’s performance or somehow alter the athlete’s way of playing. This study is important especially for the athletes. By knowing the results of an athlete’s behavior before their competitions, maybe viewers of the game would possibly guess the results of their game whether they lose or win for example.

2 Methods

This study uses the descriptive-correlational type of research that aims to determine the relationship between precompetitive mood of Futsal players as the independent variable and team performance as the dependent variable. Furthermore, it also aims to determine the possible effect of the moderating variables age, gender and years of playing experience towards main variables. This study was conducted among the Futsal players played in the SPEAR 108 Futsal Tournament at Mindanao State University-Main Campus, Marawi City. The research instrument questionnaire was used as a primary tool. The questionnaire consisted of three (3) main parts, namely: Part1- Demographic Profile of the respondents. This part determines the age, ethnicity, years of playing experience of the respondents. Part 2- Precompetitive mood as an independent variable of this study, POMS(Profile of Mood States) questionnaire will be used as developed by McNair, Lorr and Droppleman(1971). The questionnaire contains a 65-item inventory designed to measure a person’s mood states on six subscales: anger, depression, fatigue, confusion, vigor, and tension. The respondents should answer the questionnaire whether: Not at all (0), A little (1), Moderately (2), Quite a Lot (3),
and Extremely (4). Except for the two adjectives: “relaxed” and “efficient”, these are to be scored in reverse. Not at all (4), A little (3), Moderately (2), Quite a Lot (1), and Extremely (0). The questionnaire was valid for male and female age 20 to 59 years with a reliability of 0.779-0.926. Athletic performance was determined at the end of their games whether they won or lost. The POMS has 6 subscales: Tension, Depression, Anger, Fatigue, Confusion, and Vigor. For tension, its total score was determined by adding the scores for tense, shaky, On Edge, Panicky, Relaxed, uneasy, Restless, Nervous, and Anxious. The total score for Depression was by adding the scores for unhappy, sorry for things done, sad, blue, hopeless, unworthy, discouraged, lonely, miserable, gloomy, desperate, helpless, worthless, terrified and guilty. Total score for anger was determined by adding the scores for anger, peevish, grouchy, spiteful, annoyed, resentful, bitter, ready to fight, rebellious, deceived, furious and bad tempered. For fatigue, it was determined by adding the scores for worn out, listless, fatigue, exhausted, sluggish, weary and blushed. For confusion was by adding the scores for confused, unable to concentrate, muddled, bewildered, efficient, forgetful, and uncertain, about things and for the Vigor the total score was determined by adding the scores for lively, active, energetic, cheerful, alert, full of pep, carefree and vigorous. Part 3- Team performance was determined at the end of their games based on their specific places or rankings by asking the results of the team’s games in the Tournament manager. Pearson r was used to determine the significant relationship between the variables.

3 Results

The descriptive-correlational research design was employed in this study to determine the relationships between anger, confusion, depression, tension, fatigue, vigor, and precompetitive mood or total mood disturbance as the independent variable and team performance as the dependent variable. Furthermore, it determined the relationship between age, years of playing experience and ethnicity as moderating variables and anger, confusion, depression, tension, fatigue, vigor and precompetitive mood or total mood disturbance as the independent variable and team performance as the dependent variable, and the relationship between age, years of playing experience and ethnicity as moderating variables and team performance as the dependent variable.

Profile of the Respondents

This section intends to provide answers to the problem’s question no. 1 regarding the demographics of the respondents “What is the profile of the respondents in terms of the following: 1) Age, 2) Ethnicity 3) Years of playing experience,” The answers are presented in tabular form and arranged as stated in the statement of the problem.

Age

The data implies that the majority of the respondent’s ages 23-28 were actively participating in the Futsal tournament. The age bracket of 23-28 years old had the most number of frequencies in terms of participating in the tournament and revealed that athletes at that age still played actively despite the age gap with their fellow athletes.

Table 1. Frequency and Percentage Distribution of the Respondents According to Age
Age

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-16 years old</td>
<td>7</td>
<td>15.20</td>
</tr>
<tr>
<td>17-22 years old</td>
<td>9</td>
<td>19.60</td>
</tr>
<tr>
<td>23-28 years old</td>
<td>19</td>
<td>41.30</td>
</tr>
<tr>
<td>29-34 years old</td>
<td>8</td>
<td>17.40</td>
</tr>
<tr>
<td>35-41 years old</td>
<td>3</td>
<td>6.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Ethnicity

The results are based on the athlete’s ethnicity participating in the Futsal tournament and it means that there are no any ethnic discrimination in the game. In addition, most of the participating teams were integrated.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meranao</td>
<td>25</td>
<td>54.30</td>
</tr>
<tr>
<td>Non-Meranao</td>
<td>21</td>
<td>45.70</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Years of Playing Experience

The results indicate that a large number of athletes have played for 7-11 years which means that they are already equipped and experienced to play Futsal.

<table>
<thead>
<tr>
<th>Playing Experience (Years)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-6 Years</td>
<td>11</td>
<td>23.90</td>
</tr>
<tr>
<td>7-11 Years</td>
<td>18</td>
<td>39.10</td>
</tr>
<tr>
<td>12-16 Years</td>
<td>9</td>
<td>19.60</td>
</tr>
<tr>
<td>17-21 Years</td>
<td>6</td>
<td>13.00</td>
</tr>
<tr>
<td>22-26 Years</td>
<td>2</td>
<td>4.30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Subscales of Precompetitive Mood

Anger

Anger is an emotion characterized by antagonism toward someone or something a person feels has deliberately done him wrong. In addition, excessive anger can cause problems. In relation to the facts stated above, it showed that most of the athletes displayed a low level of anger and very low level of anger. In playing Football and Futsal teamwork and respect has been the center or aim of the game that leads the players to compete in a friendly way. The athletes needed to remain calm and emotionally controlled when playing Futsal especially because it is a physical game.
<table>
<thead>
<tr>
<th>Anger (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-8</td>
<td>Very Low</td>
<td>14</td>
<td>30.40</td>
</tr>
<tr>
<td>9-18</td>
<td>Low</td>
<td>22</td>
<td>47.80</td>
</tr>
<tr>
<td>19-28</td>
<td>Average</td>
<td>8</td>
<td>17.40</td>
</tr>
<tr>
<td>29-38</td>
<td>High</td>
<td>2</td>
<td>4.30</td>
</tr>
<tr>
<td>39-48</td>
<td>Very High</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Confusion

The results showed that most of the athletes experienced a low level of confusion. Implies that most athletes are not confused but rather were mentally focused prior to competition.

<table>
<thead>
<tr>
<th>Confusion (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>Very Low</td>
<td>9</td>
<td>19.60</td>
</tr>
<tr>
<td>5-10</td>
<td>Low</td>
<td>30</td>
<td>65.20</td>
</tr>
<tr>
<td>11-16</td>
<td>Average</td>
<td>5</td>
<td>10.90</td>
</tr>
<tr>
<td>17-22</td>
<td>High</td>
<td>2</td>
<td>4.30</td>
</tr>
<tr>
<td>23-28</td>
<td>Very High</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Fatigue

The results denote that the respondent’s level of fatigue ranges from very low to average. It implies that athletes in Futsal are able to sustain the physical and mental rigors when playing the tournament.

<table>
<thead>
<tr>
<th>Fatigue (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>Very Low</td>
<td>14</td>
<td>30.40</td>
</tr>
<tr>
<td>5-10</td>
<td>Low</td>
<td>24</td>
<td>52.20</td>
</tr>
<tr>
<td>11-16</td>
<td>Average</td>
<td>8</td>
<td>17.40</td>
</tr>
<tr>
<td>17-22</td>
<td>High</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>23-28</td>
<td>Very High</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Depression

Based on the displayed results, more than half of the total numbers of respondents have a very low to low levels of depression which means that respondents felt emotionally uplifted or hopeful that they might win in each game during the tournament and they remain optimistic to win.
Table 7. Frequency and Percentage Distribution of the Respondents According to Depression

<table>
<thead>
<tr>
<th>Depression (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>Very Low</td>
<td>29</td>
<td>63.00</td>
</tr>
<tr>
<td>11-22</td>
<td>Low</td>
<td>13</td>
<td>28.30</td>
</tr>
<tr>
<td>23-34</td>
<td>Average</td>
<td>3</td>
<td>6.50</td>
</tr>
<tr>
<td>35-47</td>
<td>High</td>
<td>1</td>
<td>2.20</td>
</tr>
<tr>
<td>48-60</td>
<td>Very High</td>
<td>0</td>
<td>00.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Tension

As presented in the table, most of the athletes experience a very low to average level of tension. Based on the results of the study, it is noticeable that most of the athletes are not tense before their games.

Table 8. Frequency and Percentage Distribution of the Respondents According to Tension

<table>
<thead>
<tr>
<th>Tension (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>Very Low</td>
<td>8</td>
<td>17.40</td>
</tr>
<tr>
<td>6-12</td>
<td>Low</td>
<td>27</td>
<td>58.70</td>
</tr>
<tr>
<td>13-20</td>
<td>Average</td>
<td>10</td>
<td>21.70</td>
</tr>
<tr>
<td>21-28</td>
<td>High</td>
<td>1</td>
<td>2.20</td>
</tr>
<tr>
<td>29-36</td>
<td>Very High</td>
<td>0</td>
<td>00.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Vigour

Based upon the results, half of the overall population displayed a high level of vigor and some got average and very high levels of vigor. It implies that most athletes are energetic and active physically and mentally before the start of the games.

Table 9. Frequency and Percentage Distribution of the Respondents According to Vigor

<table>
<thead>
<tr>
<th>Vigour (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>Very Low</td>
<td>0</td>
<td>00.00</td>
</tr>
<tr>
<td>5-11</td>
<td>Low</td>
<td>0</td>
<td>00.00</td>
</tr>
<tr>
<td>12-18</td>
<td>Average</td>
<td>17</td>
<td>37.00</td>
</tr>
<tr>
<td>19-25</td>
<td>High</td>
<td>23</td>
<td>50.00</td>
</tr>
<tr>
<td>26-32</td>
<td>Very High</td>
<td>6</td>
<td>13.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>46</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Total Mood Disturbance

According to the result in Table 4.G, majority (33 out 46) of the respondents or 59.5% attain a TMD score ranging between 14 – 59 which means high mood disturbance, 11 respondents or 23.90% whose total mood disturbance ranges between 69 – 106 which indicates an average total mood disturbance, only 1 respondent or 2.20% have very high level of total mood disturbance that ranges between -32 -13, only 1 respondent or 2.20% has a low level of total mood disturbance which ranges between 107 – 153 and none of the respondents have a very low level of total mood disturbance. Based on the data, a great majority of the respondents displayed a very high to average level of total mood disturbance, which ranged between -32 – 13, 14 – 59, 60 – 106, respectively. The result is supported by the scoring of the Profile of
Mood States questionnaire that a lower score is an indication of people with more stable mood profiles.

### Table 10. Frequency and Percentage Distribution of the Respondents According to TMD

<table>
<thead>
<tr>
<th>TMD (Score Range)</th>
<th>Qualitative Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>-32 - 13</td>
<td>Very High</td>
<td>1</td>
<td>2.20</td>
</tr>
<tr>
<td>14-59</td>
<td>High</td>
<td>33</td>
<td>71.70</td>
</tr>
<tr>
<td>60-106</td>
<td>Average</td>
<td>11</td>
<td>23.90</td>
</tr>
<tr>
<td>107-153</td>
<td>Low</td>
<td>1</td>
<td>2.20</td>
</tr>
<tr>
<td>154-200</td>
<td>Very Low</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

#### Team Performance

The performance of the athletes are determined based on their places in the tournament. As show in the Table 5, 8 or 17.40% of the respondents have been eliminated, 7 or 15.20% respondents ended as fifth runner up, 5 or 10.90% of the respondents were able to finished as fourth runner up and third runner up, 7 or 15.20% of the respondents were able to finished second runner up, first runner up and champion. The results implies that more than half of the total respondents were able to make it to the semi-finals until the championship. In addition, the frequency is well distributed.

### Table 11. Frequency & Percentage Distribution of the Respondents According to Team Performance

<table>
<thead>
<tr>
<th>Team Performance</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminated</td>
<td>8</td>
<td>17.40</td>
</tr>
<tr>
<td>Fifth Runner Up</td>
<td>7</td>
<td>15.20</td>
</tr>
<tr>
<td>Fourth Runner Up</td>
<td>5</td>
<td>10.90</td>
</tr>
<tr>
<td>Third Runner Up</td>
<td>5</td>
<td>10.90</td>
</tr>
<tr>
<td>Second Runner Up</td>
<td>7</td>
<td>15.20</td>
</tr>
<tr>
<td>First Runner Up</td>
<td>7</td>
<td>15.20</td>
</tr>
<tr>
<td>Champion</td>
<td>7</td>
<td>15.20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

#### Correlation Between Variables

Correlation between variables of age, ethnicity and years of experience; the independent variable of anger, confusion, depression, fatigue, tension, vigour, total mood disturbance (TMD) and team performance is presented in the following tables.

The correlation can be significant (*) when the p-value result is lesser than or equal to 0.05 and can also be very significant (**) when the p-value is lesser than or equal to 0.01 level of significance. However, if p-value is greater than 0.05, then the correlation is considered not significant (NS).

There are two possible relationship outcomes as follows: positive and negative. Positive relationship arises when the sign of the r-value is positive, while a negative relationship takes place if the r-value sign is negative.

**Moderating Variables of Age, Ethnicity, Playing Experience and Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD**
All the moderating variables have no significant relationship to the independent variables because all the resulting p-values exceeded the set 0.05 level of significance and accept H0 for these exclusive findings.

Table 12. Results of the Test Statistics Between Moderating Variables of Age, Ethnicity, Playing Experience and Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD

Age and the Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD

The relationship between age and variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD was investigated using the Pearson product-moment correlation coefficient. In the Table 6 there was a negligible correlation between age and the variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD as shown by the r-values and p-values (r = -0.109, p = 0.471; r = -0.048, p = 0.750; r = 0.226, p = 0.131; r = 0.223, p = 0.137; r = 0.005, p = 0.976; r = 0.042, p = 0.076; r = 0.076, p = 0.0614) suggesting no relationship between these variables.

Ethnicity and Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD

To test the differences between ethnicity and the different independent variables, Mann-Whitney U test was used. As seen in the results, the p-values is not less than or equal to 0.05, the results are not significant. Therefore, there is no statistically significant difference in the different mood states and the TMD of both the Meranao and Non-Meranao.

Playing Experience and Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD

The relationship between playing experience and variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD was investigated using the Pearson product-moment correlation coefficient. In the Table 6 there was a negligible correlation between age and the variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD as shown by the r-values and p-values (r = -0.130, p = 0.390; r = -0.034, p = 0.821; r = 0.139, p = 0.356; r = 0.138, p = 0.708; r = 0.057, p = 0.708; r = -0.033, p = 0.828; r = 0.044, p = 0.773) suggesting no relationship between these variables.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Age</th>
<th>Modifying Variables</th>
<th>Playing Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r-value</td>
<td>p-value</td>
<td>Z-value</td>
</tr>
<tr>
<td>Tension</td>
<td>-0.109</td>
<td>0.471</td>
<td>-0.044</td>
</tr>
<tr>
<td>Depression</td>
<td>-0.048</td>
<td>0.750</td>
<td>-0.166</td>
</tr>
<tr>
<td>Anger</td>
<td>0.226</td>
<td>0.131</td>
<td>-1.836</td>
</tr>
<tr>
<td>Fatigue</td>
<td>0.223</td>
<td>0.137</td>
<td>-1.562</td>
</tr>
<tr>
<td>Confusion</td>
<td>0.005</td>
<td>0.976</td>
<td>-0.200</td>
</tr>
<tr>
<td>Vigour</td>
<td>0.042</td>
<td>0.076</td>
<td>-1.109</td>
</tr>
<tr>
<td>TMD</td>
<td>0.076</td>
<td>0.0614</td>
<td>-0.838</td>
</tr>
</tbody>
</table>

Legend: If p-value is < 0.05, Significant If p-value is > 0.05, Not Significant
Moderating Variables of Age, Ethnicity, Playing Experience and Dependent Variable of Team Performance

In Table 13 it reveals the test results on the significant relationships between the moderating variables of age, and playing experience and dependent variable of Team performance. Significant difference between ethnicity and Team performance was also taken into consideration.

Table 14 Results of the Test Statistics Between Moderating Variables of Age, Ethnicity, Playing Experience and Dependent Variable of Team Performance

Age and Dependent Variable of Team Performance

The relationship between age and team performance was investigated using the Pearson product-moment correlation coefficient. Table 7 showed positive, moderate correlation between age and team performance as shown by the r-values and p-values ($r= 0.354$, $p= 0.016$; $r= 0.373$, $p= 0.011$), older respondents associated with high levels of Team performance.

Ethnicity and Dependent Variable of Team Performance

To test the differences between ethnicity and team performance, Mann-Whitney U test was used. As seen in the results, the z-value is -2.018 with a significance level of $p=0.044$. The p-value is less than 0.05, therefore the result is significant. There is a statistically significant difference in the team performance of the Meranao and Non-Meranao.

The cross-tabulation in Table 15 shows that more Non-Meranao players won in the said tournament.

<table>
<thead>
<tr>
<th>Moderating Variables</th>
<th>Dependent Variable</th>
<th>Team Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>r-value</td>
<td>z-value</td>
</tr>
<tr>
<td></td>
<td>0.354*</td>
<td>-2.018*</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>0.373*</td>
<td>0.044</td>
</tr>
</tbody>
</table>

Legend: If p-value is < 0.05, Significant If p-value is > 0.05, Not Significant
Playing Experience and Dependent Variables of Team Performance

The relationship between playing experience and team performance was investigated using the Pearson product-moment correlation coefficient. Table 7 showed positive, moderate correlation between playing experience and team performance as shown by the r-values and p-values (r= 0.373, p= 0.011). The results implies that more years of playing experience means more likely to win in the tournament.

As shown in Figure 1, players whose playing experience ranged between 22-26 years were 1st runner up and 2nd runner up. Majority of those players whose playing experience ranged between 12-16 years were in the top three spots or places.

![Figure 1. Bar Graph of Team Performance and Playing Experience](image)

Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD and Dependent Variable of Team Performance

The relationship between the variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, TMD and Team Performance was investigated using the Pearson product-moment correlation coefficient. In the Table 8 there was a negligible correlation between Team Performance and the variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD as shown by the r-values and p-values (r=-0.046, p=0.764;r=-0.005, p=0.976;r=0.027, p=0.859;r=-0.087, p=0.565;r=0.100, p=0.509; r=0.015, p=0.922; )suggesting no relationship between these variables.

Table 16 Results of the Test Statistics Between Independent Variables of Tension, Depression, Anger, Fatigue, Confusion, Vigour, and TMD, and Dependent Variable of Team Performance
Table 1: The relationship between Independent Variables and Dependent Variable (Team Performance) with r-values and p-values.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Team Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r-value</td>
</tr>
<tr>
<td>Tension</td>
<td>0.046</td>
</tr>
<tr>
<td>Depression</td>
<td>0.005</td>
</tr>
<tr>
<td>Anger</td>
<td>0.027</td>
</tr>
<tr>
<td>Fatigue</td>
<td>0.008</td>
</tr>
<tr>
<td>Confusion</td>
<td>-0.087</td>
</tr>
<tr>
<td>Vigour</td>
<td>0.100</td>
</tr>
<tr>
<td>TMD</td>
<td>-0.015</td>
</tr>
</tbody>
</table>

Legend: If p-value is < 0.05, Significant If p-value is > 0.05, Not Significant

4 Discussion

The purpose of this study was to assess teachers’ mental health during blended learning in Thailand from June to July 2022. The purpose of this study is to better understand how we can assist teachers during this time so they can continue to provide valuable educational services to our learners.

First, we expected to find the mental health assessment of teachers in Thailand to experience moderate levels of emotional symptoms (degree of well-being, level of anxiety, and level of depression). These findings are pioneer data that measure, analyze, and organize the emotional distress due to blended learning in Thailand.

In addition, this study proves that "blended learning is the integration of face-to-face and online learning" ranks first, with 196 out of 221 respondents saying they are familiar with it.

In sum, our findings suggest that we need to positively influence the teachers in terms of mental health so they can be effective educators by giving emotional support and balance, and life satisfaction. These can be protective factors for further research.

5 Conclusion

This research is the first of its kind in Thailand in terms of blended learning and mental health. First, our findings in the study sample may not be generalizable to the general population because of the distribution of data, which is through an online survey. The researcher also believes that the uneven sample size in terms of gender is another limitation of the study as it may affect the overall result of the study. In future research, the researcher would like to include mixed methods (qualitative and quantitative data) in order to compare and contrast the information about teachers’ mental health.

6 References

Leg Power in Relation to Rebounding Performance of Male Basketball Players

Joshua Jordan N. Ventic¹, Je-Ann D. Uy², Rebecca M. Alcuizar³

{joshventich@gmail.com¹, je-ann.uy@g.msuit.edu.ph², rebecca.alcuizar@g.msuit.edu.ph³}

Mindanao State University-Iligan Institute of Technology-College of Education¹, Mindanao State University-Iligan Institute of Technology-College of Education², Mindanao State University-Iligan Institute of Technology-College of Education³

Abstract. This study aimed to analyze the leg power related to the rebounding performance among selected male basketball players of zone 10 Barangay Bagong Silang Iligan City. The respondents of this study are 12 male players of the certain barangay. The finding showed that the majority of the players are aging 19 years old and has been playing basketball for 3-4 years. With regards to performance, the players with high leg power and high years in playing basketball have the greatest number of successful rebounds. It was found out that the correlation between their leg power and rebounding performance are not significant; also, the moderating variables interplayed between the dependent and independent variables. Based on the findings and conclusions, the following recommendations are derived: it is recommended that the future researches be done with more variables that will be considered as the determinants of basketball players in general. Finally, more depth studies are recommended on the influence of leg power in relation to rebounding performance on other male basketball players.

Keywords: Academic Performance, COVID-19 Perceived Stress, Undergraduate Students

1 Introduction

The majority of people believed that the human body was an unchangeable aspect of nature. They had a biological view of the body as opposed to a social and cultural one. But many experts and scientists today agree that unless we examine the body from a social and cultural viewpoint, we can never truly comprehend it. For instance, medical historians have lately demonstrated how many cultures and periods of history have described and classified the body and its various components in various ways. Additionally, they have demonstrated its significance by demonstrating how it influences social theories, government policies, medical practice, and everyday experiences of individuals. As for sports, 9 out of 10 males play basketball, women also practice and learn how to play. They claim that since they cannot see it as just a hobby, but it serves as their passion, activity and daily exercise, and even to waste their time on nothing else.
Basketball is a physical sport that calls for both strength and technique. Athletes of different ages and ability levels play. It can be practiced as a pick-up game or as an organized sport [1]. Dr. James Naismith created basketball in 1891 as an entertaining indoor game to be played in the winter. A leather soccer ball was tossed into two fruit baskets to begin the game. At Smith College, males were given permission to play sports, and the first women’s sports regulations were put into place in 1903. In 1936, basketball made its debut as an Olympic sport. The jump shot has been one of the most important developments in basketball over the years. All recordings produced before 1950 were made with one foot on the ground. Five players participate in a traditional basketball game. The positions are center, forward, small forward, guard and guard. Athletes play! both attack and defense. Depending on a player’s sport, they may play more than one position. It is common to see recreational games of one-on-one, two-on-two, or five-on-five in either half format [2].

The overall size of a high school basketball court is different than that of the collegiate and professional levels. High school courts are 50 feet by 84 feet, while college and professional courts are 50 feet by 94 feet. Usually rectangular in shape, the back wall is 72 inches wide by 48 inches high. A basketball hoop has a diameter of 18 inches and is suspended 10 feet in the air. Men's and women's balls are distinct in terms of weight and size. The ball for males has a diameter of 29 to 30 inches, weighs 20 to 22 ounces, and is inflated with 7 to 9 pounds of air. The ball is inflated with 6 to 8 pounds of air, has a diameter of 27 to 29 inches, and weighs 18 to 20 ounces for women. Children under the age of 12 may have lesser ball and hoop heights. The game may be played inside or outside. Typically, a leather composite ball is usually used indoors, and a rubber-based ball is used outdoors. The court construction can vary from suspended wood floors indoors to concrete and asphalt surfaces outdoors. The sport of basketball exposes the athlete to injury as a result of the running jumping, cutting, pivoting and explosive movements that occur during acceleration and deceleration [3].

The game begins with jump ball, where two players jump vertically to tip a tossed basketball toward a team for a possession, players on offense need to dribble, handle, pass and shoot the ball while maneuvering themselves for an offensive rebound. Players on defense need to be quick and powerful in order to jump and block a shot or elevate for a rebound and guard their opponents. Of the basic basketball skills, the rebound is one of the most important. Positioning, Anticipation and Sportsmanship Are Components of the Shot Once the player is in position and anticipates the direction of the ball for the shot, a vertical jump must be made. It requires balance, strength, power and reach. If possible, jumping should be done with two feet and two hands to increase control. Basketball is one of the sports played regularly by male players in Zone 10 of Barangay Bagong Silang, Iligan City. With this study, the researchers will try to determine the strength of the foot in relation to the performance of the retirement in selected basketball players from the listed position.

Statement of the Problem

This study sought to primarily find out the relationship of leg power to the rebounding performance of male basketball players. Specifically, this study is aiming to answer the following questions

1. What is the profile of the respondents in terms of
2. Methods

This chapter presents the following sections: research design, samples and sampling procedures, research instruments and data collection method.

2.1 Research Design

The descriptive co-relational method was used in this study [4]. The descriptive method aimed to describe the profile of the respondents such as the height and weight while the co-relational method derived into the extent of the leg power in relation to rebounding performance and used the person product moment coefficient of correlation and in testing the significant relationship between and among variables.

2.2 Research Instruments

The researchers of this study used the Sergeant Jump Test and the self-made Rebound test among selected basketball players in Zone 10 Brgy. Bagong Silang Iligan City as a main instrument to get their leg power in relation to rebounding performance. Another is an information sheet which was designed to gather necessary information from the players to determine their height and weight.

2.3 Sampling Procedures

The respondents of this study were male basketball players of Zone 10 Barangay Bagong Silang Iligan City. There are 2 teams and 6 players in each team. All are 12 players who are actually taken as respondents out of the size of 12 respondents.

2.4 Data Collection Method

In gathering the data, the researchers approached the chosen basketball players of Zone 10, Barangay Bagong Silang to ask permission. After the approval, the researchers asked the respondents regarding the time and day they were to conduct the same to have the leg power skill test. During the time given by the respondents the researchers conducted the leg power skill test. Prior the test, it was emphasized that the respondents should carefully fill out the information sheet that was given to them. The information sheet contained all variables needed in the study.

2.5 Statistical Tools Used

After the information sheets were retrieved and collected, the researcher tabulated and analyzed the data using the following formula: Frequency Count and Percentage. This statistics was used in summarizing the data and the profile of the respondents Percentage Formul.
Percentage (%) = \( \frac{\text{---}}{N} \times 100 \)

3 Results and Discussion

This chapter presents, analyzes and interprets the data drawn from the conduct of the study. This is done in the manner the problems are presented.

3.1 Profile of the Respondent

Table 1. Frequency and Percentage Distribution of the Respondent's Age.

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 years old</td>
<td>2</td>
<td>16.7%</td>
</tr>
<tr>
<td>17 years old</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>18 years old</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>19 years old</td>
<td>4</td>
<td>33.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table I displays the frequency and percentage distribution of the respondent's age. As displayed on the table, there are 2 or 16.7% of the respondents having an age of 16 years, 3 or 25% have an age of 17 years, 3 or 25% have an age of 18 years, and 4 or 33.3% have an age of 19 years. As we observed on the data, most of the respondents are aging 19 years old.

Table 2. Frequency and Percentage Distribution of Respondent's Weight

<table>
<thead>
<tr>
<th>Weight in Kilograms</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>49 to 52 Kilograms</td>
<td>5</td>
<td>41.7%</td>
</tr>
<tr>
<td>53 to 56 Kilograms</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>57 to 60 Kilograms</td>
<td>4</td>
<td>33.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 2 displays the frequency and percentage distribution of the respondent's weight. Table 2 shows that there are 5 or 41.7% of the respondents have weights within 49 to 52 Kilograms, 3 or 25% weighs within 53 to 56 Kilograms, and 4 or 33.7% that weighs within 57 to 60 Kilograms. As being presented in the table, out of 12 respondents, 5 of them weigh between 49 to 52 kilograms.

Table 3. Frequency and Percentage Distribution of the Respondent's Height
Table 3 displays the frequency and percentage distribution of the respondent's height. As shown in Table 3, 8 or 66.7% of the respondents stand within 59 to 62 inches, 3 or 25% stand within 63 to 66 inches, and only 1 or 8.3% of the respondents have a height within 67 to 70 inches. 8 out of 12 respondents measure a height of 59 to 62 inches as being presented on the table.

Table 4 displays the frequency and percentage distribution of the respondent's numbers of years in playing basketball. As presented on the table, there are 9 or 75% of the respondents who have played basketball within 3 to 4 years, and 3 or 25% have played basketball within 9 to 15 years. There are 9 out of 12 respondents that have 3 to 4 years experience in playing basketball as presented in the table.

Table 5 displays the frequency and percentage distribution of the respondent's leg power. As shown on the table, there are 2 or 16.7% of the respondents having a leg power of 17 to 18 inches, 6 or 50% having 19 to 20 inches, 2 or 16.7% having 21 to 22 inches, and 2 or 16.7% having 23 to 24 inches. This implies that most of the respondents have a leg power of 19 to 20 inches.

Table 6 displays the frequency and percentage distribution of respondent's rebounding performance. As shown on the table, 8 or 66.7% of the respondents have a rebounding performance of 4 to 5.
Table 6 displays the frequency and percentage distribution of the respondent's Rebounding Performance. As displayed in the table, there are 8 or 66.7% of the respondents that have a rebounding performance of within 4 to 5, 2 or 16.7% have a rebounding performance within 6 to 7, and 2 or 16.7% have a rebounding performance of 8 to 9. This implies that most of the respondents have a rebounding performance of 4 to 5.

Table 7 displays the correlation between the respondent's leg power and rebounding performance of the respondents. As shown on the table, the correlation of the leg power and the rebounding performance of the respondents is 0.2444. Since the correlation is positive, this implies that as leg power increases, the rebounding performance also increases. But since the probability (0.444) is not less than the level of significance which is 0.05, the correlation is not significant.

Table 8 displays the correlation between the respondent's leg power and rebounding performance. As displayed on Table 8, the respondent's rebounding performance and height are negatively correlated. This implies that as the height of the respondent increases, the rebounding performance decreases. These findings are in consonance with Basketball.com. According to the site interestingly, when we look at height ordering (761075), the apparent difference between offensive and defensive rebounding (73106N) nearly totally vanishes. I have some early ideas, but I'd have to take a look to truly figure out what's going on there. My hypothesis is that undersized big men who capture more defensive rebounds than the typical player simply because they are playing a position that places them closer to the basket on defense may explain why ordering correlates better to DRB% than height. In other words, a player who must spend the most of his minutes guarding the team's second-tallest player on the court (based on a height ranking of 4), will be guarding opposing close to the hoop, and thus be in a better position for defensive bounds than the typical 6'8" player who is guarding SFs on the perimeter (and who
has a height ordering of 37" Since the probability (0.661) is greater than the level of chance which is 0.05, the correlation is not significant. The respondents' rebounding performance and weight are negatively correlated. This is that the weight of the respondents increases the rebounding performance decreases or as the weight of the respondents decreases the rebounding performance increases. Since the correlation coefficient is .04824, the correlation is moderate. This means that there are other factors that affect the respondents' rebounding performance. The probability (0.12) is greater than 0.05, thus the correlation is not significant.

There is a positive correlation between the respondents' rebounding performance and the number of years in playing basketball. This implies that as the number of years in basketball increases the rebounding performance also increases. However, since the correlation coefficient is 0.2678, the correlation is weak. This implies that there are other factors affecting the rebounding performance of the respondents. The probability is greater than 0.05, the correlation is not significant.

4 Conclusions

Based on the findings of the study, majority of the respondents are 19 years old, had 49 to 52 kilograms in weight, 59 to 62 inches in height, and 3 to 4 years in playing basketball. As to their performance, the majority of the respondents had 19 to 20 inches in leg power, and 4 to 5 rebounds out of 10 on their rebounding performance. The rebounding performance of the respondents was not affected by their leg power. However, it is being projected on the tables that those who have higher leg powers have most rebound scores than those which have low leg power. The rebounding performance is not affected by the moderating variables such as height, weight, and numbers of years in playing. However, the tables imply that as the number of years in playing basketball increases, the rebounding performance also increases.

References

Scandinavian Journal of Sports Science 5. 20-28
Science & Sports 18, 161-163
Publishing Company, 1996
Boundless Classes And Absent Bodies: Teaching Physical Education Online

Lydie D. Paderanga, Ph.D¹, Monera Salic-Hairulla, Ph.D², Rebecca M. Alcuizar, Ph.D³

{ lydie.paderanga@g.msuit.edu.ph¹, monera.salic@g.msuit.edu.ph², rebecca.alcuizar@g.msuit.edu.ph³ }

Christ the King College de Maranding, Lanao del Norte Philippines¹, MSU-Iligan Institute of Technology, Iligan City, Philippines², MSU-Iligan Institute of Technology, Iligan City, Philippines³

Abstract. This qualitative study explored the PE teachers’ experiences in teaching online during the outbreak of the COVID-19 pandemic. Specifically, it aimed to investigate the teaching experiences and perspectives of the PE teachers and the educational theories that guided them on online teaching. Another purpose of the study was to understand the insights of the PE teachers with regards to their instructional practices of online teaching. PE college teachers from the Mindanao State University-Iligan Institute of Technology (MSU-IIT) served as participants of the study. In order to describe PE teachers’ instructional practices and perspectives regarding online PE teaching, the following research questions guided the study: (1) What are the daily instructional practices of participating online PE teachers; (2) What educational theories guided these teachers’ online teaching of PE? and (3) What are the perspectives and reflections of the PE teachers on online learning? Data collection methods for this case study included 1) interviews with online PE teachers, 2) virtual classroom observations and field notes, and 3) e-mail communications between the researcher and the participants. Results showed that teachers provided demonstration classes and allowed students to be creative in submitting their outputs. They practiced differentiated instruction, challenged the creativity of students and developed innovative ways of teaching PE online.

Keywords: Boundless, Teaching Physical Education, Online.

1 Introduction

A quality physical education program provides students with a planned, sequential, outcome-based curricula and instruction designed to develop the knowledge, skills and confidence to enjoy a lifetime of healthful physical activity. But school closures prompted by the COVID-19 pandemic reduced opportunities for youth to be physically active which has created a new educational challenge for physical educators to determine the most effective instructional strategies to teach their content using online modalities. This challenge was particularly difficult to those in the field of physical education, as a large proportion of the curriculum centers on socialization, shared games and activities, and group work (Graham et al., 2020). PE is physical
by nature, and remote instruction seems incompatible. As Varea & Gonzalez-Calvo (2020) indicated, Physical educators are confronted with the task of teaching a predominantly movement-based curriculum in a distance learning format, which runs counter to the traditionally defined identity of physical education.

Several studies were conducted on online teaching. Researchers have studied the effectiveness of and student satisfaction in online course at the secondary level (Sidman, Fiala, & D’Abundo, 2011). Other researchers have attempted to provide an overview of online PE-related fitness courses and have suggestions for the creation, implementation and assessment of online health and fitness courses within a secondary or post-secondary physical education curriculum, but they have not addressed physical education teaching practices for optimal online instruction (Williams, M., 2013). Other studies (Patrick & Powell, 2009) have shown that students in online classes have performed as well or better than students in traditional classrooms. However, the study of online courses should not only be in terms of effectiveness, but should include to examine the instructional practices used to attain optimal learning outcomes.

Given the lack of research regarding teaching PE online, this study explored the pedagogical practices of PE teachers and the guiding philosophies that led them on teaching online, and the insights/reflectons of the PE teachers with regards to their instructional practices on online teaching. In the current educational climate which includes advanced technology options and the threat to health due to the Corona Virus, it has become necessary to identify best practices in online pedagogy for content delivery and interaction with students. There is an overall lack of research regarding how best to design teaching PE online, the guiding teaching theories that guided the teachers, and their perspectives or reflections on teaching PE online.

Online college PE is a significant addition to the physical education field in the 21st century, and more exploratory, descriptive research is needed to provide information about online teaching within the PE field (Daum & Buschner, 2012). This study contributes to the literature about teaching tertiary physical education and sets the stage for further research in teaching online physical education. It assists current and future online PE teachers, as well as teacher educators, in understanding what teachers think about of online teaching. Ultimately, understanding how teachers engage in online teaching behaviors at this emergency remote learning time can serve as a reference for the future promotion of e-learning.

A close look at the daily instructional practices and the perspectives of PE teachers about virtual PE may be helpful in providing insight about how an online PE class works, and how an online PE teacher can facilitate student learning virtually this time of the pandemic. With the current emphases on social distancing without sacrificing students’ acquisition of knowledge, skills, and attitudes specifically in PE, the teacher is considered a key facilitator for online courses, (Williams, M,2013). Online teachers must have technological skills in addition to the traditional teaching skills in order to help students move through the content virtually.

This research also informs college physical education teacher education faculty about the instructional practices necessary for successful online PE teaching. Teacher educators in physical education can benefit from knowing more about effective online PE teaching at the tertiary level for successful online PE instruction that produces positive student learning outcomes.
Finally, this study will help address the current shortage of research in this area and provide value in teaching PE online. It will contribute to the body of knowledge on teaching tertiary PE online and sets the stage for further research in teaching online physical education by identifying teachers’ teaching practices, guiding philosophy and reflections on teaching online.

This study sought to describe online tertiary physical education instruction through the lived experiences of eight (8) teachers who were teaching online. This was an eight-week qualitative case study that included data from interviews with each of the eight online PE teachers, virtual classroom observations, and field notes. The purpose of this qualitative case study was to describe selected PE teachers’ experiences that included their teaching strategies and the choice of educational theories that guided them regarding online PE teaching, and to probe into the insights of the participants in teaching PE online.

2 Data Collection and Participants

This qualitative research design mainly investigated teachers who had conducted online classes because of the pandemic. Purposive sampling was adopted. Only teachers teaching PE were considered in investigating teaching experiences, guiding philosophy and reflections on online teaching. The participants were teaching tertiary PE at MSU-Iligan Institute of Technology. An orientation on the study was done prior to the gathering of data which also included asking for their consent to participate in the study.

Data collection methods for this case study included 1) interviews with online PE teachers, 2) virtual classroom observations and field notes, and 3) e-mail communications between the researcher and the participants. The interview which approximately lasted for forty minutes were semi-structured to provide a framework and to get specific answers to the research questions. Questions were open-ended to provide room for flexibility (Kvale & Brinkmann, 2009). Within a semi-structured format, the questions did not have to be asked exactly in this order. Probing questions and statements followed participants’ responses when necessary for clarification and expansion. The interviews took place either in-person or through the SMS or messenger in the participant’s work environment. A group chat was created among the respondents, researchers, and research aides for easy communication.

Any question that may not have been asked during the interview sessions due to time constraints were addressed through the more informal setting of email or the group chat or even through the use of texts or SMS. Each interview was transcribed immediately upon completion for fresh recall of the participants’ answers as transcription was done manually. Interviews were recorded upon the consent of the participant for checking the accuracy of the transcription. This transcription was then sent to the participant for verification and also to solicit their agreement on what was written. Participants were given the freedom to edit the transcription.

In addition to interviews, the participants’ Online Classroom was visited. This particular phase of data-gathering noted the course design, course information, the graphics, the various
assignments, the video supplemental materials, quizzes and feedbacks from the teacher and students..

3. Results and Discussions

Content and thematic analyses were used to interpret the results of the study. Common themes were identified as they emerged. These included: (1) an overview of online PE teaching and transition; (2) activities/strategies in teaching PE online; and (3) teachers’ reflections. Table 4.1. Demographic Data of Study Participants.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Sex</th>
<th>Highest Attainment</th>
<th>Educational</th>
<th>Specialization</th>
<th>Employment Status</th>
<th>Years of Teaching PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Becky</td>
<td>64 yrs.</td>
<td>F</td>
<td>Doctor of Education in Educational Management</td>
<td>Fitness</td>
<td>Dance</td>
<td>Permanent</td>
<td>37 yrs.</td>
</tr>
<tr>
<td>Cindy</td>
<td>44 yrs.</td>
<td>F</td>
<td>Doctor of Education major in Physical Education</td>
<td>Research</td>
<td>Fitness</td>
<td>Temporary</td>
<td></td>
</tr>
<tr>
<td>Larry</td>
<td>35 yrs.</td>
<td>M</td>
<td>Master of Science in Physical Education</td>
<td>Fitness</td>
<td></td>
<td>Permanent</td>
<td></td>
</tr>
<tr>
<td>Katrina</td>
<td>21 yrs.</td>
<td>F</td>
<td>Bachelor of Education major in MAPEH</td>
<td>Dance</td>
<td>Sports</td>
<td>Contractual</td>
<td>1 year</td>
</tr>
<tr>
<td>Jeff</td>
<td>26 yrs.</td>
<td>M</td>
<td>Master of Science in Physical Education</td>
<td>Dance</td>
<td>Sports</td>
<td>Lecturer</td>
<td>6 years</td>
</tr>
<tr>
<td>Junjun</td>
<td>29 yrs.</td>
<td>M</td>
<td>Master of Science in Physical Education</td>
<td>Dance</td>
<td>Sports</td>
<td>Lecturer</td>
<td>3 years</td>
</tr>
<tr>
<td>Kenneth</td>
<td>25 yrs.</td>
<td>K</td>
<td>Master of Science in Physical Education</td>
<td>Dance</td>
<td>Sports</td>
<td>Contractual</td>
<td>3 years</td>
</tr>
<tr>
<td>Lyn</td>
<td>24 yrs.</td>
<td>F</td>
<td>Master of Science in Physical Education</td>
<td>Dance</td>
<td>Sports</td>
<td>Lecturer</td>
<td>4 years</td>
</tr>
</tbody>
</table>

Overview of teaching PE

Overview of teaching PE described the pathways to teaching PE. Specifically, it described the circumstances that lead the participants to choose teaching as a career. It also delved into their teaching philosophy and how they transitioned from face-to-face classes to online classes.
Pathways to teaching PE. Analysis of the data revealed that these teachers had similar pathways to teaching PE. Almost all of them considered teaching PE because of their passion in dancing, cheerleading, and sports. Majority of them joined competitions in skills associated with PE in their earlier years of schooling. It is understood that knowledge and skills in PE should be a primary consideration in teaching PE. Unlike other disciplines, PE is more of skills and concepts. Other disciplines would only involve concepts. For one to teach PE effectively he should master the skills for it has to be demonstrated.

Teaching Philosophy. Majority of the participants anchored their teaching on Gardner’s Multiple Intelligences. This belief led them to individualize instruction, not to be judgmental but aim to develop the individual gifts of students. It is important to note though that the participants were guided by other beliefs aside from Gardner’s theory. For Example, Katrina believed that as a PE teacher, she should promote health in all aspects not only physical. She believed in inclusive education and that no student of hers should be left behind. Teaching in a multicultural classroom, she respected her students’ cultural diversities such as muslim students are given different activities that would not go against their cultural practices. As Katrina shared, “I not only differentiate instruction, but I differentiate what I ask my students to produce in order to demonstrate understanding. This is critical to challenging students and keeping them engaged.”

Other teachers like Larry thought that learning was mostly based on experience. In his early years of teaching, he was an idealist. He demanded perfection from his students and failed to understand why students would not understand concepts which were easy for him. Because he was skillful in PE skills like dancing and cheerleading which he learned through experience, he thought that learning was mostly based on experience. But after attending trainings and workshops in education, he learned more strategies such as breaking down skills for easy understanding. He understood that basic skills can’t be learned overnight leading him to be more patient with his students.

Like Larry, Jeff believed in experiential learning stating that experience is the best teacher. He learned this the hard way in his first year of teaching when he was then idealistic, always aiming for perfection among his students. Unlike Leo who thought that experience is all you need to learn, having experienced PE skills in high school, Jeff’s standard for perfection was more based on the school he came from. When his evaluation came, he was so devastated to know that his students had no good words for him. He reflected on the evaluation and decided to change. This grim realization taught him to be a better teacher. He became considerate to his students.

Aside from believing in multiple intelligences, Kenneth was essentially an existentialist. He was student-centered and allowed his students to make their own choices especially in their outputs and presentations.

In addition to multiple intelligences, Lyn believed that teaching should be holistic. She looked at her students like empty bottles that needed to be filled with teachers’ help and assistance. She also believed in the practical side of life making her a pragmatist. For her, knowledge and skill in PE should be used for practical applications. Lyn firmly believed that teaching is unconditional and inclusive therefore everyone should be given the opportunity to develop holistically.
Consistent with his belief in multiple intelligences, Junjun believed that every student is gifted differently not necessarily mental. Guided by this philosophy, he did not judge his students but considered it his responsibility to guide students to develop their individual gifts.

Cindy on the other hand believed in Bandura’s Social Learning Theory that students learn by observation and imitation. Therefore, a teacher should be a good model, as students learn by modelling from the teacher. She should have mastery of skills for students to follow. This also led her to believe in mastery learning. She further believed that learning PE should be fun and that to be an effective PE teacher, one should have a sense of humor and should make PE fun for learning. PE teachers’ theories and philosophies centered on Gardner’s Multiple Intelligences and Bandura’s Social Learning Theories with a sprinkling of existentialism and idealism. This study showed that an understanding of educational theories can assist teachers in the design and implementation of an effective online learning environment.

Transitioning to online teaching. Except for one, all of the participants admitted that transitioning to teaching PE online was never a problem at all. They easily adopted to online teaching because their school created its own center for integrating ICT in teaching called MSU-IIT On Line Environment (MOLE) with moodle as its platform. Even their college has long embraced ICT integration through the Intel Teach Program. The teachers considered LMS which was developed by the university long before the pandemic as a supplement rather than replacing all their teaching activities. Such preparations adequately prepared the teachers for online teaching when the pandemic came. This is in contrast to the study of Turnbull et al. (2021) who claimed that the sudden transition to remote teaching and learning using various internet-based resources created lots of challenges that students and teachers had to deal with.

Aside from these initial preparations, their school, specifically their own department conducted a Webinar on ICT Building PE Teachers’ Capacity to Teach Online. In addition, their school had strong administrative support to online teaching by providing teachers with laptops individually. In the early part of the pandemic, when the laptops were not yet issued, teachers were given internet allowance amounting to one thousand pesos each. However, one participant confessed that he struggled during the early part of online implementation because PE is a practical subject that is mostly concerned with skills development not theories. As he was then at the stage of finishing his thesis, he read online research journals which helped him cope with the challenge of online teaching. Another participant shared that his first teaching assignment in a computer school taught him additional technical skills in integrating PE to online teaching.

The participants did not consider it much problem in transitioning from in person teaching to teaching PE online. One main reason for the smooth transition was the previous trainings they received in their school even before the pandemic came.

Class activities/strategies

Four areas of concern emerged from the interviews and supported by visits in the virtual classrooms regarding the class activities/strategies employed by teachers in their online classes. These included their typical day, student support, technical skills and content needed to successfully teach PE online, and their practices in online teaching.

Typical day. A close look at the daily instructional practices and the perspectives online PE teachers hold about virtual PE may be helpful in providing insight about how an online PE class works, and how an online PE teacher can facilitate student learning virtually. Analysis of the
participants’ typical day yielded six (6) common practices. This included (a) waking up early; (b) making presentable appearance to the students; (c) creating conducive conditions for the virtual classes; (d) doing physical fitness activities; (e) checking email, answering messages, checking facebook and replying to students’ queries; and (f) checking student outputs.

For a more picturesque description, let us consider Larry’s typical day. Larry wakes up early to make preparations for his online classes such as installing a camera and looking for a spot that would provide good lighting. In-between classes, he would check emails, answer messages, check face book and replied to students’ queries. This took so much of his time so he devised a way of taking note of frequently asked question to be included in his next virtual meeting.

A typical day for Cindy always started with excitement in meeting her students. As an early riser, she saw to it that everything is in order before class started. This included making herself presentable to the students just like when classes were face to face. After checking that her materials are ready for discussion and demonstration, she saw to it that conducive conditions such as good lighting and clear audio are in place.

Jeff was very particular in creating conducive conditions for his classes. He would prepare and check his materials the night before. He would prepare in advance the questions to be asked including review questions. He saw to it that pre-assessment activities are in place. Part of a conducive learning condition would be a presentable appearance against a plain background and enough space for demonstration purposes especially showing to students how to execute specific steps correctly. He would use led lights for proper lighting.

Checking email, answering social media messages, checking facebook and replying to students’ queries also constitute part of all participants’ typical day. Larry for example would check emails, answer messages, check face book and replied to students’ queries in between classes. As for the case with Kenneth, he would entertain questions until 10:00 at night and made announcements through a group chat created for the class.

A big chunk of the participants’ typical day was spent in checking students’ submission of outputs and assignments. Checking was done either in-between classes or after classes. In consideration of students who might find technical problems in submitting their outputs, Jeff for example would wait to check student outputs two days after the deadline. Some teachers observed weekly post-advisory to those who failed to submit their outputs. Other participants would use the group chat to remind students who failed to submit their requirements.

Student support. PE teachers extended varied support to their students in this time of pandemic. Listening to the interviews, the researcher identified four areas of teacher support. This included communication, consideration, concern, and development of students’ potential. An important student support communication is communication between students and teachers and among students themselves.

One teacher noted that communications between her and her students improved because of her increased use of technologies for communications, observing, “When kids can send you an e-mail or text message and don’t have to say it in the room and perhaps be embarrassed, it is easier for them to say what they want to say. It has improved the way they communicate with me.”

Aside from providing varied forms of communication, some teachers would entertain queries from students until 10 o’clock at night but majority of the PE teachers observed office hours. Communication was not limited to student queries but also included reminders from teachers
for non-submission of outputs or missing the deadlines. As Howland & Moore (2002) pointed out the level and quality of communication between students and between students and instructor was a critical issue. Petrides (2002) revealed the immediacy in responses affected learners’ experiences.

Another form of student support was giving consideration to students. This came in the form of accepting late submission, giving extra time to prepare for written exams, giving more time for slow learners, understanding students who had no gadgets therefore submitting poor quality outputs as long as the substance was there. As one teacher said, I became more flexible and understanding about assignment deadlines and requirements: “I am more sensitive to my students’ needs concerning lack of gadgets and poor connectivity which may cause delays in submission of outputs.”

PE teachers also gave emotional support not only in the instructional aspect. This is especially true this time of pandemic when mental health was also an issue as a result of isolation and other problems encountered by students. Vonderwell (2003) and Song et al. (2004) also reported the lack of a sense of community in students’ online learning experiences. For example, Jeff encouraged his students to continue schooling despite the challenges they encountered this time of pandemic such as no appropriate gadgets, lack of internet connectivity resorting to the use of the peso net. He had developed a new empathy with students saying, “I have been able to see learning more from the student’s viewpoint.”

Finally, PE teachers support students by helping them develop their potentials to the fullest. Teachers like Junjun organized student activities to support student learning. As an adviser of the PE student organization, he conducted weekly meetings, encouraged students to succeed academically, and conducted virtual meetings to unwind. Cindy encouraged her talented students in dancing to join cultural troupes to further hone their talents.

Practices and strategies. It was found out that PE teachers utilized a variety of student online activities depending on the areas taught. For example, teaching dance usually included demonstration by the teacher through recorded video prepared by teachers themselves. This shows that college teachers were more likely to make course videos for students to watch (Yi-Wu, 2021)

In the case of Cindy for example, after her demonstration, students danced with her. When students mastered the basic steps, then they were required to choreograph their own dance at home. They partnered either with a friend or family member which allowed students not only to be creative, but also to bond with the family. Cindy adopted a simple practice to ensure students acquire creativity by allowing students to choreograph their dance to be executed. She also introduced Tiktok Dance Challenge with a Twist. This activity further developed students’ creative skills as they have to dance tiktok by incorporating a story or task such as putting one’s shoes or using props to describe the setting while dancing. As Cindy described it, “This activity was both enjoyable to the students and the teacher. To the teacher, it was an affirmation that students learned from her and was therefore gratifying. To the students it was a manifestation that learning PE and dancing for that matter is fun.”

In the case of Jeff, and Larry, they gave demonstration teaching using recorded videos as some students had problems with connectivity. After which, students were required students to choreograph and execute a dance collaboratively in groups that would require editing. Working
collaboratively with classmates is a good practice this pandemic to reduce the feeling of isolation caused by online classes as Vonderwell (2003) and Song et al. (2004) reported the lack of a sense of community in students’ online learning experiences. As Larry admitted, “I want something where they can use pretty much anything they can use, I want them to be creative and just, like, get enthusiastic about it and erase the feeling of isolation even though the task involved working virtually with the group.”

Other teachers would showcase excellent outputs to serve as sample and to inspire other students. It was also a way of recognizing quality outputs. Another activity is the use of tiktok with a twist introduced by Cindy where students used tiktok but incorporate an activity like putting on one’s shoes while dancing or used props that would represent the setting. Aside from using apps in dancing, PE teachers also used innovative techniques. For example, Larry created a technique in teaching the basic dance steps through the use of a square board filled with numbers representing footsteps to guide in executing the basic dance steps.

Teaching sports online however is a different ballgame since games cannot be orchestrated like dancing. In sports, assessing student learning is quite difficult. For example, Lyn was limited in requiring students to submit videos on warm-up exercises. As for Kenneth, he devised a way to integrate team sports to E-sports which students played online. This innovation was applied in interclass tournament where he divided the class into two teams. This was shown in facebook where students had individual assignments either as players, team leader, director, scorer, watcher or announcer. Students have to do the planning and implementation of the tournament.

In conducting lectures such as the History of Sports Lyn for example made sure that the lesson was relevant to students’ lives for them to relate with the lesson. PE teachers like Jeff also used other applications using apps such as Kahoot which is a quiz game. During discussion, he used other apps such as padlet and forum. These two apps are similar enabling students to answer simultaneously teacher’s questions. Padlet differs from forum in the sense that students may opt to be anonymous whereas in Forum students’ names will always appear when they answered. Other teachers used reflections that led them to discover the strengths and weaknesses of their students. In the case of Katrina she asked her students to write an essay titled “Who Am I?” which served as a springboard for discussion on overcoming weakness.

As a whole, it can be said that teaching PE online enabled teachers to use varied techniques and strategies in teaching which were predominantly internet-based. They practiced differentiated instruction, challenged the creativity of students and developed innovative ways of teaching PE online, provided student support and facilitated student success. As a result, students became more independent learners. PE Teachers on the other hand, were challenged to improve their teaching strategies and techniques through online applications. Furthermore, they were inspired to personalize their demonstration videos to show their expertise or to model to the students which the latter really appreciated as indicated in their comments reflected in the teaching efficiency rating. They implicitly ascribed to Gardner’s Multiple Intelligence Theory and Bandura’s Social Learning Theory on the use of observation and imitation. The results of this study supported the premise that college PE can be taught online and is workable this time of pandemic (Williams, 2013).

**Teachers’ Reflections**
Teachers’ reflections included how they looked at teaching PE and their perspectives about teaching PE online. This included the challenges encountered in teaching PE online, what they thought they need to know to successfully teach PE online, what they enjoy about teaching PE online, and how their teaching experience in teaching PE online affected their outlook of face-to-face teaching.

What we think about teaching PE? When asked how they viewed teaching PE, their common response was that, “teaching PE is a calling and a gift to be shared and celebrated.” They considered it a calling because most of them did not immediately decide to be PE teachers, but in some ways, they were led to teach PE. They considered it a gift because almost all of them had the talent in dancing, cheerleading, and sports. So because it is a gift, and are passionate about these, they felt there is a need to share these gifts to others especially their students. Another participant such as Cindy considered teaching as a calling because not everybody can teach. The calling is for the teacher to touch and influence the lives of their students. Similarly, Junjun shared that he considered teaching PE as a calling and that he was called by God to share his talents to others such as his students. Other teachers like Becky and Larry looked at teaching not only a calling but a gift in itself as well. Larry specifically stated that teaching PE is a calling and a gift to be shared and celebrated. He was thankful to have chosen teaching PE a career as it led him to travels, competitions, and even entry to reputable schools which were gifts in themselves too. In addition, he considered teaching PE as an in demand profession. Becky likewise looked at teaching PE as God’s calling because she already finished a non PE-related degree before she thought of teaching PE. She considered it a gift because through PE she got recognized and appreciated. For Katrina, teaching PE was a gift and this gift was her passion in dancing, sports and arnis. It was a passion that led her to instill discipline and correct the misbehavior of her students.

Miller (2021) posted in a blog that a calling implies a deep-seated belief that teaching is the only profession that makes sense for one to pursue or as simple as a nudge toward the teaching profession from a former teacher or parent as in the case of Jeff and Lyn who were influenced by their teacher and father respectively. This was because these influencers saw their passion in sports, dancing, and PE-related activities that a simple suggestion made them decide to pursue a career in teaching PE.

Challenges. Transitioning from face-to-face to online learning this time of pandemic spawned some barriers for teachers considering that it happened suddenly without preparation. As in the case of most of the participants, they indicated that the challenges mostly came from the students’ end. Some of them did not have gadgets and resorted to borrowing from friends or family members. Related to this problem was the absence or weak internet connectivity. These conditions prevented teachers to present lived demonstrations and had to resort to recorded videos. From the teachers’ end, they admitted the difficulty of teaching sports as unlike dancing where movements are choreographed actions in games, moves are unpredictable. Therefore, for sports they limited their coverage with exercises or drills. Other teachers used E-games to take the place of tournaments. Other activities related to teaching sports included the use of vlogs with captions. Another challenging part of teaching PE online was assessing individual outputs of students. To address this problem teachers also required group activity. However, because of the strict implementation of social distancing, students needed to edit their outputs to put together each one’s contribution. Though “touchless, this” activity provided them opportunity to collaborate and interact reducing the feeling of isolation. Though most of the
respondents were comfortable with the use of technology in teaching PE, they still felt the need for more training to improve their strategies and techniques in teaching PE online.

The COVID-19 pandemic has brought with it challenges for teaching PE online. Nonetheless, teachers will be best served by taking advantage of these extraordinary circumstances and focusing upon the advantages (vs. disadvantages) of technology, and use technology as an opportunity to enhance teaching PE online. Furthermore, much of what is effectively taught in the online situation may be further utilized in future blended teaching in the post COVID-19 era—all of which may allow for timesaving in f2f situations and make teaching PE more productive.

What you enjoyed most in teaching PE online? Majority of the participants enjoined that what really made them happy was to see that their students learned from their online classes as evident from the outputs they turned in which were mostly entertaining and funny at times. They admitted that whether students learned or not was primarily their responsibility as teachers. That is why they felt so happy to see their students showing evidences of learning.

Another thing that made them happy was having the chance to learn more about their students and their interests. They appreciated the fact that students learned on their own and became independent learners. Another teacher shared that he liked the challenges online teaching brought as it led him to build and acquire more skills, learned to manage his time better and admitted that he learned a lot of lessons from the experience. Some teachers confided that what they enjoyed most was the opportunity of working at the comfort of their homes. Another reason which surfaced from the interviews was that online learning provided the teachers easy communication with students as there are many ways of reaching their students.

The participants admitted that all preparations made in online learning are also applicable to face-to-face learning. Both students and teachers can learn a lot from the internet. There were lots of time to teach and learn. Learning seemed limitless and topics could be boundless.

Limitations

This investigation included limitations related to the sample that should be acknowledged in interpreting the results. First, all of the participants taught college PE in a state-owned institution providing the same curriculum and school facilities. By limiting participants who worked in a state university with the same setting and common student populations, the results may be generalizable. Second, this study examines the teachers’ experiences, guiding philosophies and reflections on teaching college PE online. To get a truer sense of their experiences, it would be useful to elicit feedback from their students. Finally, the strength of the data likely would have increased had a greater number of interviews been conducted with each participant. This study was, however, crafted in response to the unpredictable arrival of the COVID-19 pandemic. In order to create a timely product, the researchers were forced to work in an expedited manner, limiting the amount of available data.

Conclusions

The purpose of this study was to gain an understanding of the PE teachers’ practices, philosophies and perceptions of online learning. Qualitative research methods used in this study were well suited to achieve this goal. The depth of information gained through the analysis of
interviews and observations provided a level of understanding that quantitative methodology could not have.

While teaching online, participants were challenged to use varied activities and strategies, delved into their teaching philosophies to support their teaching and reflected on the whole teaching experience itself. Reflection, flexibility, and convenience are reported as strengths of online education by several researchers (Petrides, 2002; Vonderwell, 2003; Poole, 2000; & Murphy and Collins, 1997). This study also unearthed the teachers’ reflections on teaching PE online. They experienced difficulties in assessing student outputs which usually came as videos. But they felt that the challenges were more at the students’ ends such as lack of gadgets and poor internet connectivity. They confided that the strategies used in teaching PE online are very much applicable to face-to-face teaching when this pandemic is over.

The researchers concluded that in the process of ensuring the quality of online education, the teacher plays a key role. Not only because the teacher “faces” the students directly, but also because more responsibility has been put on the teacher’s shoulder. This does not mean however, that the administrator should be set aside in the quality assurance of online education. More importantly, the administrator should provide sufficient supports (training, administrative, monetary, and promotional), hire qualified faculty, and motivate faculty to provide effective online teaching.

This study has contributed to the literature in the area of on-line education. It has also provided valuable information from teachers that can serve both online students, other PE teachers and administrators in providing more effective online education. This study suggests that benchmarks should be adopted by every institution of higher education as a measure of success on online programs. This research approach can serve as a valuable guide for PE faculty seeking to improve the qualities of current PE technologies and practices in order to produce next generation resources for the profession.

The continued use of online learning as the end of the pandemic is not yet in sight needs the examination of best practices for online PE teaching. The experiences of PE teachers as they switched to remote instruction during the onset of COVID-19 yielded important insights on the short and possibly long-term landscape of PE. It was essential for teachers to identify alternative strategies to support student learning. It is our opinion however, that students learn from good teachers regardless of the learning mode. Teachers have the greatest impact on learning, not the mode or delivery of learning. Certainly, there are limitations related to students’ and teachers’ access to technology, that will impact the learning environment. We believe, however, that teachers can overcome the barriers presented to them and still produce good learning outcomes. With the right activity/strategy, guided by a sound teaching philosophy from teachers, quality online physical education can be ensured even after the country’s health situation returns to normal. It is comforting to know that PE teachers are more willing than ever to embrace an online learning environment. The implications of this willingness to improve instruction in both online and face-to-face PE in the future is one glimmer of hope to take away from the terrible situation that COVID-19 brought about.

**Recommendations**

Much of what is effectively taught in the online situation may be further utilized in future blended teaching in the post COVID-19 era—all of which may allow for timesaving in f2f

This study has also shown that more research need to be conducted in the area of improving communications and teaching strategies utilizing multi-media to enhance the on-line educational experiences of teachers in regard to both course content and social connectedness. Future research may include explorations of: (a) guiding principles to teaching PE online; (b) effective strategies when teaching PE online; (c) the design of blended PE programs; (d) how to videotape, store, and share school PE classes and workshops; and (e) development of online PE professional learning communities/networks regionally, nationally, and internationally.

Support for PE teachers, through continued professional development sessions and additional resources, especially among groups where inequities are identified, is needed as teachers adapt to leading students on a new path toward facilitating student learning in PE.

References

[2] Aguinaldo, J. (2021). Challenges Encountered by Physical Education Teachers in Online Learning. Physical Education Department, De La Salle University, Philippines jerrwin.aguinaldo@dlsu.edu.ph
https://journals.library.brocku.ca/brocked Chunlei Lu,* Joe Barrett, Olivia Lu
Emotional Attributes Of Msu-Ilit’s Science Students: Basis For Science Programs And Mental Health Enhancement

Gevie June Pasanting¹, Mylene O. Toraja², Manuel B. Barquilla³, Elesar V. Malicuban⁴, Odessa Aberilla⁵

{ manuel.barquilla@g.msuit.edu.ph }

Dept. of Science and Mathematics Education, College of Education, MSU-Iligan Institute of Technology, Iligan City, 9200 Philippines¹, Dept. of Science and Mathematics Education, College of Education, MSU-Iligan Institute of Technology, Iligan City, 9200 Philippines², Dept. of Science and Mathematics Education, College of Education, MSU-Iligan Institute of Technology, Iligan City, 9200 Philippines³, Dept. of Science and Mathematics Education, College of Education, MSU-Iligan Institute of Technology, Iligan City, 9200 Philippines⁴, Dept. of Science and Mathematics Education, College of Education, MSU-Iligan Institute of Technology, Iligan City, 9200 Philippines⁵

Abstract. The capability of students to recognize their own emotions and those of their classmates and discern between different feelings and label them appropriately is said to affect their academic performance. Hence, this study aimed to obtain useful emotional information for the design of classroom activities and science curricula. This study determined the emotional attributes of 150 science students from two colleges of the Mindanao State University-Iligan Institute of Technology through an online survey, which harvested data during the time of the COVID-19 pandemic. The questionnaire used surveyed several aspects of emotional intelligence, which were analyzed collectively using box-and-whisker plots that allowed comparison of scores across individuals. Results showed high and low scores characterizing the study population that represent their strengths and weaknesses. Among their strengths was the ability to cooperate and collaborate in teams, which might be a natural consequence of doing laboratory and field exercises. Field trips may not be easy to conduct today because of safety protocol, but doing this poses additional value by providing opportunities for social cohesions to foster. On the other end, the students may have difficulty articulating their feelings, resulting from the lack of safe spaces inside and outside the classroom to share their opinions and ideas with others without the fear of being embarrassed or rejected.

Keywords: Emotional Attributes, Assessment, Science Programs Enhancement. Mental health Enhancement
1 Introduction

It has been a regular practice to manipulate IQ (Intelligence Quotient) into measuring an individual's level of mental abilities. Their teachers consider anyone who achieves high test marks to be knowledgeable. However, success in life does not constitute only high IQ as many other elements construct a healthy, fulfilling life besides mental capability. Today, the educational system recognizes the critical role that emotional attributes play in learners' academic performances. These attributes define outstanding corporate leaders, successful entrepreneurs, and successful individuals. High skills of communication, interaction, and dealing with other people are part of high EQ qualities. Undoubtedly, EQ contributes to productive life experiences and optimal leadership potential. Current literature points to the EQ as the barometer of excellence on virtually any job (Saibani et al., 2011). Various studies sought to determine the relationships between intelligence, intelligence quotient (I.Q.), and students' academic performances. Based on terminology, these three concepts refer to three different phenomena. According to Kaur et al. (2018), intelligence means a lot. It relates to the capacity for logical and abstract thought and much more such as self-awareness, understanding, communication, emotional knowledge, planning, learning, memory, creativity, and problem-solving. The intelligence quotient is the score derived from several standardized tests designed to assess human intelligence. Finally, academic achievement indicates the knowledge attained and skill developed in the school's subjects, generally designated by test scores (Bhat, 2013). According to Parker et al. (2003), attempts to relate academic achievement with emotional, social competencies have produced many inconsistencies. Some studies, such as Wong et al. (1995), found social perception as a moderate predictor of academic performance. In this study, Wong et al. (1995) defined social perception as the ability to understand other people's emotional states. However, the study of Newsome et al. (2000) found a weak correlation between emotional intelligence and academic performance when they used the BaRon Emotional Quotient Inventory. Though studies did not meet end points however, this study increase evidence on ecology of knowledge in restructuring curriculum outcome using EQ. Further study is necessary to ascertain effect of the program based of EQ component. With this notion, EQ becomes an interesting element that can affect the students' academic performance, not only in the secondary but also in the tertiary education level. The learners have experienced years of hardships in their previous institutions, which may affect their EQ development. Emotional intelligence is the capacity to control or express one's emotions and handle interpersonal relationships wisely and empathetically. Emotional intelligence does have an impact on the professional life and academic success of a student that is taking science courses. Emotional intelligence and self-efficacy are two critical structures to be taken into account while studying the causes of academic success or failure. These structures are flexible and improvable through necessary interventions. People not believing in their abilities get disappointed while facing difficult circumstances and are less likely to operate effectively. Such people are afraid of dealing with challenging issues, and consequently, their performance is negatively affected, leading to more feelings of inadequacy.

The silent generation raised baby boomers to have the opportunity to attend college and also to receive government assistance in terms of grants or scholarships and financial aid and to be able to contribute to the economic growth of our country. Now, baby boomers have their offspring who have grown in an environment of institutional choices, dynamic technologies, and
complicated financing. Going to college was no longer perceived as a privileged class, but one's duty to patriotism and country (Bowen, 1977; Thelin, 2004; Trow, 1989). Since the 1950s, higher education has become increasingly competitive and diverse (Adelman, 1999; Pascarella & Terenzini, 2005). Students have a wide choice of choosing a degree. May it be online or on-campus programs from highly selective 4-year universities or 2-year colleges or diploma degrees. Economic unreliability has brought many changes in education today.

In this study, the researchers harvested data from science students to determine attributes of their emotional well-being that can inform science programming, especially in the content and delivery of the curriculum. This study aims to improve the academic performance of science students by providing information that could feed into the design of in-house initiatives to increase their emotional, not only mental well-being.

2 Statement of the Problem

The study's primary goal was to assess the emotional attributes of science students of MSU-IIT, which can serve as a basis for the teachers in enhancing science programs and students' learning. Specifically, this research seeks to answer the following questions:

1) What are the emotional attributes of science students in terms of:
   i. Emotional self-awareness
   ii. Accurate self-assessment
   iii. Self-confidence
   iv. Self-management
      i) Emotional self-control
      ii) Transparency
      iii) Adaptability
      iv) Initiative
   v. Relationship Management
      i) Inspirational Leadership
      ii) Conflict Management
      iii) Change Catalyst
      iv) Teamwork Collaboration
      v) Influence

2) What enhancement can science schools do in their:
   i. Curriculum
   ii. Guidance Programs
3 Methods

The researcher utilized a quantitative approach utilizing descriptive research design. This research was conducted among Science students of Mindanao State University-Iligan Institute of Technology (MSU-IIT). A total of one hundred and fifty-five (155) students enrolled in the survey. These respondents were Science students of the College of Education and the College of Science and Mathematics. Following a purposive sampling, the survey harvested data from randomly selected classes in the two colleges during the height of the COVID-19 pandemic, limiting participation to students who have a connection to the internet only. Initially, research conducted the required entry protocol requirements by asking permission from the Deans and professors of the students' colleges. The professors who agreed to participate in the survey published the survey questionnaire in their MOLE (MSU-IIT Online Learning Environment) classrooms and group chats for their students to answer. The Google forms returned answers that the respondents gave directly to the researcher’s email account, both in raw and summarized form, eliminating the need for manual counting. This self-assessment questionnaire on emotional intelligence by Daniel Goleman (1995) was used in this study. Goleman (1995) found that while the qualities traditionally associated with leadership such as intelligence, toughness, determination, and vision are required for success, they are insufficient. Accordingly, truly effective leaders are also distinguished by high emotional intelligence, including self-awareness, managing emotions, motivating oneself, and showing empathy. Those with leadership potentials are also believed to have the ability to manage, influence, and inspire feelings in others. Hence, the 50-item questionnaire measures various aspects of the aforementioned emotional competencies. Using the questionnaire, the students make a personal assessment of themselves based on a five-point Likert scale. The questionnaire was validated and has a reliability measure value having Cronbach alpha of .81. Data were analyzed using SPSS version 10.

3 Results and Discussion

The emotional intelligence of the Science students is cross-tabulated to summarize the frequency and percentage distribution of the scores related to various aspects of their emotional intelligence. Embedded in the frequency and percentage tables are the mean scores and the computed standard deviation.

3.1 General Emotional Well-being of the Students

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Self-awareness</td>
<td>3.33</td>
<td>1.10</td>
</tr>
<tr>
<td>Accurate Self-assessment</td>
<td>3.44</td>
<td>1.18</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>2.63</td>
<td>1.28</td>
</tr>
<tr>
<td>Emotional self-control</td>
<td>3.13</td>
<td>1.15</td>
</tr>
<tr>
<td>Transparency</td>
<td>3.14</td>
<td>1.17</td>
</tr>
<tr>
<td>Adaptability</td>
<td>3.34</td>
<td>1.15</td>
</tr>
</tbody>
</table>
### 3.2 On Emotional self-awareness (ESA)

**Table 2.** Level and intensity of emotional self-awareness among the students.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expresses own feelings</td>
<td>2.41</td>
<td>1.12</td>
</tr>
<tr>
<td>Recognizes the situations that trigger own emotions</td>
<td>3.59</td>
<td>1.12</td>
</tr>
<tr>
<td>Knows how own feelings impact own performance</td>
<td>4.00</td>
<td>1.06</td>
</tr>
<tr>
<td><strong>Construct Mean</strong></td>
<td><strong>3.33</strong></td>
<td><strong>1.10</strong></td>
</tr>
</tbody>
</table>

People have emotional hot buttons. The moment these are pushed to the limit upon hearing persons say something terrible, it catapults them to intense emotional reactions that hijack their sanity. Because of anger, people say and do things that they would regret later. Hence, mastering emotional reactivity is a core competency that everyone, including Science students, should learn.

The ability to understand and regulate their emotions is comprised of two essential features. First is the ability to identify feelings, and second, the competency to access practical coping skills (Kopp, 1989; Shonkoff & Phillips, 2000; Siegel, 1999). The data speaks of the ability of the respondents to recognize emotional pushbuttons (almost always: 30.3%; always: 23.9%). The bulk of the respondents (71%) are also aware that their own feelings could affect their performance in school. These two are already indicators of the level of emotional awareness that Science students have. The second feature on practical coping might be a challenge to them. Results show that only 2.6% of Science students were confident in expressing their feelings. A large majority say that they are only able to express themselves either sometimes (32.9%), usually (24.5%), or rarely (21.9%).

### 3.3 On Accurate Self-Assessment (ASA)

**Table 3.** Level and intensity for accurate self-assessment among the students.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledges own strengths and areas of weakness</td>
<td>3.53</td>
<td>1.21</td>
</tr>
<tr>
<td>Has a sense of humor about oneself</td>
<td>3.43</td>
<td>1.22</td>
</tr>
<tr>
<td></td>
<td>3.30</td>
<td>1.11</td>
</tr>
</tbody>
</table>

Legend: 0-- Never, 1-1.99-rarely; 2-2.99-Sometimes; 3-3.99-Usually, 4-4.99-almost always; 5-always
Is not defensive in receiving new information or perspective about oneself

Compensates for own limitations by working with others with the necessary strengths 3.49 1.17

Makes career choices to leverage opportunities to learn new things or broaden one's experiences 3.44 1.16

Seeks out opportunities to broaden one's repertoire of capabilities 3.43 1.19

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.44 1.18</td>
</tr>
</tbody>
</table>

Self-assessment in education involves reflecting on and monitoring one's own academic performances (Brown & Harris, 2013). Student self-assessment is a central component of current conceptions of classroom assessment, particularly formative assessment. However, during this pandemic, self-assessments of student performances can be pretty complicated given the online and modular delivery of lessons by the teacher. Nonetheless, the respondents scored higher on the category of accurate-self review, with mean values ranging from 3.30 to 3.53. The majority (80%) know their strengths and weaknesses, responding either usually, almost always, or always in the questionnaire.

Considering self-assessments into the formative assessment should proceed with caution because of concerns and issues over validity. According to Butler (2011), the question for self-assessment is to what degree student self-descriptions and evaluations of their work are truthful or veridical. In addition, Burson et al. (2006) said that self-appraisal may be problematic because it can be biased towards individuals rating themselves more favorably. Students appraising themselves can also be more lenient as judges of their academic performances compared to teacher ratings (Fox et al., 1994).

Aware of their shortcomings, the students collaborate with those who possess the necessary strengths they lack. Nearly half of them are confident enough to display a sense of humor about themselves, which sometimes reflects a lack of insecurity. The students are either usually (32.3%), almost always (29.7%), or always (14.8%) not defensive in receiving new information or perspective about oneself. The students are willing to seek opportunities to broaden their competencies (51.6%), extending beyond student life to leverage opportunities to learn new things when exploring career choices (51%). According to Dweck & Leggett (1988), students like this are learning goal-oriented. They subscribe to an incremental theory of abilities, meaning they believe abilities to be malleable attributes.

iii) On Self-confidence (SC)

Vrugt et al. (1997) referred to academic self-confidence as the student's expectation of their ability to excel in their classes and could be an influential factor in ensuring their academic success. Based on the data, only a handful (8.4%) said they are always confident to work without the need for direct supervision. Many registered responses on sometimes (31.6%), usually (25.8%), or almost always (21.3%). They are not confident to comply with their tasks without their professors or instructors. This percentage distribution can be explained by the fact that students need supervision conducting Science experiments.

Table 4. Level and intensity of self-confidence among the respondents.
Feel's confident to work without the need for direct supervision  
Believes oneself to be among the most capable for a job and likely to succeed  
Is decisive  
Presents self in an assured, forceful, impressive and unhesitating manners  
Has personal presence (i.e. stands out in a group  
Assumes significant personal or professional risk to accomplish important goals  
Speaks out for a course of action one believes in even when others disagree  

Construct Mean  2.63  1.28

The students also need to be accompanied by their teachers when they are on field trips. Because they are still students, most respondents were not sure they could land a job and succeed. In fact, 31% of them only answered sometimes, with only 11.6% responded always. It can also be a challenge for them to be decisive as they are still not wholly autonomous. Only 9.7% responded with "always" on the question about decisiveness. Like any Asian, Filipino is a high-context culture. Most of the time, it is challenging to present oneself in an assured, forceful, impressive, and persistent manner. It is easy to maintain the low-key status as evidenced by the fact that the majority of the respondents responded with sometimes (35.5%) and usually (21.9%) answers only. A small percentage (8.4%) can come in forceful and assured.

It can be pretty tricky for students to be risk-takers, given that most Science activities are resource-intensive. Scientific experiments and field works require could be costly, making it challenging to be risk-takers. When asked if they were willing to assume significant personal or professional risk to accomplish important goals, most of the respondents only answered "rarely" (21.9%), "sometimes" (28.4%), and "usually" (22.6%) in the questionnaire.

Sometimes, the need to achieve consensus in decision-making leads to group thinking. Here, one does not speak out for a course of action that they don't believe in, especially when others disagree. In fact, the majority of the respondents ticked "sometimes" (36.8%) and "usually" (25.2%) in the online questionnaire they were asked to answer.

iv) On Emotional self-control (ESC)

Table 5. Level and intensity of emotional self-control among the respondents.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resists the impulse to act immediately</td>
<td>2.95</td>
<td>1.04</td>
</tr>
<tr>
<td>Behaves calmly in stressful situations</td>
<td>3.03</td>
<td>1.12</td>
</tr>
<tr>
<td>Stays composed and positive, even in trying moments</td>
<td>3.19</td>
<td>1.14</td>
</tr>
<tr>
<td>Calms others in stressful situations</td>
<td>3.34</td>
<td>1.27</td>
</tr>
<tr>
<td>Construct Mean</td>
<td>3.13</td>
<td>1.15</td>
</tr>
</tbody>
</table>
In education, emotions are only relegated to being supplementary to the learning process Hafiz (2015). However, the COVID-19 pandemic has raised emotional regulation as something that needs monitoring by academic institutions. The threat of infection and anxiety from isolation has produced a roller coaster of emotions for students. Today, more than ever, educational institutions see emotion regulation strategies as essential resources in improving students' learning, achievement, and quality in education. Hafiz (2015) said that emotion regulation and academic performance are critical domains in achieving students' life goals and objectives. Students must have the right attitude and be fortified with effective emotion regulation strategies to handle the difficulties of their daily lives, especially during this pandemic period.

The data shows that the aspect of emotional self-control is something that the students can still improve. They can be reactive and may have challenges resisting the impulse to act immediately. At times they can be composed and positive in trying moments. But it may be challenging for them to behave calmly in stressful situations without doing anything. What is essential, however, is that they tend to calm others in such stressful conditions.

v) On Transparency (T)

<table>
<thead>
<tr>
<th>Table 6. Level and intensity of transparency among the respondents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Behaves consistently with own stated values and beliefs</td>
</tr>
<tr>
<td>Publicly admits to mistakes even when it is not easy to do so</td>
</tr>
<tr>
<td>Confronts unethical actions in others</td>
</tr>
<tr>
<td>Acts own values even when there is a significant risk</td>
</tr>
<tr>
<td>Adaptability</td>
</tr>
<tr>
<td>Construct Mean</td>
</tr>
</tbody>
</table>

Transparency is often talked about as the communication of ideas or goals. It is about conversing underlying, hidden assumptions and making them clear to all parties. But this is only limited to what is called cognitive transparency. Rarely do people from the academe talk about clear and open communication of feelings in their conversations. Kondrath (2008) posits that when people hide their feelings from others, the waters get much murkier than when assumptions, goals, and rationales are hidden or unexplained. And the confusion or obstruction happens more rapidly when feelings are obscure or opaque than when cognitive beliefs are hidden. When communications are suppressed and hidden, the latent conflict will eventually surface and erupt when conditions become ripe.

The study's respondents find it difficult to be transparent with their thoughts and opinions to others, even if the other has already committed mistakes. In fact, it is not easy for them to call out the unethical actions of others, as evidenced by the mean score of 2.79, which is the lowest in the transparency category. The inability to air out their opinions to others presents a moral dilemma, especially when what they are saying or doing is not consistent with their values and beliefs. In fact, only 17.4% said they were behaving according to what they believe is right. In addition, only 97% act based on their own values when confronted with danger and risk. The majority answered "usually" at 33.5%. The students can also be very
compromising, based on the fact that they could almost always (32.3%) quickly adapt to the opinions and ideas of others (Mean: 3.55). However, the combined percentage of 79.3% of total respondents is good, who said they can publicly admit to mistakes even when it is not easy to do so (Mean 3.45).

vi) On Adaptability (Adap)

Table 7. Level and intensity of adaptability among the respondents.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingly changes ideas or perceptions based on new information or contrary evidence</td>
<td>3.70</td>
<td>1.01</td>
</tr>
<tr>
<td>Applies standard procedures flexibly</td>
<td>3.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Smoothly juggles multiple demands</td>
<td>2.98</td>
<td>1.12</td>
</tr>
<tr>
<td>Is comfortable with ambiguity</td>
<td>2.94</td>
<td>1.28</td>
</tr>
<tr>
<td>Adapts by changing overall strategy, goals or projects to fit the situation</td>
<td>3.47</td>
<td>1.09</td>
</tr>
<tr>
<td>Construct Mean</td>
<td>3.34</td>
<td>1.15</td>
</tr>
</tbody>
</table>

The school is a complex environment of people coming from a lot of cultures. Interacting with people from diverse backgrounds can be stressful because of cultural differences. Cui and Awa (1992) said that for students to be successful in their academic endeavors, they should be cross-culturally adaptive. According to them, successful cross-cultural adaptability involves empathy, flexibility, patience, role flexibility, tolerance for ambiguity, and the ability to establish and maintain relationships.

In this study, adaptability could mean a lot of things. For example, most students are not very stiff with standard procedures (mean: 3.63). They exhibit a certain level of permissible flexibility and change ideas when presented with new information (mean: 3.70). They can do this by changing their overall strategy, goals, or projects to fit a given context (mean: 3.47; percentage of almost always and always responses: 49.6%). Some admit they can be comfortable with ambiguity as they believe that circumstances can also be fluid (mean: 2.94). For this population, grit is never a way to move forward with life. : 2.94). For this population, grit is never a way to move forward with life.

vii) On Initiative (I)

Table 8. The ability of the respondents to do things based on initiative.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finds and acts upon present opportunities</td>
<td>3.30</td>
<td>1.00</td>
</tr>
<tr>
<td>Acts rather than simply waiting to study actions of others</td>
<td>3.07</td>
<td>1.13</td>
</tr>
<tr>
<td>Cuts through red tape and bends the rules when necessary to get the job done</td>
<td>2.75</td>
<td>1.34</td>
</tr>
<tr>
<td>Monitors customer or client satisfaction</td>
<td>3.49</td>
<td>1.13</td>
</tr>
<tr>
<td>Takes personal responsibility for resolving customer or client problems non-defensively</td>
<td>3.39</td>
<td>1.04</td>
</tr>
<tr>
<td>Make oneself available to customers or clients</td>
<td>3.54</td>
<td>1.06</td>
</tr>
</tbody>
</table>
In general, personal initiative results in an individual taking an active and self-starting approach to work goals and tasks and overcoming barriers and setbacks (Frese et al., 1997). One of the consequences of performing an initiative is that students can change their environment to accommodate their personal and communal needs. This is in stark contrast to a passive process characterized by doing what one is told to do, giving up in the face of difficulties, and reacting to environmental demands.

In the respondent's personal initiative, the lowest score of 2.75 in this category is their willingness to cut through red tape to get the task done. Science students are adherent to process, especially when it comes to experimental procedures. A resounding 31.6% of them said they are only willing to do the short-cut sometimes. More than a third (36.8%) of the respondents were occasionally ready to act upon present opportunities, mainly when it addresses the needs of others (mean: 3.39; almost always and always responses: 49.7%). However, most exercise due diligence first before acting on something. The data shows the low percentage distribution of only 12.3% for those who were always willing to act rather than simply wait to study the actions of others.

### vili) Inspirational leadership (IL)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leads by setting vision and direction rather than through formal authority or positional power</td>
<td>3.13</td>
<td>1.13</td>
</tr>
<tr>
<td>Stimulates enthusiasm and makes work exciting</td>
<td>3.12</td>
<td>1.21</td>
</tr>
<tr>
<td>Consistently and visibly leads by example and sets a clear standard for teams and colleagues</td>
<td>3.06</td>
<td>1.21</td>
</tr>
<tr>
<td>Inspires others to action by articulating a compelling mission and vision</td>
<td>3.14</td>
<td>1.24</td>
</tr>
<tr>
<td><strong>Construct Mean</strong></td>
<td><strong>3.05</strong></td>
<td><strong>1.11</strong></td>
</tr>
</tbody>
</table>

Becoming an inspiration to others comes from creating an environment that motivates them to be more engaged and committed to sharing a common belief, vision, and goals. According to Paolini and Bryan (2015), an inspirational leader is a visionary who grows, develops, and builds others. They are also effective communicators who, upon speaking, helps provide a sense of trust, empathy, and a feeling of safety that will allow others to speak up and perform well.

Concerning the statements mentioned earlier, the data reveals that only 12.3% of the students possess the qualities of an inspirational leader that can lead with a vision and direction. Others may exhibit situational leadership (usually: 29%) and resort to position power to lead the group or team members. Words are potent as they can inspire group members and constituents into action, especially when a
compelling mission and vision are articulated. Data shows that only 18.1% of the students can speak these missions and ideas very well. Also, only 12.3% were consistent in leading by example as words speak louder than words.

ix) On Conflict management (CM)

<table>
<thead>
<tr>
<th>Table 10. The ability of the respondents to manage conflicts.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>Brings disagreements and grievances into the open</td>
</tr>
<tr>
<td>Communicates the positions of those involved in a conflict to all concerned</td>
</tr>
<tr>
<td>Focuses disagreements on the issues or actions involved rather than on the person</td>
</tr>
<tr>
<td>Helps de-escalate conflicts</td>
</tr>
<tr>
<td>Finds a common idea to which all parties in a conflict can endorse</td>
</tr>
<tr>
<td><strong>Construct Mean</strong></td>
</tr>
</tbody>
</table>

People with high levels of emotional intelligence consider their own emotions and other's emotion, discriminate among them and use the information to guide their conflict-handling styles (Salovey & Mayer, 1990; Morrison (2008). Emotionally intelligent individuals can regulate their own emotions in dealing with interpersonal conflict in a constructive manner.

The results show that the students find it challenging to bring disagreements grievances into the open, as evidenced by the mean score of 2.61. Based on the percentage distribution of responses, most students can only air out their disagreements sometimes (28.4%). Only 12.9% possess the skill for roundtable geometry by communicating the positions of those involved in a conflict to all concerned. This is an important skill to learn individual contexts in understanding people's attitudes and behavior towards conflict. About 18.1% focuses disagreements on the issues or actions involved rather than on the person, which minimizes the possibility of raising people's enemy images against each other. Just more than 40% of them have intentions to address and de-escalate the conflict. They can also be compromising in responding to disputes by finding common ground for a win-win solution.

x) On being a Change Catalyst (CC)

<table>
<thead>
<tr>
<th>Table 11. The innate ability of the science students to become change catalysts.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>States a need for change</td>
</tr>
<tr>
<td>Expresses an explicit vision for change to those affected</td>
</tr>
<tr>
<td>Enlists others in pursuit of a change initiative</td>
</tr>
</tbody>
</table>
Removes barriers to change 2.78 1.01
Models the change expected for others 2.95 1.08
Personally leads change initiatives 2.81 1.14
Takes a strong, public stand to advocate change despite opposition 2.74 1.21

Construct Mean 2.90 1.10

Nothing in this world is permanent except change. Organizations change for the better. However, change usually is associated with chaos, uncertainties, and psychological reactions (Foltin & Keller, 2012). In this regard, emotionally intelligent leaders are central to successful organizational change. These are individuals who can effectively facilitate change and manage the emotions involved in change. It enables leaders to identify the talents needed to build a winning team and overcome resistance to change.

Based on the result, there is still room for improvement regarding Science students being catalysts of change, as evidenced by the high percentage of "sometimes" responses. First of all, only 7.1% of them were always personally involved in leading change initiatives. Only 6.5% always model the change they want to attain. Only 9% take time to advocate what they believe could positively transform their communities. A small percentage (11%) always urged others to participate in their change initiatives. The good thing is that a number of the students registered responses that were usually and almost always.

xi) On Teamwork and Collaboration (TC)

Table 12. The ability for teamwork and collaboration among the science students.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintains co-operative working relationships</td>
<td>3.88</td>
<td>1.06</td>
</tr>
<tr>
<td>Shares information to faster collaboration</td>
<td>3.99</td>
<td>1.03</td>
</tr>
<tr>
<td>Expresses positive expectations or respect for others at work</td>
<td>4.19</td>
<td>0.99</td>
</tr>
<tr>
<td>Values, solicits and uses others input</td>
<td>4.03</td>
<td>1.01</td>
</tr>
<tr>
<td>Identities and encourages opportunities for collaboration and within groups</td>
<td>3.99</td>
<td>0.99</td>
</tr>
<tr>
<td>Actively promotes a friendly climate, good morale and co-operation</td>
<td>4.15</td>
<td>0.99</td>
</tr>
<tr>
<td>Promotes group reputation with others</td>
<td>3.91</td>
<td>1.08</td>
</tr>
<tr>
<td>Builds team spirit by creating symbols of identity and pride</td>
<td>3.70</td>
<td>1.20</td>
</tr>
<tr>
<td>Construct Mean</td>
<td>3.93</td>
<td>1.05</td>
</tr>
</tbody>
</table>

Luca and Tarricone (2001) find a strong correspondence between student's emotional intelligence and their abilities to foster team harmony. Furthermore, Farh et al. (2012) saw higher teamwork effectiveness in individuals with higher emotional intelligence and perception in job contexts. This subcategory on teamwork and collaboration by far received higher scores in all indicators, especially
on expressing positive expectations or respect for others at work that garnered a mean score of 4.19. Based on the same data, 51.6% of the respondents always do this. Nearly half (49%) of them actively promote a friendly climate, good morale, and co-operation, which explains the mean score of 4.15. Valuing, soliciting, and considering other's input is very important in fostering a climate of camaraderie and teamwork. This received a score of 4.03.

xii) On Influence (Inf)

According to Njoroge & Yazdan ifard (2014), one of the characteristics of emotionally intelligent individuals is their ability to influence without formal authority. They can understand the bigger picture, including the larger vision, strategy, and culture. An influential leader understands the internal dynamics and politics in communities. Within the community, there exist multiple sub-cultures with their own norms, patterns, and preferences.

Table 13. The ability of the science students to influence and convince others.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expresses concern with own images and reputation, or that of one's organization</td>
<td>3.01</td>
<td>1.22</td>
</tr>
<tr>
<td>Uses factual arguments to persuade and influence others</td>
<td>3.48</td>
<td>1.18</td>
</tr>
<tr>
<td>Takes symbolic actions to have a specific impact on the audience</td>
<td>3.15</td>
<td>1.23</td>
</tr>
<tr>
<td>Convinces by appealing to people's self-interest</td>
<td>3.12</td>
<td>1.15</td>
</tr>
<tr>
<td>Gains the buy-in of influential parties and enlists their help in convincing others</td>
<td>2.73</td>
<td>1.20</td>
</tr>
<tr>
<td>Gets people to buy-in or take ownership of ideas or plans</td>
<td>2.68</td>
<td>1.19</td>
</tr>
<tr>
<td>Develop broad, behind the scenes support to increase persuasive impact</td>
<td>3.12</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Successful influencers understand and value these differences and can use this understanding in their efforts to move forward. Based on the results, the students may still have room for improvement on being an influencer as scores are generally lower than that teamwork and collaboration. They featured a low score of 2.73 in gaining the buy-in of influential stakeholders and enlisting their help in convincing others. Also, only 6.5% of the students do this. One of the measurements of influence is when people buy one's ideas. In the current study, the score for buy-in is only 2.68, which is relatively low. This score of 2.68 can be explained by the percentage distributions of 31.6% rarely, 29% usually, and 20% almost always responses. Only 16.1% of them were always conscious of their organization's image in their immediate community. Although, the good thing for Science students is that 51% of them either almost always or always use factual arguments in persuading and influencing others.

B. Proposed Design for an Intervention for Science Students

Goel and Aggarwal (2012) mention that confident people feel socially competent, mature emotionally, sufficient in intelligence, success, satisfaction, firm, optimistic, independent, confident, constantly moving, and have leadership qualities. Self-confidence allows students to believe in their ability, not give up quickly, and perform all tasks provided independently. Unfortunately, the results of this study show that the students score low on self-confidence and capacities to be positive change agents. Therefore, it is essential to identify spaces in the Science curriculum where activities and learnings can be instilled to boost students' self-confidence.
At MSU-IIT, there are some science courses where students could learn the value of self-confidence. These include Biology courses, such as Ecology, Environmental Science, Human Ecology, and others, where there are discussions on organismal interaction, including individual humans. These competencies could be entrenched in the delivery of the course pre-pandemic as some recommended activities are available on the internet. However, because of quarantine restrictions, activities that help boost self-confidence may be confined only to online methodologies.

According to Nurhayati et al. (2017), there are two ways students acquire self-confidence. The first one has something to do with the learning process. Students are expected to be active, especially in understanding the concepts described by teachers that ultimately can improve self-confidence. Secondly, it is suggested that students engage in collaborative learning as an alternative learning model in their online classes, according to Nurhayati et al. (2017). According to Ilaal & Laal, 2011), collaborative learning involves grouping students to solve a problem, task, or product creation. Students in the group decide and find out how they are solving a problem, task, or product without direction from the teacher. Therefore, the freedom given in collaborative learning really emphasizes students actively participate in joint missions. This will undoubtedly make students better understand the concepts they are learning and can help develop self-confidence. A sample activity and its learning objectives are described below.

**Title of Activity:** Use of Appreciative Inquiry in addressing environmental issues

**Learning Outcomes:** This activity provides a space that allows students to express their opinions and feelings without fear that giving them this opportunity would help boost their confidence.

**Learning Objectives:** The students are engaged in the four-step Appreciate Inquiry (A.I.) and collaborative learning in determining action plans to solve environmental issues. The steps in A.I. include four Ds, namely Discovery, dream, Design, and destiny, that is described more in detail below:

a) In the first step of Discovery, the students are presented with images of various environmental issues. These pictures can come from the internet but should be appropriately acknowledged. The photos could also come from the personal collections of the instructors. These images are uploaded as a template to a freeware called MURAL, which functions as a digital whiteboard or a workspace that works best on visual collaboration. Upon presenting the images in MURAL, the students work collaboratively to express their opinions and feelings concerning the environmental issues. The students can use the digital meta cards embedded in the freeware to express these ideas and feelings. The students are instructed to keep what they hear from the discussions to ensure that everyone would feel comfortable and safe participating. If the class is large, the students can meet in small breakaway rooms to give each other a chance to speak.

![Sample Image](https://www.rubiconline.com/)

**Figure A** sample image can be uploaded to MURAL, a digital workspace where students can collaboratively design solutions to environmental issues. Image courtesy of The Rubicon website [https://www.rubiconline.com/](https://www.rubiconline.com/).
b) The second part would still dwell on their MURAL. Still, it would focus on Dreams about what they would like to see concerning environmental issues. This part would involve a visioning exercise where students are asked what they would like to see in the future. In this stage, the students will still use the digital meta cards in the MURAL to articulate their dreams and aspirations about the environmental issue. All are required to participate in breakaway sessions or small circle activities.

c) Cognizant of their dreams and aspirations, the students are now ready to Design and develop action plans to achieve these visions. The students may put their action plans in Meta cards that are shaped like footsteps. This step requires a lot of planning and input from reading secondary literature about best practices and lessons learned.

d) In this last step called Destiny, the students construct a stakeholder map to identify individuals, organizations, and institutions with who they can work to address the environmental issue. All of these discussions will still take place in MURAL. This part serves as a call to action for students to implement the initiatives, fulfilling yet another competency on becoming catalysts of change.

Exit interviews can be arranged to harvest narratives as to the usefulness of A.I. in allowing meaningful participation of the students and whether it impacts their level of self-confidence. These interviews can be done online or offline and in partnership with the Guidance and Counseling Office of MSU-IIT. This is where the guidance may, from time to time, recruit students from the Science classes to regularly check on their emotional intelligence. Therefore, this partnership calls on an active role of the Guidance and Counseling office in the monitoring and evaluation of the A.I. program on the students' emotional intelligence.

Msukwa et al. (2003) pointed out the importance of using Appreciative Inquiry. It discusses what works best to resolve an issue rather than delve most of the time into the problem. The use of A.I. makes it less heavy on the part of the student because they would not dwell on negativities. Instead, they would work to harvest best practices and lessons learned, a pause of positivity. On the aspect of collaborative learning, Goodsell et al. (1992) said it makes students more focused on expressing ideas in the classroom. When doing collaborative learning, students build their confidence and experience in speaking thoughts they have when answering questions, listening carefully, and responding to questions from other friends. They develop their ability to stay focused, maintain an idea, build relationships with some students and learn how to politely reject or accept other student's opinions.

4. Conclusions and Implications

The following are the conclusions based on the findings of the study:

1. Science students are typically timid and cannot articulate their feelings, especially those with conflicts. It is imperative to note this as input to the curriculum on how organisms and people respond to stimuli from the environment and other organisms.

2. Science students typically could be very technical in acquiring and processing their lessons, which has a downside. The downside is that as human as they are, Science students also need space to communicate their feelings, whether ill- or happy ones, to their classmates and peers.
3. The ability to work well with others is also an emotional attribute required in scientific collaborations. Fortunately, working with others is a characteristic shared by many of them. Being a team player is one of Science students' competencies in doing field works, laboratory exercises, and writing reports. What is needed is how the process can be inclusive so that every student may have the chance to lead their groups or teams. Usually, leading a group is a privilege given only to a few students.

4. Reflections about oneself and the capacity to carry out self-introspections are essential if people truly welcome changes for them to be better. Sadly, not all have this self-evaluation ability. Self-assessments also mean students have to learn from constructive criticisms other people make towards them.

5. In this study, students are always open to receiving feedback from other people, whether positive or negative. This phenomenon needs to be incorporated into Science students' core competencies as sometimes they get this idea that they need to defend to the death their opinions. Communication for them is debate, seldom dialogue.

6. The respondents exude self-confidence in all their undertakings, including working autonomously without needing direct supervision.

7. Science value innovation and creativeness, which does not happen when there is full of insecurities. Science students, therefore, need self-confidence, not only in performing tasks but also in communicating their findings and sharing their thoughts about science issues.

8. To sell their ideas, science innovators need to present themselves well in public. They need to trust their system and their being. The trait of self-confidence still needs improvement among the students. A few of the students can maintain composure amid stressful episodes. This composure is vital in maintaining emotional self-control.

9. Since most science students have to do field works or laboratory experiments, they have to keep their presence in times of distress. They should also have to work smart, which means they don't act based on impulse. They have to stay calm.

10. Unfortunately, the initiative to act and not wait for others to address a problem or issue is a trait found in a few respondents. The COVID-19 pandemic taught us the value of innovation and volunteerism in our Bayanihan approach to mitigating the pandemic's impacts. Our country needs initiative from many of our science majors to contribute something to the pandemic response.

11. Sadly, only a few of our students always leads by setting vision and direction. This data also means that not all who perform well in their academe have leadership potentials. It still needs further enhancement.

12. Aside from becoming leaders, science students also need to be trained to become catalysts of change, requiring active citizenship skills.

13. The majority of the respondents exhibit avoidance behavior regarding settling disputes, as evidenced by the dismal number who can always thresh out grievances into the open. Others can dialogue with conflicting parties only sometimes. Conflicts are part of people's everyday lives. It matters a lot how people respond to resolve conflicts.
14. Since most of the science subjects' activities are by teams, many respondents responded to cooperation and collaboration. Despite having more who answered positively, there are still those who still need capacitation to foster friendly cooperation and trust.

15. Science students argue based on empirical data as they have their formal training on this. However, reality tells us that being a good leader must balance factual arguments and symbolism.

5 Recommendations

5.1 Curriculum

1. Lessons on ecology need not be limited to studying the interactions between humans and other forms of organisms. It can also include topics on human ecology that tackle communication systems, consisting of practical ways to talk to other people non-violently and connect peacefully to everyone.

2. The curriculum needs to integrate topics about the physiological basis of human behavior to understand how genes and environmental factors interact to produce phenotypic characteristics. These lessons are essential to raising awareness that Science students could do something to override gene expression, which runs contrary to genetic determinism. Students need to understand that they can act based on free will and their own volition to behave within the norms of society.

3. Lessons on human ecology may include topics on bioethics. Despite being inclined to Science, the students also need to be aware of ethical considerations to behave within the bounds of society's norms. Human as they are, Science students need to act consistently along with shared value systems. Very few can rebuke the unethical actions of others. Ethics are essential as a precaution to innovations that go wrong such as genetically modified organisms and biowarfare. Science products can see no boundaries, some of which may pose a danger to man and society.

4. Exemplars in participatory facilitation, especially for a virtual class, should be collated, taught to teachers, and implemented in delivering the lessons to encourage meaningful discussions.

5. Aside from their subject on Ecology, the students can learn volunteerism in their Biodiversity subject, where they learn the value of initiating interventions that positively impact their communities. These two subjects need not dwell on theory only but may also focus on how these lessons translate into pragmatic solutions to environmental problems in their communities.

6. Regular conduct of Lesson Studies might benefit the teachers and students to find ways to optimize cooperation and collaboration among classmates in virtual classes. Group work is challenging to perform given the limitations in the students' internet connectivity and digital skills.

7. In their Bio seminar classes, Science students may learn to use different platforms for effective communication, including the use of meta cards in limited face-to-face sessions, PowerPoint presentations, and online apps for virtual learning.
5.2 Guidance and Counseling Programs

1. The Guidance and Counseling office may engage the students in activities where they learn to detect emotional push buttons for them to know when and where they might be vulnerable, and at the same time, manage the impacts of breakdowns on their academic performance.

2. Collaboration between the Guidance and Counseling Office and the College of Arts and Social Sciences might be needed to enhance the subject's content on "Understanding the Self" to lessen the gap between theory and practice. The Guidance office may provide listening sessions to harvest suggestions from students on localizing the learning materials for the subject and making it more appropriate to MSU-IIT students.

3. The Guidance and Counseling Office may also collaborate with the Office of the Vice-Chancellor for Student Services to offer training on inspirational leadership for the youth. Some of our Science students would become managers or heads of agencies in the future. Thus, they need to learn the value of inspirational leadership, which is different from leadership based on position power.

4. Science students need to learn skills in managing and resolving disputes, which may become vital, especially when handling science projects already. Thus, science students must undergo training on conflict management to prepare themselves for unforeseen disputes in the future. The Guidance office may design this type of training in collaboration with the Institute for Peace and Development in Mindanao of MSU-IIT. Alternatively, the Guidance office may also assist professors teaching Fundamentals in Peace Education to enhance mediation and negotiation.

References

Information And Communications Technology (Ict) Usage And Health Status Of The Student Teachers Of Msu-Iit, Iligan City

Rebecca Alcuizar¹, Randel John Bulawin², Uriah Daw Patria³

{rebecca.alcuizar@g.msuiit.edu.ph¹, randeljohn.bulawin@g.msuiit.edu.ph², uriahdawn.patria@g.msuiit.edu.ph³}

Mindanao State University-Iligan Institute of Technology¹, Mindanao State University-Iligan Institute of Technology², Mindanao State University-Iligan Institute of Technology³

Abstract. In education, ICT is very helpful because of the following reasons; it can lead to greater efficiency throughout the school, communication channels are increased through email, discussion, groups, and chat rooms and its regular use across different curriculum subjects can have a beneficial motivational influence on students’ learning. The dissertation aims to know the harmful effects of severe exposure of the student teachers of CED, MSU-IIT to Information Communications Technology (ICT) on the aspects of mental, emotional, and physical health. Result shows that the usage of cellular phones/smartphones, student teacher’s field directly affects the mental and emotional health of a student teacher. Information Communications Technology (ICT) usage also affects the psychological health of a student teacher as shown in the result. However, age, gender, and family income do not directly affect a student teacher's emotional, mental, or physical health in terms of Information Communications Technology (ICT) usage and exposure.

Keywords: ICT Usage, ICT Negative Effects, ICT.

1 Introduction

In all parts of this planet, Information and Communications Technology (ICT) is very rampant. Information and Communications Technology (ICT) is a vital tool in many different jobs and activities for adults and children. In education, ICT is very helpful because of the following reasons; it can lead to greater efficiency throughout the school, communication channels are increased through email, discussion, groups, and chat rooms and its regular use across different curriculum subjects can have a beneficial motivational influence on students’ learning. Teachers also have a variety of benefits in using ICT, such as ICT facilitating sharing of resources, and expertise, and advising greater flexibility in when and where tasks are carried out easier planning and preparation of lessons, and designing materials. access to up-to-date pupil and school data, anytime and anywhere, enhancement of professional image projected to colleagues, and
computer use during lessons motivates students to continue using learning outside school hours. ICT also offers benefits to students and these are: higher quality lessons through greater collaboration between teachers in planning and preparing resources, gains in understanding and analytical skills, including improvements in reading, comprehension is improved, development of writing skills (including spelling, grammar, punctuation, editing, and redrafting, fluency, originality, and elaboration) development of higher level learning styles. Students who use educational technology in school felt more successful in school and they are more motivated to learn and have increased self-confidence and self-esteem, opportunities to address their work to an external audience, and opportunities to collaborate on assignments with people outside or inside the school. ICT also offers benefits to parents like easier communication with teachers, higher quality student reports—more legible, more detailed, and better presented, and greater access to more accurate attendance and attainment information.

But too much exposure to anything becomes bad already, such as long periods of using Information and Communications Technology (ICT) can increase your chance of developing an injury. Inappropriate computer use can cause muscle and joint pain, overuse injuries of the shoulder, arm, wrist or hand, and eye strain. Information and Communications Technology (ICT) is commonly used by professionals and students for the accessibility of information and the bridge for communication, but majority of Information and Communications Technology (ICT) users nowadays are very attached to it, to the extent that their awareness on the negative effects that computers might give to them will be erased.

This severe exposure to Information and Communications Technology (ICT) will lead into different types of health problems including the physical, emotional and mental health of a person.

Physical, mental and emotional health are just some of the most important aspects of a human body in order to perform daily activities. It is essential also when applying for jobs. These aspects of a human being are the most to see and judged when applying for job and will also serve as the basis for all the persons doing and daily routine. That if a person has the ideal physical look; he or she is more likely to do physical exercise but if a person is weak-looking he or she must have a bad habit. That is why regular physical activity is essential to prevent and reduce risks of many diseases and improve physical and mental health. But when physical activity has been alternated with severe exposure to any bad doing that is when physical health problems occur. These problems come into different forms that make a person weak and muted.

2 Methods

2.1 Research Design

This study will make use of the Descriptive Correlation Method to describe the profile of the respondents such as age, year level and family income. A modified questionnaire will be used in gathering of data.

2.2 Population Description
The subjects of the study will be the student teachers of MSU-IIT who will be identified during first semester of S.Y. 2015-2016 through purposive sample, those who will be around during the survey.

2.3 Sample and Sampling Procedure

The respondents of this study will be students of MSU-IIT who are enrolled during the S.Y. 2015-2016. These students are taking different subject area relating to education. The selections of the respondents will be based on their availability during the research. Purposive Sampling Procedures will be used so that no individual will be selected twice and that each individual in the population is selected once.

2.4 Research Instrument

The researchers will utilize a modified questionnaire as the principal instrument in gathering the needed data. The questions are based from gathered facts and information.

2.5 Data Collection Method

A letter will be disseminated to the respondents. The researcher will personally give the questionnaire to the respondents to provide adequate information, instruction and purposes. The respondents will be requested to fill out the questionnaire with the presence of the researchers. Once the respondents are done answering the questionnaire, it will be immediately collected.

2.6 Statistical Treatment

The data that the researchers gathered were tabulated using the different statistical tools; Descriptive – Descriptive statistics includes statistical procedures that we use to describe the population we are studying. The data will be collected from the sample, and the results will help us organize and describe the data, frequency will be used to determine the number of times an answer is being chosen by the respondent, percentage is another way of expressing a proportion. Frequency and percentage were used in the presentation of the demographic profile. Tabular and summer calculation were utilized to present the data or information. Correlation Coefficient was utilized to measure the strength of the relationship between two random variables by mean of a single number. The Pearson Correlation Coefficient (p) measures the strength of the linear relationship between two variables X and Y.

3 Results And Discussion

This study aimed to know the negative effects of the severe exposure to ICT to the student teachers of MSU-IIT College of Education, and the ICTs that are commonly used by the student teachers that affect the health status of the student teachers of MSU-IIT, College of Education. Results indicated that the frequent use of Iphones affect the psychological and emotional health of the student teachers depending on the course taken.

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>19</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 1. Profile of the Respondents according to their Age
As depicted in the table 1, majority of the respondents are in the age of 20 with 5.3%, followed by 21 with a 1.3%. So, this implies that majority of our respondents were 20 years old. Hence, most of the student teachers who are fourth year are aged 20 years old.

Table 2. Profile of the Respondents according to their Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>27</td>
<td>3.5</td>
</tr>
<tr>
<td>FEMALE</td>
<td>33</td>
<td>4.3</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Table 2 shows the profile of the respondents according to their gender. 33 of our respondents are female with a 4.3% and 27 are male with a 3.5%. So, this shows that most of the respondents are female. Since there is a higher number of female students enrolled in the College of Education compared to male students.

Table 3. Profile of the Respondents according to their Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAPEH</td>
<td>15</td>
<td>1.9</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>DT</td>
<td>7</td>
<td>.9</td>
<td>11.7</td>
<td>36.7</td>
</tr>
<tr>
<td>IT</td>
<td>7</td>
<td>.9</td>
<td>11.7</td>
<td>48.3</td>
</tr>
<tr>
<td>TLE</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>50.0</td>
</tr>
<tr>
<td>BEED</td>
<td>15</td>
<td>1.9</td>
<td>25.0</td>
<td>75.0</td>
</tr>
<tr>
<td>ENG</td>
<td>3</td>
<td>.4</td>
<td>5.0</td>
<td>80.0</td>
</tr>
<tr>
<td>BEED</td>
<td>3</td>
<td>.4</td>
<td>5.0</td>
<td>80.0</td>
</tr>
<tr>
<td>SCIE</td>
<td>BIO</td>
<td>1</td>
<td>1.7</td>
<td>81.7</td>
</tr>
<tr>
<td>PHY</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>83.3</td>
</tr>
<tr>
<td>MATH</td>
<td>7</td>
<td>.9</td>
<td>11.7</td>
<td>95.0</td>
</tr>
<tr>
<td>GENSCIE</td>
<td>3</td>
<td>.4</td>
<td>5.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>7.8</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows that the majority of the respondents were BSED-Mapeh and BEED-English with the frequency of 15 and a percentage of 25. This is due to the accessibility and the availability of the students, who were more reachable compared to other courses of the college of education.
Table 4. Profile of the Respondents according to their Family Income

<table>
<thead>
<tr>
<th>Family Income</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>₱5,000.00</td>
<td>4</td>
<td>.5</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>₱8,000.00</td>
<td>5</td>
<td>.6</td>
<td>8.3</td>
<td>15.0</td>
</tr>
<tr>
<td>₱10,000.00</td>
<td>21</td>
<td>2.7</td>
<td>35.0</td>
<td>50.0</td>
</tr>
<tr>
<td>₱11,000.00</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>51.7</td>
</tr>
<tr>
<td>₱12,000.00</td>
<td>2</td>
<td>.3</td>
<td>3.3</td>
<td>55.0</td>
</tr>
<tr>
<td>₱14,000.00</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>56.7</td>
</tr>
<tr>
<td>₱15,000.00</td>
<td>13</td>
<td>1.7</td>
<td>21.7</td>
<td>78.3</td>
</tr>
<tr>
<td>₱16,000.00</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>80.0</td>
</tr>
<tr>
<td>₱20,000.00</td>
<td>10</td>
<td>1.3</td>
<td>16.7</td>
<td>96.7</td>
</tr>
<tr>
<td>₱30,000.00</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>98.3</td>
</tr>
<tr>
<td>₱40,000.00</td>
<td>1</td>
<td>.1</td>
<td>1.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>7.8</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows the family income of the respondents. The result shows that most of our respondents has an income of ₱10,000.00 monthly with a frequency of 21 and a percentage 2.7.

Table 5. Relationship between the ICT usage in terms of frequency and duration and the health status of the student teachers of CED, MSU-IIT

<table>
<thead>
<tr>
<th>PHYSICAL</th>
<th>MENTAL</th>
<th>PS</th>
</tr>
</thead>
<tbody>
<tr>
<td>L/</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>EMOTIONS</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ONAL</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>STATE</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>O</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of Years Using Computer</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.071</td>
<td>.115</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>.590</td>
<td>.380</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>-.108</td>
<td>.032</td>
<td>63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobiles</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.412</td>
<td>.807</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>.6</td>
<td>.0</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>.1</td>
<td>.1</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Computer</strong></td>
<td>-.006</td>
<td>.050</td>
<td>-.0</td>
</tr>
<tr>
<td></td>
<td>81</td>
<td>.0</td>
<td>37</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.961</td>
<td>.702</td>
<td>.5</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>-.058</td>
<td>-.199</td>
<td>-</td>
</tr>
<tr>
<td><strong>Tablets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.658</td>
<td>.128</td>
<td>.9</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>.053</td>
<td>-.048</td>
<td>-</td>
</tr>
<tr>
<td><strong>Smart Phones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.688</td>
<td>.717</td>
<td>.9</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>-.005</td>
<td>.294*</td>
<td>.0</td>
</tr>
<tr>
<td><strong>iPhones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.972</td>
<td>.022</td>
<td>.9</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>-.028</td>
<td>.139</td>
<td>.2</td>
</tr>
<tr>
<td><strong>Calling</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.833</td>
<td>.290</td>
<td>.0</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>-.118</td>
<td>.211</td>
<td>.1</td>
</tr>
<tr>
<td><strong>Messaging</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.371</td>
<td>.106</td>
<td>.2</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>-.112</td>
<td>.052</td>
<td>.0</td>
</tr>
<tr>
<td><strong>Internet</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.396</td>
<td>.692</td>
<td>.8</td>
</tr>
<tr>
<td>N</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>-.285*</td>
<td>-.008</td>
<td>-</td>
</tr>
<tr>
<td><strong>Social Networking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.027</td>
<td>.949</td>
<td>.7</td>
</tr>
<tr>
<td></td>
<td>44</td>
<td>.0</td>
<td>41</td>
</tr>
</tbody>
</table>
As depicted in the table above, there is a significant relationship between iPhones and mental/emotional health status with the p-value of 0.022, between calling and Psychological health status with the p-value of 0.44 and between social networking sites and physical health status with the p-value of 0.027.

Table 6. Relationship among the usage of Information and Communication Technology, gender and Psychological Health Status of the respondents

<table>
<thead>
<tr>
<th>Tests of Between-Subjects Effects</th>
<th>Source</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ICT</td>
<td>4</td>
<td>2.039</td>
<td>17.050</td>
<td>.009</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>1</td>
<td>1.606</td>
<td>7.894</td>
<td>.014</td>
</tr>
<tr>
<td></td>
<td>ICT * Gender</td>
<td>4</td>
<td>.120</td>
<td>.141</td>
<td>.966</td>
</tr>
</tbody>
</table>

Legend: if p-value is less than 0.05, then the relationship is significant; otherwise is not significant.

As depicted in the table above, there is a significant relationship with the Frequency usage of ICT and Psychological Health Status with a p-value of 0.009 and the Gender and Psychological Health Status with 0.014. But there is no significant relationship between the Gender with ICT usage Gender towards Psychological Health Status with a p-value of 0.966. Hence, we do not have sufficient evidence to conclude that there is a significant relationship between ICT usage and the Psychological Health Status of the respondents.
Table 8. Relationship among the usage of Information and Communication Technology, family income and Mental/Emotional Health Status of the respondents

<table>
<thead>
<tr>
<th>Tests of Between-Subjects Effects</th>
<th>Dependent Variable: MS</th>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT</td>
<td>Hypothesis s</td>
<td>4</td>
<td>2.395</td>
<td>2.473</td>
<td>.081</td>
<td></td>
</tr>
<tr>
<td>Family_Income</td>
<td>Hypothesis s</td>
<td>10</td>
<td>1.116</td>
<td>1.054</td>
<td>.426</td>
<td></td>
</tr>
<tr>
<td>ICT * Family_Income</td>
<td>Hypothesis s</td>
<td>11</td>
<td>.886</td>
<td>.634</td>
<td>.787</td>
<td></td>
</tr>
</tbody>
</table>

Legend: if p-value is less than 0.05, then the relationship is significant; otherwise is not significant.

As depicted in the table above, there is a significant relationship between the ICT usage to the Mental/emotional state of the respondents with a p-value of .081. There is no significant relationship between the Family Income with frequency usage of ICT and the Mental/Emotional State of the respondents. The p-values are greater than 0.05. Hence, we do not have sufficient evidence to conclude that there is a significant relationship between Family Income with frequency usage of ICT and the Physical Health of the respondents.

Table 9. Relationship among the usage of Information and Communication Technology, family income and Psychological Health Status of the respondents

<table>
<thead>
<tr>
<th>Tests of Between-Subjects Effects</th>
<th>Dependent Variable: PSY</th>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT</td>
<td>Hypothesis s</td>
<td>4</td>
<td>2.870</td>
<td>3.305</td>
<td>.040</td>
<td></td>
</tr>
<tr>
<td>Family_Income</td>
<td>Hypothesis s</td>
<td>10</td>
<td>.897</td>
<td>1.063</td>
<td>.429</td>
<td></td>
</tr>
<tr>
<td>ICT * Family_Income</td>
<td>Hypothesis s</td>
<td>11</td>
<td>.891</td>
<td>1.188</td>
<td>.332</td>
<td></td>
</tr>
</tbody>
</table>

Legend: if p-value is less than 0.05, then the relationship is significant; otherwise is not significant.

As depicted in the table above, there is a significant relationship between the ICT usage to the Psychological Health Status with a p-value of .040. There is no significant relationship between the Family Income with frequency usage of ICT and the Physical Health of the respondents.
The p-values are greater than 0.05. Hence, we do not have sufficient evidence to conclude that there is a significant relationship between Family Income with frequency usage of ICT and the Psychological Health Status of the respondents.

References

[19] The effects of ICT on Student’s learning in Teacher Education Programs. Files retrieved from...
https://library.iated.org/view/HAQ2012EFF
[22] Information and Communications Technologies. Files retrieved from http://searchcio.techtarget.com/definition/ICT-information-and-communicationstechnology-or-technologies
To Investigate the Effects of Static Stretching and Dynamic Stretching on Power and Agility Performance in University Students

Joel Chia$^1$, Dominan Cho$^2$

{penghwee.chia@nie.edu.sg$^1$, dominan_159@hotmail.com$^2$}

Nanyang Technological University National Institute of Education Physical Education & Sport Science$^1$, Nanyang Technological University National Institute of Education Physical Education & Sport Science$^2$

Abstract. Warming up before the start of any physical activity has been a common practice for many decades. It serves to prepare an athlete physically and mentally for optimal performance. Stretching is one of the main components of a warm up, and it is usually done in the form of static stretching or dynamic stretching. Static stretching has been demonstrated to impair performance, while dynamic stretching has been suggested to enhance performance. For this study, it was hypothesized that dynamic stretching would be more effective in enhancing power and agility performance in university students. 16 participants who trains or exercise at least twice per week volunteered for this study. A within-subject, randomized crossover design was employed, and participants had to undergo two intervention protocols – static stretching (SS) and dynamic stretching (DS), on two separate sessions. After each stretching protocol, participants had to perform a standing broad jump and 4x10m shuttle run test with three attempts each. Only the best attempt for each test was recorded for data analysis. Results demonstrated a significant difference ($p \leq 0.001$) between the mean for standing broad jump between SS and DS, with DS having a higher mean (204.4 ± 39.11) than SS (196.0 ± 33.69). A significant difference ($p = 0.017$) was also demonstrated between the mean for the shuttle run test, with DS (11.11 ± 1.35) performing better than SS (11.33 ± 1.44).

Keywords: Static Stretching, Dynamic Stretching, Power Performance & Agility Performance

1 Introduction

1.1 Background

Warming up prior to any physical activity has been widely practiced for many decades, with the intention of preparing an athlete for optimal performance (Young & Behm, 2002). It typically comprises 3 main components: 1) a
submaximal aerobic activity such as jogging or cycling; 2) stretching exercises for specific
muscle groups and; 3) rehearsing of the sport-specific movement or skills (Young & Behm,
2002; Behm & Chaouachi, 2011).

There are a few different types of stretches that are performed, including static stretching (SS),
dynamic stretching (DS), proprioceptive neuromuscular facilitation (Young & Behm, 2002).
Static stretching is one of the most commonly performed type of stretches for many years. It
involves a controlled lengthening of a muscle, whereby the end range of motion (ROM) is held
in place for a specific amount of time. Static stretching has been proven to be effective in
increasing ROM (Haddad et al., 2014). Furthermore, other proposed benefits of SS include a
reduction in risk of injury (Cramer et al., 2004), decreasing muscle soreness (High, Howley &
Franks, 1989) and enhanced athletic performance (Sullivan et al., 2009). One possible
explanation for the improvement in physical performance is due to muscle’s improved ability
to stretch, and a lowered resistance of a compliant muscle (Young, 2007). Nevertheless, a few
studies demonstrated that SS does not lower the risk of injury (Herbert & Gabriel, 2002; Small
et al., 2008).

On the other hand, DS involves movement from a neutral position to its end ROM, where muscle
length is elongated, and then returning to its original position. These stretches are performed in
a smooth and controlled manner, and repeated for a specific number of repetitions (O’Sullivan,
Murray & Sainsbury, 2009). Numerous studies have concluded the positive effects of DS, such
as enhancing athletic performance in the areas of agility, explosiveness and vertical jump height
(Haddad et al., 2014). It was suggested that DS improves performance by increasing the
excitability of motor units and improved kinesthetic sense. Thus, it improves proprioception and
pre-activation (Bishop & Middleton, 2013).

1.2 Purpose and Rationale

The purpose of this study is to broaden the current literature regarding the topic of SS and DS
on performance. Most of the existing studies used performance
measures such as vertical jump or a variety of agility tests including the 505 test and Illinois
agility test. These measures are certainly relevant in certain sports. However, there is a lack of
studies that uses a broad jump or 10-meter shuttle run to measure power and agility performance
respectively. These two tests are relevant because they are components of the International
Physical Fitness Test, as well as Singapore’s National Physical Fitness Award (NAPFA). As
NAPFA test is compulsory for primary 2, 4 & 6 students, secondary 2,4 & 5 students and junior
college 2 students in Singapore, this study may provide valuable insights to help them improve
their performance.

1.3 Aim and hypothesis

The specific aim of this study is to evaluate whether SS or DS is more effective in enhancing
power and agility performance. Power and agility are important components of sport
performance in several types of sports. Furthermore, they are also commonly evaluated during
recruitment of new athletes, as well as general fitness tests, such as the International Physical
Fitness test or the NAPFA test. It is hypothesized that DS would be more effective than SS in improving power and agility performance.

2 Literature Review

The literature on the effects of static and dynamic stretching on sport performance is very well-studied. This section will discuss several past research regarding this topic and how it is relevant to this current study.

A systematic review of the acute effects of static and dynamic stretching on performance done by Behm & Chaouachi (2011) found that there are a number of studies whose results suggests that SS does not impair performance and supported with possible reasons. It was also suggested that physical activities with relatively longer ground contact times like jumping may not be significantly impaired by SS. Static stretching was once thought to improve performance for various reasons. The increase in performance was attributed to the improved ability of a muscle to stretch, as well as decreasing the stiffness of the muscle. Overall, this systematic review found that the majority of studies are in agreement that SS does actually impair performance. Only a small number of studies reported no significant differences or improved performance.

Another research done by Gelder & Bartz titled “the effect of acute stretching on agility performance” (2011) was one of the few studies that examined the effects of stretching on agility. Many studies focused on the impact of stretching on athletic components such as force, power and sprinting speed. There is a lack of literature regarding how agility is affected by different stretching techniques. The participants in this study were assigned into three groups – static stretching, dynamic stretching and no stretching. They were tasked to perform the 505-agility test to determine which stretching technique resulted in a better performance. The results showed that the dynamic stretching group performed significantly better than the static stretching and the control group. However, a between-subject design was used for this study. Thus, it was unclear whether static or dynamic stretching would be better for individual performance.

A study titled “effects of dynamic and static stretching on vertical jump performance and electromyographic activity” done by Hough, Ross & Howatson (2009) investigated how static stretching and dynamic stretching affected vertical jump performance, as well as using electromyography (EMG) to assess muscle activity following each stretch protocol. This research employed a within-subject, randomized crossover study design where participants had to undergo three different protocols on different sessions – static stretching, dynamic stretching and no stretching. It was established that static stretching led to a significant decrease in jump performance as compared to the dynamic stretching and control group. EMG activity was also reported to have a significant increase after dynamic stretching. Overall, this study coincides with many other research that demonstrated how jump performance is impaired by static stretching.

Another study titled “the use of static stretching in warm-up for training and competition” authored by Young (2007) highlighted the common limitations that many studies have. The two important points mentioned were stretch
duration and stretch intensity. For instance, Young noted that a particular study involved a protocol using stretches of 30-minutes duration. This is an important factor because some studies have suggested that stretches of longer duration may result in a larger magnitude of performance impairment than a shorter duration. Often, most studies that demonstrated a negative effect of static stretching tend to use at least 2 minutes of stretch for each muscle group. Thus, stretching protocols of such durations are not representative of a real-world training setting.

Stretch intensity is another important point to consider when implementing protocols. In some studies, this was usually not well described and controlled. Examples of instructions given were to stretch until the point of “pain threshold”, until “pain was received” and “just before discomfort”. There are also studies where participants were not given specific instructions for their stretches. It was pointed out that stretch intensity should be taken into account, because it can play a significant role in performance. A study reported that stretching of a muscle with 10% less elongation as compared to the “point just before pain” did not result in impaired power production.

Overall, these literature review highlights that despite the consensus that DS is more effective in improving performance, there are still some studies which disagree with the statement. Furthermore, it is important that stretching protocols are designed in a way that is more applicable to athletes in a real setting, thus increasing the practicality of the study.

3 Methodology

3.1 Recruitment

A total of 16 participants (Height = 166.44cm ± 13.62, Weight = 64.3kg ± 14.9; Mean ± SD) volunteered for this study. Participants would only be recruited if they were 21-27 years old and were free from any injuries within the past 6 months. In addition, they must also be physically active, and exercise or take part in any form of physical activity at least twice per week. Participants who did not fulfill any of the aforementioned criteria were excluded from the study. This study was approved by the Institutional Review Board of Nanyang Technological University. All participants have read and signed an informed consent document.

3.2 Study Design

This study was performed using a randomized crossover, within-subject study design. There were two independent conditions for this study; SS and DS, thus participants had to attend two separate sessions. Each session was separated by least 48 hours. A coin toss was used to determined which condition each participant will be assigned to for their first session. Following each protocol intervention, participants would undergo two performance measures; standing broad jump test and a 4x10m shuttle run test. These tests were used to access power and agility performance respectively. The order of performance testing was also conducted in a randomized order for each participant. However, the order of testing for an individual participant remained consistent across both sessions. Similarly, a coin tossed was used to determine the order of
performance tests. The entire procedure was conducted in an indoor sports facility to minimise any effects of wind resistance or bad weather conditions.

3.3 Methods

The entire study procedures were explained to each participant for familiarization purposes. Participants would start each session by jogging at a self-selected pace for 3 minutes. After jogging, they were told to rest for 3 minutes. They would then proceed to perform their stretching protocol that they have been assigned for that session. A demonstration for each stretch was shown to each participant so that they would be able to perform them correctly. Table 1 and table 2 shows the types of SS and DS stretches respectively and the duration to be performed. Both stretching protocols were adapted from Gelder & Bartz (2011) study.

3.1 Static Stretching

The stretches used in this protocol were constructed to be as similar as possible to conventional stretches that many athletes use prior to physical activity. The muscles that are emphasized include the main locomotive muscle groups such as the hip flexors, hip abductors and adductors, gluteal, quadriceps, hamstrings and gastrocnemius. It also comprises some emphasis on the erector spinae, pectorals, abdominals and obliques. All stretches are done in sets of 30 seconds, because it is representative of a real-world training setting (Gelder & Bartz, 2011). There have been studies performed where stretches were held for more than 30 seconds, and researchers have found that it does not provide additional increases in ROM (Bandy, Irion & Briggler, 1997). In addition, participants were told to stretch each muscle at the point just before discomfort. Table 1 shows the order of static stretches performed.

3.2 Dynamic Stretching

The DS protocol was designed to closely replicate common dynamic stretching techniques used by many athletes. It comprises a mixture of mobility drills, movements within an active ROM and simple plyometrics. A huge emphasis is placed on the muscles of the lower limbs, whilst targeting the other upper body muscles with active upper-limb movements. Table 2 shows the order and repetitions of dynamic stretches of which they were performed.

<table>
<thead>
<tr>
<th>Stretch name</th>
<th>Muscle emphasis</th>
<th>Time (s)</th>
<th>Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butterfly</td>
<td>Adductors</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Sit and reach</td>
<td>Spinal erectors and hamstrings</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Floor back extension</td>
<td>Abdominals</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Lateral bend</td>
<td>Obliques</td>
<td>30</td>
<td>2 (1 per side)</td>
</tr>
<tr>
<td>Wall pec</td>
<td>Pectoral groups</td>
<td>30</td>
<td>2 (1 per side)</td>
</tr>
<tr>
<td>Stretch name</td>
<td>Muscle emphasis</td>
<td>Repetitions</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Supine knee rocking</td>
<td>Pelvic, spinal mobility</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Prone scorpion</td>
<td>Quadriceps, gluteus maximus, obliques</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Hand walkout</td>
<td>Erector spinae, gastrocnemius, soleus</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Prisoner squats</td>
<td>Quadriceps, hamstrings, rhomboids</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Lunge with twist</td>
<td>Quadriceps, hamstrings, obliques</td>
<td>5 per side</td>
<td></td>
</tr>
<tr>
<td>High knees</td>
<td>Quadriceps, gastrocnemius, soleus</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Heel kicks</td>
<td>Hamstrings, gluteus maximus, gastrocnemius, soleus</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Leg swing</td>
<td>Hamstrings, iliopsoas, gluteus maximus</td>
<td>10 per side</td>
<td></td>
</tr>
<tr>
<td>Box drill hops</td>
<td>Gastrocnemius, soleus</td>
<td>10 CW/CCW</td>
<td></td>
</tr>
<tr>
<td>(counter and clockwise)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single leg hops (back and forth)</td>
<td>Gastrocnemius, soleus</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Single leg hops (side to side)</td>
<td>Gastrocnemius, soleus</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Carioca</td>
<td>Gastrocnemius, soleus, adductors, abductors</td>
<td>4 x Half of a basketball court</td>
<td></td>
</tr>
</tbody>
</table>
Upon completion of the entire stretching procedures, participants rested for 2 minutes before the commencement of the performance measures tests.

3.4 Performance measure tests

3.4.1 Standing broad jump

Participants started by standing behind a starting line, and were told to jump with their maximum effort. No practice trials were allowed to minimise any learning effects. A total of three attempts were given to each participant, with a 1-minute rest between each attempt. A measuring tape was used to measure the jump distance. The best performance was used for data analysis. After three attempts were completed, participants were rested for 2 minutes before performing the 4x10m shuttle run test.

3.4.2 4x10m shuttle run

Prior to the test, the starting line and the 10-m line was established and made clear to each participant. This was achieved using a cone and masking tape. Participants had to start behind the starting line, and upon giving the signal “3, 2, 1, go!”, the timer would start and they had to perform the test with maximum effort. For the first three laps of 10-m, participants were required to touch the line with their preferred hand before turning around. Similarly, a total of three attempts were given, with a 1-minute rest between each attempt. Only the best timing was used for data analysis. After the test was completed, a 2-minute rest was given before performing the standing broad jump test.

4. Results

Statistical analysis of the data was performed using JASP (Version 0.13.1). A paired samples T-test was used to determine statistical significance (p ≤ 0.05).

Table 3 represents the descriptive statistics of each performance measure tests for both SS and DS protocols.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sample size</th>
<th>Mean ± SD</th>
<th>4x10m shuttle run (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Standing broad jump (cm)</td>
<td></td>
</tr>
<tr>
<td>Static stretching</td>
<td>16</td>
<td>196.0 ± 33.689</td>
<td>11.34 ± 1.443</td>
</tr>
<tr>
<td>Dynamic stretching</td>
<td>16</td>
<td>204.4 ± 39.108</td>
<td>11.11 ± 1.349</td>
</tr>
</tbody>
</table>
There was a significant difference in the mean of the standing broad jump distance between SS and DS conditions ($p \leq 0.001$). Participants were able to jump further (204.4cm ± 39.11, mean ± SD) for the standing broad jump test when they performed DS as compared to SS (196.0cm ± 33.69). Similarly, there was also a significant difference in the mean of the 4x10m shuttle run times between SS and DS conditions ($p = 0.017$). Participants performed significantly faster (11.11s ± 1.35) when DS was performed as compared to SS (11.34s ± 1.44).

**Figure 1** Standard error bar for standing broad jump. SSSBJ – static stretching standing broad jump; DSSBJ – dynamic stretching standing broad jump

**Figure 2** Standard error bar for 4x10m shuttle. SSSR – static stretching shuttle run; DSSR – dynamic stretching shuttle run

5. **Discussions and conclusions**

5.1 **Discussions**
The results of this study support the hypothesis that DS is more effective in enhancing power and agility performance than SS. The data has revealed that there was a significant difference in both standing broad jump and shuttle run performance, with DS having higher means than SS. Based on the current literature, there are many studies that are equivocal in concluding that SS is detrimental for power and agility performance. A study done by Winchester, Nelson &
Kokkonen (2009) found that even a single set of SS performed for 30 seconds was sufficient to reduce maximal voluntary strength. In another study, counter-movement jump performance was found to be decreased following a session of SS that lasted for 5 minutes, but returned to baseline levels after 15 minutes (Bradley, Olsen & Portas, 2007).

With respect to agility performance, the results of this study coincide with various other studies as well. Despite using different agility tests in all of these studies, it was concluded that DS was beneficial for improving performance (Khorasani, Sahebozamani, Tabrizi & Yusof, 2010; Little & Williams, 2005; McMillan, Moore, Hatler & Taylor, 2006). There are several proposed reasons as to why SS may cause a reduction in sport performance. One reason is that SS reduces the stiffness of the musculotendinous unit, thus negatively affecting the amount of elastic energy that can be stored and reused (Haddad et al. 2014). In addition, the slack in the musculotendinous unit as a result of SS can delay the transmission of forces through tendons. This prevents maximal storage and decreases the efficiency of utilizing elastic energy during the stretch shortening cycle (Nelson, Driscoll, Landin, Young & Schexnayder, 2005). Another possible reason is that SS increases the tendon compliance, thus lowering maximal force production (Power, Behm, Cahill, Carroll & Young, 2004).

There seems to be a general consensus in the literature that DS is more effective at enhancing power and agility performance. Researchers have theorized possible mechanisms for this improvement. Firstly, DS improves performance as a result of increasing the muscle and body temperature prior to physical activity (Fletcher & Jones, 2004). An increased in muscle temperature has been shown to provide a number of benefits. It reduces stiffness of muscles, increases force production and anaerobic power, and lowers concentration of lactate in blood and muscles. It also increases the rate of glycogenosis, glycolysis, and stimulates the degradation of high-energy phosphate (Gelder & Bartz, 2011). Next, DS may have a post-activation potentiation effect on the muscles due to contractions of the antagonist, stimulation of the nervous system, and reduced inhibition of the antagonist muscles (Behm & Chaouachi, 2011). Another suggestion was that DS increases the rate which cross-bridge attachments can be formed. This increases the number of cross-bridges allowed to be formed, hence resulting in enhanced force production (Behm & Chaouachi, 2011).

5.2 Limitations and future research
One limitation of this study is that the participants were of different training background and experience. It is possible that highly trained athletes, or athletes who participate mainly in power and/or agility dominant sports are more resistant to the differences that may arise as a result of SS or DS, or vice-versa. Thus, future research could look into recruiting participants who are very similar in training experience and background.

5.3 Conclusion
In summary, dynamic stretching is more effective in enhancing power and agility performance. Athletes who participate in sports where power and agility are key components of athletic performance, or those who are looking to improve their results in a physical performance test should look to incorporate dynamic stretching instead of static stretching during their warm-up.
References


Associations between physical activity, desk-bound time, and physical fitness in Chinese female institute students

Guo Ming Ming¹, Wang Xiao Zan², Koh Koon Teck³

{guo.mingming@outlook.com¹, xiaozanwang@163.com², koonteck.koh@nie.edu.sg³}

College of Physical Education and Health, East China Normal University, Shanghai, China, 200241¹, College of Physical Education and Health, East China Normal University, Shanghai, China, 200241², National Institute of Education, Nanyang Technological University, Singapore, 637616³

Abstract. This study’s objective is to look into how PA, ST, and PF relate to one another in Chinese female college students. This study included 512 Chinese female college students. Physical activity (PA) and sedentary time of participants (ST), and level of fitness were evaluated utilizing the Chinese National Student Physical Fitness Test and the International Physical Activity Questionnaire (PF). The findings indicated that compared to inactive participants, active participants had considerably greater levels of cardiorespiratory fitness and total fitness. Compared to inactive people with high sedentary time, active persons with low ST or high ST also have greater cardiorespiratory fitness. Furthermore, compared to inactive participants with high sedentary time, active participants with high ST and inactive participants with low ST have less flexibility. Positive correlations between PA and cardiorespiratory

Keywords: Chinese students, physical health, sedentary behavior, and physical activity

1 Introduction

Physical activity (PA) is the term used to describe the energy-draining behavior brought on by the skeletal muscle action within the human body [1]. Sitting, lying down, or sleeping when awake is referred to as sedentary behavior (SB), which often involves decreased energy use [2]. Regular PA has favorable impacts on mental health and overall health and is protective in the treatment of non-communicable diseases such cancer, type 2 diabetes, and cardiovascular disease [3]. High levels of SB, in contrast to PA, are associated with danger to human health and all-cause mortality [3]. An adult who does not engage in 150 minutes of moderate-intensity physical activity (MPA) or 75 minutes of vigorous physical activity (VPA) each week is deemed physically inactive by the World Health Organization (WHO). 27.5% of adults globally are physically inactive, according to a 2016 survey [4]. SB spends more than 8 hours a day sitting down, according to study, and the trend is rising [5].

ACPES 2022, October 28-30, Medan, Indonesia
Copyright © 2023 EAI
DOI 10.4108/eai.28-10-2022.2327414
These conflicting results from previously published studies, that PA and PF levels in women are significantly lower than in men, and available studies examining populations of female students Eastern background and culture influences. We should research the association between PA and ST. PF among Eastern schoolgirls to inform policy and practice, given that it is limited.

2 Materials and Methods

2.1 Study design and participants

From February to May 2022, a single cross-sectional study was carried out at East China Normal University in Shanghai, China. At East China Normal University, 512 first- and second-year students collected snowball samples as part of this study.

2.2 Procedure

Participants accept recruited through campus notices and online advertisements. Each graduate completed her contract and signed her informed approval form in front of the class. The participant was then instructed to complete an online questionnaire that requested information about her recent PA and ST as well as her name, contact details, physical education class, and name. After gathering participant data through surveys, the study's two authors approached the teachers of physical education and requested their assistance in managing and gathering the PF data. To guarantee test consistency, the original author of this study participated in and oversaw all data gathering procedures. The first author was then given the data to analyze.

2.3 Physical fitness measurements

The participants in this study was consistent adopting the Chinese Ministry of Education test system, CNSPFT [18]. CNSFT has seven elements. Prevalence of obesity (BMI, kg/m²), aerobic capacity (ml), rising pole vault (m), one minute stomach muscle (times), and 800-meter dash (sec) indicate, in that order, body composition, cardiorespiratory fitness, speed, flexibility, muscle burst, muscular endurance, and cardiorespiratory endurance. Each test's precise objective and the proper way to administer it have already been covered in another study [19]. It is recommended that readers consult it for more details. According to the CNSFT standard's scoring methodology [18], the results for each item were converted to percentage scores for scoring. The following formula from the CNSPFT criteria was then used to determine an overall fitness score based on the results for each item.

\[
\text{Total fitness score} = \text{body composition} \times 0.15 + \text{cardio score} \times 0.15 + \text{speed score} \times 0.20 + \text{flexibility score} \times 0.10 + \text{muscle burst score} \times 0.10 + \text{muscle endurance score} \times 0.10 + \text{cardio endurance score} \times 0.20.
\]

The scores for each item and the overall fitness score were categorized into four levels: accordance to the CNSFT criteria, Fail, Pass, Good, or Excellent. The appropriate group for each element was defined as the participants who achieved excellent and good levels in that element as well as overall fitness, while the inappropriate group was defined as the participants
who did not achieve excellent and good levels (i.e., failed students and failing students). assemble for this thing.

2.4 Statistical analyses

Data that had been removed was taken illegally with research participants. The mean and standard deviation of descriptive data for PA, ST, and each PF element were reported. The long-term strength of links between active and inactive associations as well as between desk and sedentary groups were examined using independent-samples t-tests to identify significant differences between the mean scores for each PF item. figured out if there is The likelihood that the active moderately sedentary group would be disqualified in comparison to the inactive sedentary group was calculated using binary logistic regression for each PF item. Tested. For each PF item, the active/slightly sedentary, active/severely sedentary, and inactive/lowly sedentary groups were contrasted with the inactive/severely deprived group using multinomial logistic regression. compared. We are taking into account the prospect of getting rejected.

3 Results

After removing data with missing PF indices (11) or out-of-range PA data (495 participants), the final analysis included 495 participants (6). Table 1 provides descriptive statistics for each item's MVPA, ST, and PF scores. A total of 62% (n = 305) of individuals met WHO-PA recommendations, spending 431.52 ± 183.75 minutes per day on ST and 233.35 ± 219.63 minutes on MVPA each week (at least 150 minutes overall). week) [3]. MVPA or at least 75 minutes of VPA. Spirit capacity (p = 0.05) and total fitness (p = 0.01) were considerably higher in the active group than in the inactive group. 43% of individuals (n=213) were classified as sedentary and less sedentary, with a median ST (420 minutes per day). No discernible differences existed between the sedentary

Table 1 Participants’ physical activity, sedentary time, and level of fitness are described in descriptive statistics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>All (495)</th>
<th>Active (305)</th>
<th>Inactive (190)</th>
<th>p</th>
<th>Low Sedentary (213)</th>
<th>High Sedentary (282)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVPA (mins/week)</td>
<td>233.35 ± 219.63</td>
<td>333.61 ± 225.25</td>
<td>72.42 ± 47.08</td>
<td>0.00</td>
<td>254.37 ± 218.31</td>
<td>217.48 ± 219.67</td>
<td>0.06</td>
</tr>
<tr>
<td>ST (mins/day)</td>
<td>431.52 ± 183.75</td>
<td>425.02 ± 182.76</td>
<td>441.95 ± 185.35</td>
<td>0.31</td>
<td>256.69 ± 96.95</td>
<td>563.56 ± 107.71</td>
<td></td>
</tr>
<tr>
<td>Fitness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>563.56 ± 107.71</td>
<td>0.00^</td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>20.02 ± 1.77</td>
<td>20.11 ± 1.83</td>
<td>19.88 ± 1.68</td>
<td>0.16</td>
<td>20.07 ± 1.67</td>
<td>19.99 ± 1.85</td>
<td>0.621</td>
</tr>
</tbody>
</table>
The mapping between the PA, ST, and PF elements is shown in Table 2. The active group had a higher likelihood of being cardiopulmonarily ineligible as compared to the inactive group (spatial capacity; odds ratio (OR), 0.566; 95% confidence interval (CI), 0.381-0.842; p0.01 poor rating). The active group was nevertheless considerably less likely than the inactive groups to be labeled as lacking in cardiorespiratory fitness (spatial capacity; OR 0.572; 95% CI 0.384-0.852; p0.05). This finding suggests a beneficial relationship between PA and cardiopulmonary function.

**Table 2** Physical activity and sedentary time groups are correlated with classifications of physical fitness (n = 495).

<table>
<thead>
<tr>
<th></th>
<th>PA Group (Using the inactive group as reference)</th>
<th>ST Group (Using the high sedentary group as reference)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Active</td>
<td>Active*</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fit</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>unfit</td>
<td>1.352(0.541-3.380)</td>
<td>1.386(0.554-3.472)</td>
</tr>
<tr>
<td>Vital capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fit</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>unfit</td>
<td>0.566(0.381-0.842)*</td>
<td>0.572(0.384-0.852)**</td>
</tr>
<tr>
<td>800 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fit</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>unfit</td>
<td>0.724(0.489-1.073)</td>
<td>0.720(0.486-1.068)</td>
</tr>
<tr>
<td>Test</td>
<td>Fit</td>
<td>Unfit</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td>---------------</td>
</tr>
<tr>
<td>Sit-up</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>unfit</td>
<td></td>
</tr>
<tr>
<td>Sit and reach</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>unfit</td>
<td></td>
</tr>
<tr>
<td>Standing long jump</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>unfit</td>
<td></td>
</tr>
<tr>
<td>50 m run</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>unfit</td>
<td></td>
</tr>
<tr>
<td>Overall fitness</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>unfit</td>
<td></td>
</tr>
</tbody>
</table>

Data are OR and 95% CI.

PA is additionally adjusted for ST, and ST is mutually adjusted for PA.

* indicates p < 0.05.

4 Discussion

This study's purpose is to examine how PA, ST, and PF relate to one another in Chinese female students. Our findings indicated that 62% of the candidates adhered to the adult PA WHO standards. WHO assignments for adults only call for at least 150 minutes of MVPA or 75 minutes of VPA per week, as opposed to PA advice for children and minors, which demands at least 60 minutes of MVPA daily. [3]. However, only 62% of study participants complied with this criterion. This is somewhat in line with high-income nations in the West (63.2%) and the Asia-Pacific region (64.3%), but substantially lower in East Asian nations (82.7%). [Four]. Chinese university students' lower PA could be the cause. [Four]. Chinese university students may have less PA connected to job, housework, or commuting than adults who are already employed, which could be the cause. Furthermore, females are not supposed to speak out or move around much in traditional Chinese society [20]. Instead, they are expected to be peaceful and well-behaved. Environment and culture are significant influences on people's thinking and behavior, according to Bandura's theory of social cognition [21]. We think that the unique cultural and social environment in China may have an impact on female students' attitudes, routines, and actions when they perceive and participate in PA, ST, and PF in ways that are different from Western countries. There, I contend, is. In fact, according to recent cross-cultural
study, the majority of sports programs intended to impart values in Western nations really take cultural differences into account in terms of how children learn and practice as well as the values they prioritize. have demonstrated that it is not always implemented successfully in Asian cultures. them [22]. Understanding the values and belief systems of female college students that are pertinent to their engagement in PA and how they shape their behavior would be a nice place to start for future research.

The term "sit and reach" refers to the both noted decreased flexibility and started to increase flexibility by increasing PA or lowering ST. is one explanation for this phenomena. As a result, they can initially be less flexible than the group that is sedentary or inactive. It is plausible to infer that for girls with high or low ST, boosting PA vs decreasing ST does not, or even might, do much. More flexibility exacerbates the current situation (that is, less flexible). To increase our understanding, more study on the connection between PA, ST, and flexibility is required.

BMI, abdominal strength, standing long jump, and 50-meter sprint are the participants' separate measures of body balance, muscular endurance, explosive power, and speed. A significant correlation between PA and ST and body composition, muscular endurance, explosive power, or speed was not found in the current study. The findings indicate a favorable relationship between PA and body composition [35], muscular stamina [36], and speed [12]. The points cited in this study are often women [39] or adults from the same group as our study [12], and previous studies have not found a correlation between PA and ST. In studies involving kids, teens, or mixed-sex students, relationships between PA. This study is the first to our knowledge to look at the relationship between PA, ST, and PF among Chinese female college students. The findings of this study will give administrators at government or academic institutions information they may use to create policies or initiatives that will support the health of female college students. This study's sample was taken from a sizable number of female college students, a group that is underrepresented in the literature, which is one of its strengths. The relationship between each PF component and PA or ST was also examined in this study.

These contributions notwithstanding, this study has some significant flaws. First off, because the sample was taken from a single university in Shanghai, it is possible that it is not sufficiently representative of all Chinese female college students. Participants from other states' universities should be included in future studies. The majority of the participants were also in her first or second grade, with only a small number in her third or fourth. As a result, the outcomes do not accurately reflect the academic achievement of all Chinese university students. To close this disparity, future research should include more college juniors and her seniors. Thirdly, rather of using a triaxial accelerometer or another objective measurement tool, participants' PA was assessed using a subjective questionnaire that might have been influenced by recall bias. Objective accelerometers should be used in future investigations to close this gap. Finally, more research should be done to determine the connection between various PF indicators, various PA categories (work, housework, mobility, etc.), and his ST (learning, screen time, etc.). result.

5 Conclusion
In this study, we found a strong relationship between PA, cardiorespiratory health, and general physical health. The findings of this study also suggest that greater cardiorespiratory health and lower flexibility are connected to more PA and less ST. According to these data, each PA and ST may have a different impact on Chinese woman university students' own PF objects. These findings minimize the necessity for fitness pro-movement movements or fitness education to be directed according to gender or age when evaluated from the standpoint of public fitness and fitness education. They instead highlight the significant and unique roles that PA and ST play.

References


Perceived Cushioning Levels of Running Shoes with Different Mechanical Properties

P.S.P. Teng¹, K.F. Leong², N.J.H. Tang³, R. Alonzo⁴

¹ phillis.teng@nie.edu.sg, ² mkfleong@ntu.edu.sg, ³ nich0043@e.ntu.edu.sg, ⁴ r_alonzo@hotmail.co.uk

Abstract. In place of human testing, mechanical shoe tests could be used to save time and costs for shoe manufacturers. This study aimed to compare perceived levels of cushioning with mechanical test results from a new dynamic drop test of running shoes. Nineteen participants were recruited to brisk walk over a 10-m walkway and vertical drop jump from a 30-cm platform. Participants then rated their perceived levels of cushioning of four models of running shoes using the 10cm visual analog scale (VAS). Results showed that the significantly worst perceived cushioned running shoe corresponded with the worst loading rate measured in the dynamic test. On the other hand, perceived levels of cushioning of shoes were not significantly different among shoes with similar loading rates in the dynamic tests. These results suggest that the perceived levels of cushioning only matched dynamic test results if the difference in cushioning properties is sufficiently large.

Keywords: Biomechanics, Heel cushioning, Force plate

1 Introduction

Running is a well-liked sport worldwide but as a result, there is also a substantial number of running-related injuries, amounting to 2.5 to 38 injuries per 1000 running hours [1]. Higher mean vertical loading rates have been associated with running related injury risks among runners [2]. To counter these injury risks, better cushioned footwear could help reduce loading rates by reducing maximum vertical ground reaction force (VGRF), increasing time to the first peak of the VGRF and by allowing more deformation in the cushioned material instead [3]. In fact, studies in 2017 have also found that 67.5% of consumers worldwide consider cushioning of running shoes as ‘very’ to ‘extremely’ critical [4]. This therefore could be a motivating factor for footwear companies to develop materials to help with better cushioning.
To measure the effectiveness of the cushioning systems, studies have used mechanical tests such as the static shore hardness tests [5,6] to determine the hardness of the midsole of shoes. However, the static shoe harness tests may not adequately simulate dynamic conditions during walking or running. Hence, other studies adopted the ASTM F1976 [7] in testing their shoes dynamically [8,9]. This form of mechanical testing is intended to replicate the dynamic impact forces of a foot strike [7]. Nevertheless, the dynamic impact testing in ASTM F1976 still does not replicate how a shoe with a human load is dropped onto the ground as a person walks or runs. Thus, a new dynamic shoe drop test is proposed in this study to better simulate actual shoe impact conditions.

If mechanical tests could truly reflect actual human perceived levels of cushioning, they would then provide footwear manufacturers with a quantitative evaluation of customer satisfaction. This could help footwear companies save costs and time in evaluating their products without the need for human testing. In fact, studies have been conducted to better understand if perceived levels of cushioning and mechanical test results were correlated [6,8,10,11]. However, mechanical test results did not always correspond with perceived levels of cushioning, possibly affected by the type of mechanical test that was carried out. Thus, this study aimed to compare perceived levels of cushioning with results from our newly proposed mechanical test, that might more closely simulate actual dynamic walking or running conditions. It was hypothesized that perceived levels of cushioning matched dynamic test results of the four models of running shoes that were tested.

2 Methodology

2.1 Participants

Nineteen male runners (age: mean 24.7 (SD 1.9) years old; height: mean 1.73 (SD 0.03) m; body mass: mean 67.4 (SD 6.9) kg) participated in this study. Participants ran at least once a week and were heel-strikers. They had no injuries in the lower back, hip, and lower extremities three months before and during the study and had no previous lower-limb surgery in the last three years. As only shoes with US9 sizes were available for this study, participants with only US8.5 to US9.5 were recruited. The study was approved by the Nanyang Technological University Institutional Review Board (IRB-2020-09-045). All participants were briefed of the protocol before signing a written consent form as an agreement to take part in the study.

2.2 Mechanical Test

Dynamic shoe drop tests were conducted on four brands of running shoes using the CADEX Vertical Impactor (Twin-Wire 1000kg Machine, CADEX Inc, Saint-Jean-sur-Richelieu, QC, Canada) (Figure 1). The shoes included in the study were Nike Zoom Fly SP, Asics Gel-DS Trainer 24, Brooks Glycerin 17 and Decathlon Kalenji Run Active.
Following the ASTM F1976 - Standard Test Method For Impact Attenuation Properties Of Athletic Shoes Using An Impact Test [7], moderate drop energy of 5J was used in this test. Instead of impacting the shoe, each shoe with added weights amounting to around 4kg was raised to a height of 15 cm before dropping onto the force plate below to better simulate dynamic movements during moderate impacts such as in walking. For each of the four shoes (right side, size US9), four drop tests were carried out, and the data collected was put through a Butterworth low-pass 4th order filter of 800 Hz via a MATLAB code. Mean loading rate was calculated as the gradient of the vertical ground reaction force curve between 10% to 90% of the slope from heel strike to the first peak. The loading rate (N/ms) of each shoe was then averaged across the four drop trials.

2.3 Participant Protocol

This is part of a bigger study. Participants were asked to brisk walk over a 10m walkway and to carry out a double leg drop vertical jump from a 30-cm platform in a randomized order while wearing the four different brands of shoes. The order of the shoes was also randomized to prevent any chronological biases. Before the start of the experiment, each participant was briefed and asked to carry out the same stretching exercises. Their fatigue levels were monitored using the Borg Scale [12]. Only the dominant foot was used in the collection of experimental data and participants were asked to identify their dominant foot as the foot which kicked a ball the furthest [13]. Each participant was allowed as many practice trials as required. After which, each participant was asked to rate their perceived levels of cushioning of the running shoes using the 10cm visual analog scale (VAS). Participants were blinded to the mechanical properties of each shoe.

2.4 Data Analyses

Normality assumption was first checked with the Shapiro–Wilk test and data were found to be normally distributed (p > 0.05). To compare among the perceived levels of cushioning, a one-
way repeated measures Analysis of Variance was conducted at $\alpha = 0.05$ (IBM SPSS 26.0 — IBM Corp., NY, USA). Sphericity could not be assumed when data were tested using Mauchly’s test of sphericity and a Greenhouse–Geisser correction was applied. Post-hoc test with Bonferroni adjustment was made with a family-wise $\alpha = 0.05$. Data are presented as mean (standard deviation).

### Results and Discussion

The shoe had a significant effect on participants’ perceived levels of cushioning (Table 1). Post-hoc tests showed that the Decathlon shoe was perceived to have significantly less cushioning than the Asics ($p < 0.001$), Nike ($p = 0.032$) and Brooks ($p < 0.001$) shoes. On the other hand, dynamic drop test results showed that Nike shoe was rank the best with the least loading rate (associated with relatively better cushioning and force absorption), followed by Brooks and then Asics, finally ending with the Decathlon shoe that relatively had the highest loading rate (Table 1).

**Table 1** Perceived cushioning levels in participant trials and loading rates of the shoes based on mechanical testing (mean (standard deviation)).

<table>
<thead>
<tr>
<th>Shoe</th>
<th>Asics</th>
<th>Decathlon</th>
<th>Nike</th>
<th>Brooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Cushioning Levels (cm)*</td>
<td>6.84 (1.80)</td>
<td>3.34 (2.47)</td>
<td>6.38 (2.79)</td>
<td>6.32 (1.69)</td>
</tr>
<tr>
<td>Mechanical Test Result: Loading Rate (N/ms)</td>
<td>148.72 (0.92)</td>
<td>200.73 (4.55)</td>
<td>136.46 (2.03)</td>
<td>140.87 (2.93)</td>
</tr>
</tbody>
</table>

* $p < 0.001$

The Decathlon shoe, which had significantly worst perceived cushioned running shoe, corresponded with the worst loading rate measured in the dynamic test. However, perceived levels of cushioning of shoes were not significantly different among shoes with similar loading rates in the dynamic tests. These results suggest that participants were only able to consistently perceive a similar worst level of cushioning when the increase in loading rate was big enough. In this study, the difference between Nike and Brooks and between Brooks and Asics was around 4 N/ms and 8 N/ms respectively. However, between Asics and Decathlon, the difference jumped to 52 N/ms. In future, more shoes of various cushioning results from our drop test set-up, could be used to determine the minimum difference required for a person to detect a difference in cushioning. Should results fall within the limit, manufacturers could possibly assume that consumers were unable to detect any differences in their shoe cushioning.

On the other hand, the new dynamic drop test proposed in this study was able to correctly identify trends in shoe properties that corresponded with perceived cushioning levels. Shoes perceived similarly as relatively better in cushioning correspond with lower loading rates that...
are close in the drop test. This suggests that footwear manufacturers might be able to use the
test to estimate customer satisfaction and perceived levels of cushioning. In the literature,
mechanical tests using the ASTM F1976 was similarly consistent with perceived levels of
cushioning especially when the difference was sufficiently large [8]. Thus, to further evaluate
the usefulness of the current dynamic test over the ASTM F1976 test, which is easier to conduct,
biomechanical test results must be compared with mechanical test results in future. Cushioning
of shoes have been found to have an effect on injury risks when 848 healthy runners were
followed over six months [9]. With a mechanical test that could correlate with loading rates
experienced during running, this could further help footwear manufacturers test the
effectiveness of their cushioning materials.

Limitations: Firstly, currently only one shoe size was used in the study. Participants’ feet were
restricted to US8.5 to US9.5 but some participants might have feet that did not fit the shoes as
well. This could affect the results of the perceived cushioning. More shoe sizes could
be provided in future studies. Secondly, the CADEX Vertical Impactor was asymmetrical, and
weights have been positioned to counter this. However, the shoes may be slightly unbalanced
and differ across shoe models due to the shoe design. A more balanced set-up could help in
making the test more robust.

4 Conclusion

A new dynamic drop test to better simulate walking or running was proposed in this study.
Participants rated their perceived levels of cushioning of four models of running shoes using the
10cm visual analog scale (VAS) after brisk walking and carrying out the drop vertical jump in
them. Results showed that the running shoe with the worst perceived level of cushioning
corresponded with the worst loading rate measured in the dynamic test. On the other hand,
perceived levels of cushioning of shoes were not significantly different among shoes with
similar loading rates in the dynamic tests. This suggests that the new dynamic test could be able
to determine customer satisfaction only if differences were large enough. Future work could
determine the minimum difference that corresponds with a possible perceived level of
 cushioning for consumers. In doing so, shoe manufacturers could then use mechanical tests to
determine consumer perception of cushioning levels in their shoes.

References

[2] Davis IS, Bowser BJ, Mullineaux DR. Greater vertical impact loading in female runners with
2013 Sep 16.
[4] Smith P. How important for you is the cushioning of your running shoes? [Internet] Statista; 2022
running-shoe-cushioning-by-consumers-worldwide/
The Use of Human Pose Estimation to Enhance Teaching & Learning in Physical Education

Tommy Hock Beng1, Ng Steven Kwang San2, Tan Shern Meng3, Tan Wei Peng4, Teo John Komar5
{hockbeng.ng@nie.edu.sg1, steven.tan@nie.edu.sg2, shernmeng.tan@nie.edu.sg3}

National Institute of Education, Nanyang Technological University, Singapore1, National Institute of Education, Nanyang Technological University, Singapore2, National Institute of Education, Nanyang Technological University, Singapore3, National Institute of Education, Nanyang Technological University, Singapore4, National Institute of Education, Nanyang Technological University, Singapore5

Abstract. Non-proficient demonstration, gross motor skill assessment, and subjective feedback are but a few of the perennial problems in physical education (PE). These problems stand to benefit from a technology-based solution that uses human pose estimation to guide learning. In this approach, a criterion motor action is embedded in a deep-learning algorithm (DLA). A learner can view this motor action on an iPad and uses its kinematic signatures to guide practice. The learner’s movement is captured by the device and the recorded motor action enters the DLA for computation of movement proficiency. The output of the DLA is a quantitative index that informs the learner how well the movement has been executed. In this way, the learner gains timely and objective feedback. A separate device held by the PE teacher collates the quantitative indices from other students in the class. Collectively, the information facilitates the teacher’s selection of instructional strategies.

Keywords: Human Pose Estimation ∙ Demonstration ∙ Assessment ∙ Feedback.

1 Introduction

This paper is a proof-of-concept study undertaken by the authors. Here, we propose a novel technology-based solution to address the problems faced by teachers and students during PE. The implementation of the solution has only recently started and herein no results will be reported.

One of the perennial problems in PE is that not all PE teachers are capable of proficiently demonstrating the motor skill(s) they are teaching. When a PE teacher demonstrates a particular motor skill sub-optimally, the students do not perceive the visual information necessary for motor learning. Additionally, in a class of 40 students, viewing of the demonstration may be blocked or obscured by classmates nearby. Consequently, students are unlikely to produce movements that approximate the desired motor action, which is characterized by a combination
of limb kinematic signatures. This problem requires a technology-based solution so that proficient motor skill demonstrations pre-recorded in digital devices can provide reliable visual information necessary for motor learning.

After demonstrating the motor skill, the PE teacher often finds it difficult to effectively monitor the motor performance of the class, which in Singapore school context, comprises about 40 students. In practice, the teacher either focuses on some students who are facing difficulty or through subjective ‘eye-balling’, estimates the overall motor performance of the class. The arbitrary estimation of skill proficiency could influence the PE teacher’s decision to either set aside more time for practice or progress on to the next activity in the lesson plan. To my knowledge, there is currently no objective and efficient way of assessing motor performance in large class setting. This problem will benefit from a technology-based solution. Working in pairs, while a student practices the skill, the other uses a digital device to video record the movement. The executed movement is compared with a criterion motor action that has been embedded in the digital device. The result of the comparison yields a quantitative index that represents the student’s skill proficiency. In this way, 20 students will have access to timely and objective feedback of their motor performance.

While the feedback benefits the students, it remains that the PE teacher does not have an efficient way of monitoring students’ motor performance. To address this problem, the quantitative index in each digital device (there will be 20 such devices in the class) will be wirelessly transferred to a separate device held by the PE teacher. On that device, quantitative indices representing each student’s skill proficiency will be displayed. A separate programme in the device combines the indices to yield an objective measure of overall skill proficiency.

Therefore, the proposed technology-based solution has the propensity to address the trilogy of sub-optimal demonstration, assessment, and feedback in PE.

2 Technology-based solution

The solution utilizes a process called human pose estimation (HPE). It is a computer vision-based technology that detects and analyses human postures during movement production. A skeleton-based model consisting of key joints such as the ankles, knees, and shoulders in 3D space will be developed to compute movement proficiency (Fig. 1). The steps for human pose estimation are as follows: 1) determine criterion movement parameters, 2) capture executed movements, 3) analyse the correctness of performance, and 4) display movement errors in the digital devices (Fig. 2).
Step 1 - The authors will video record the criterion motor action based on parameters defined in PE textbooks [2]. These videos are entered into deep learning algorithms (DLA) with convolutional neural networks and dilated temporal convolutions to identify crucial kinematic features of the action. These algorithms are housed in the digital devices.

Step 2 & 3 - During practice, one student will use the digital device to video record his/her partner’s executed movement. The information will enter the DLA, which computes the degree of deviation from the criterion motor action. The processes of the DLA are as follow: i) match the speed (i.e., frame per second) of the input and criterion videos, ii) align and normalize the skeleton models of the executed and criterion motor action, iii) compare keypoints frame by frame and detect motion inconsistencies, and iv) repeat the process for different groups of joints. The difference between the executed and criterion model will be calculated using the cosine function (see equation 1).

$$\cos \theta = \frac{\bar{a} \cdot \bar{b}}{\|\bar{a}\| \cdot \|\bar{b}\|}$$

When an executed movement moves in the direction of the criterion motor action, the angle subtended by the executed and criterion keypoints will be near zero degree. In this case, the cosine function of the deviation angle will be close to one, approximating 100 percent. Conversely, when an executed movement moves in the opposite direction relative to the
criterion motor action, the angle subtended by the executed and criterion keypoints will be near one hundred and eighty degree. In this case, the cosine function of the deviation angle will be close to minus one, approximating -100 percent (Fig. 3).

Step 4 - The output of the computation will be a quantitative index in terms of percentage compliance, that is, higher positive percentage reflects better motor performance.

Fig. 3. Calculation of skill proficiency based on angle of deviation subtended by keypoints on the executed (E) and criterion (C) models.

3 Brief history of technology in PE

The turn of the century saw a concerted push for the infusion of technology in PE [8,9,11]. PE teachers were introduced to the use of electronic devices such as heart rate monitors, bioelectrical impedance devices, and pedometers to assess health-related physical fitness. More recently, PE teachers have access to software applications such as Calorie Counter and Google Fit to track students’ dietary trends and physical activity levels. In some parts of the world, applications such as PEManager has been used to alleviate arduous processes in PEassessment [13,5]. Albeit advantageous, it may be argued that the benefits afforded by technology have up till now been teacher-centric rather than student-centric. Therefore, a crucial question to ask is whether technology can be strategically implemented in PE to enhance both teaching and learning experiences.

Applications of HPE in the real world are evident in the areas of human-computer interface, autonomous driving, and sports [14,7,4,15,10,6]. The paucity of its application in education is unequivocal. Therefore, a significant gap exists for educators to explore HPE as a technology-based strategy to enhance teaching and learning in PE. Therefore, in our proposed study, we will use HPE to analyse movements produced by students during PE. The deep learning algorithm in HPE will assign loci to joints of a human body in space thus enabling the computation of movement errors given the criterion parameters [12,1,3]. We hypothesize that HPE will enhance PE teachers’ ability to monitor and assess motor performance, and in doing, enable them to provide more engaging and meaningful activities for the students.

4 Evaluation of the technology-based solution
The proposed study involves the production of a beta version of the HPE algorithm. Once completed, the model will undergo testing using a small number (e.g., 2 to 3) of digital devices. There will be numerous rounds of testing to improve the efficiency of the model. Once the model stabilizes, the current study will be scaled up for implementation in large classes with 40 or more students. Testing at this stage will involve not only the increased number of digital devices (e.g., 20 or more) but also the network capability that is crucial for the operation of the proposed solution.

The impact of the proposed solution will be evaluated using interviews and surveys. Two to three university course instructors will be interviewed. A sample of the interview questions is provided below.

1. What are the benefits and challenges of using the digital device as a teaching tool?

2. What impact did the proposed solution have on assessment and its implications on lesson progression and pedagogical development?

Two to three university courses will be selected for the study. At the start of the semester, the instructors will provide a brief description of the study, its aims, and intended outcomes. A survey will be administered at the end of the course to gather feedback on the usability of the digital device. Feedback will be garnered from the students on how their learning needs have been addressed by the proposed solution. A sample of the survey questions is provided below.

1. Did you encounter any technical issues while using the software application? Yes / No

2. Did you find the criterion motor action videos useful? Yes / No

3. Was the slow-motion playback of the demonstration useful? Yes / No

4. Did the software application enhance your learning experience? Yes / No

5. To what extent did the software application afford collaborative and experiential learning?

6. Comment on your experience regarding this type of pedagogical approach for teaching and learning in PE.

**References**


Nurturing Future-Ready Learners in the new normal through Physical Education lessons: Reflections from two Singapore PE Teachers

Ho J Yen Louis¹, Yap Sze Hui Stella²

{ho_j_yen_louis@moe.edu.sg¹, Yap_sze_hui_stella@moe.edu.sg²}

Physical Education Teacher, Seng Kang Secondary School, Singapore¹, Physical Education Teacher, New Town Secondary School, Singapore²

Abstract. As Singapore moves into the endemic stage of managing COVID-19, there has been a greater emphasis on blended learning in schools to minimise disruptions to learning. Our students need to be ready to face the rapidly changing world and thrive in collaborative learning environments while demonstrating resilience, inclusiveness, empathy and good decision-making skills. How do we nurture our students to become self-directed and reflective learners through PE? How do we create a culture of thinking and learning in PE? How do we develop character in PE? How do we leverage technology to personalize learning and provide authentic experiences for them. In this presentation, two Singapore PE teachers will share on how they design their lessons to nurture self-directed learners through practical strategies underpinned by assessment and feedback literacy. Observations include higher student engagement, positive and inclusive classroom culture and thinking players who deliberate on their actions, behaviour and choices.

Keywords: Self Directed Learners, Assessment Literacy, Inclusive Classroom Culture, ICT in PE, Character and Values Development

1 Introduction

In Singapore’s education landscape, our mission remains to mould the future of our nation by providing a holistic education that develops and supports every learner to their full potential, nurturing them to become lifelong learners and good citizens, conscious of their responsibilities to their family, community and country. With the ever-evolving education landscape, educators constantly take on the role to rethink, reframe, relearn and redefine teaching and learning in a classroom that is both relevant and relatable to our learners.

We believe that every child wants to learn, and can learn; that every child wants to do well, and can do well. We believe that learning flourishes especially when our learners are in a caring and safe learning environment, when they are given opportunities to construct knowledge both
collaboratively and actively, when they are given opportunities to develop thinking skills and dispositions, and when assessment is used to address our learner’s learning gaps in a meaningful way.

Adjusting to the global pandemic whilst maintaining the goals of Physical Education in the face of COVID-19 has not been an easy feat, but it has challenged the way in which we think, learn, and yet continue to unify us in our quest to thrive in the future. With our rapid technological advancement today, coupled with the economic, social, and environmental changes, the world presents many unprecedented challenges and opportunities for our learners. Yet, despite these uncertainties our learners may face, it is the core values - Respect, Responsibility, Resilience, Integrity, Care and Harmony that better guides our learners’ motivations and actions, and will determine how they lead their lives in navigating the world of tomorrow.

In our quest to develop a future-ready generation with critical thinkers and adaptable learners, Singapore has taken a direction towards the meaningful implementation of Blended Learning in schools, affording students with a personal learning device to enrich our learners’ educational experience by enabling them to benefit from multiple modes of learning, and to empower them to be self-directed learners. At the same time, we are working towards Full Subject Based banding as an ongoing effort to nurture the joy of learning and develop multiple pathways to cater to the different strengths and interests of our students.

The above initiatives undertaken by the Ministry of Singapore are just small steps toward developing a nation of lifelong learners who embrace learning as a way of life. The challenge is on the readiness of schools to enable our students to be future-ready learners who will co-create living, lifework and learning in Singapore (Ng, D., Wong, C.P. & Liu, S (2020).

2. Literature Review

To help develop our students to be future-ready learners and better guide teachers in delivering lessons that focus on the joy of learning, assessment literacy was introduced as one of the six key areas of practice for teachers in Singapore.

Assessment Literacy (AL) aims to enable teachers to look at assessment from a holistic perspective rather than merely exams or test scores. The hope is for teachers to develop their student’s intrinsic motivation to learn and reduce the over-emphasis on exams or test scores through the purposeful design of assessment tasks that focus on learning and mastery. The other aim of AL is for teachers to strengthen their competencies in diagnosing and addressing learning gaps in their students.

Based on Stiggins work, assessment Literacy is a multidimensional concept that involves teachers, students and other stakeholders (Stiggins, 1991). From a sociocultural lens, the definition of assessment comes:
“Assessment literacy is a dynamic context dependent social practice that involves teachers articulating and negotiating classroom and cultural knowledge with one another and with learners, in the initiation, development and practice of assessment to achieve the learning goals of students.” (Willis et al., 2013, p.242).

Therefore, the sociocultural lens of assessment is important for PE practitioners as a key component of PE lessons in the development of social aspects.

To help our teachers and students develop their assessment literacy skills, formative assessment is one way of helping teachers and students make sense of assessment information and better utilize these information to help address their learning gaps and make improvements in their learning. Formative assessment is a process where teachers and students gather relevant information during lessons that provide feedback on teaching and learning. If implemented well, formative assessment processes help to improve teaching practice and student achievement.

There are 5 practical strategies or practices for effective formative assessment based on Dylan Wiliam. The 5 practical strategies or practices are:

1. Clarifying, understanding, and sharing learning intentions
2. Engineering effective classroom discussions, tasks and activities that elicit evidence of learning
3. Providing feedback that moves learners forward
4. Activating students as learning resources for one another
5. Activating students as owners of their own learning

A key aspect of nurturing future ready learners is the level of involvement among learners in their learning. Watkins (2005) encourages us to think about what we have done to involve the role of learners in the learning process. Are our learners driving their own learning proactively? Are they taking greater ownership of their own learning?

“Students are crew, not passengers.” (Watkins, 2005, Pg35)

Formative assessment practices ranges from assessing our learners’ progress, to understanding their learning gaps, to taking steps to address their learning needs. The challenge is to involve our students in the assessment process in a PE classroom. How can teachers effectively integrate formative assessment practices in a PE classroom in an engaging and meaningful way?

Taking into consideration the broad shifts in the education system in Singapore which includes full subject based banding, joy of learning, reduced emphasis on exams and test scores, the implication is that teachers are expected to cope with a diverse group of learners with widely varying learning profiles and learning needs. With our goal of nurturing a diverse group of
students to be self-directed learners and learners for life, there is a need for an intentional design to get students more actively involved in assessment during lessons.

Dylan’s five practices of assessment includes the need to involve students in the formative assessment process. Two key practices that reflect the greater involvement of students in assessment are the need to activate students as learning resources for one another and activating students as owners of their own learning; which is similar to what Willis has advocated in his work for assessment literacy. Thus, there is a need to consider the role of students in assessment where their involvement in assessment is receiving more attention from researchers (e.g., Charteris & Thomas, 2017; Davari-Torshizi & Bahraman, 2019; Deeley & Bovill, 2017; Smith et al., 2013).

A simple way to involve students in assessment is through feedback practices. Carless & Bond (2018) defined feedback as “a process through which learners make sense of information from various sources and use it to enhance their learning or learning strategies (p.1315). By developing student’s capacity to collect relevant information of their performance, use these performance data or indicators as their feedback of their learning and take relevant action to address their learning needs (Carless & Boud 2018), these actions will promote greater student agency and student voice in their learning.

Feedback is a crucial part of formative assessment. Dylan William mentioned that eliciting evidence and providing feedback are two key areas of practices in formative assessment. One of the ways to involve students in assessment or to raise their assessment literacy is to get them more involved in assessment through activating them as owners of their own learning and engaging them in the learning, more specifically the feedback process. How do we develop our students to gather relevant information on their learning and use this information to improve? Apart from test and exam scores, how do we engage students in feedback during lessons?

Based on Chong 2021’s social constructivist approach in feedback where it is seen as an interactive process, a dialogue between teachers and students, and Carless, 2016 proposal that feedback can also operate as an “inner dialogue or self monitoring”, there are relevances in raising the feedback literacy of students especially in PE classes where there is a strong social component in PE lessons. To ensure effective and engaging assessment feedback dialogues, raising feedback literacy levels is crucial (Careless & Bould 2018). Students should develop the learning skills of those who know how to collect relevant information on their learning and use these information to improve their learning, mastery of skills at an individual level or collectively as a team.

Careless & Bould 2018 defines student feedback literacy as “the understanding, capacities and dispositions needed to make sense of information and use it to enhance work or learning strategies.” (p.1316).

Therefore, as PE practitioners, how do we implement these formative assessment strategies in PE lessons effectively so that we can raise the student’s ability to use feedback with the long
term goal of developing them to be future ready learners. How do we get students to be more involved in their learning and to raise their level of feedback literacy? How do we engage students in feedback during PE Lessons?

More than addressing just the physical and/or psychomotor aspects of Physical Education, our PE lessons also stress on the cognitive and affective development of our learners. How can we best incorporate character development in our PE lessons? How do we encourage peer to peer relatability? Bruner’s Constructivist Theory (1966) of learning advocates for the emphasis of learning to be placed on the learners rather than the teacher. As the learner interacts with their environment, experience and reflects upon those experiences, they construct their own conceptualisations and solutions to problems. They learn by incorporating new learning experiences and information into their pre-existing knowledge and experiences. The affective learning in PE must be pursued as an intentional outcome rather than a hoped-for by-product.

Throughout history, academic and research psychologists have devoted more attention to cognitive qualities than affective qualities, focusing on empirical research of theories, concepts of intelligence and achievement for higher physical and cognitive performances (Thomas, 1997). Common to us would be Bloom’s taxonomy of cognitive objectives (Bloom, 1965), and the six components that comprises this taxonomy of cognitive abilities include knowledge, comprehension, application, analysis, synthesis and evaluation. More than educating the body and mind, we believe in educating the heart through the design of our lessons. Character development is often viewed as an integral part in education, the composite of core values that defines every child, and the outward manifestation of those values (Matt, Kelli, Jeffrey 2004). As a PE educator and practitioner, it is paramount to integrate and apply the various values inculcation principles and practices into our PE lessons to increase the behavioural frequency of students demonstrating values such as respect, responsibility, resilience, integrity, care and harmony.

Krathwohl, Bloom & Masia (1964) shares about the taxonomy of affective qualities, which states the following five qualities:

1. To receive (i.e., a student is aware of or passively attending to certain events or stimuli, for example when a student is listening and being attentive to what others are saying),

2. To respond (i.e., a student complies to requests by attending or reacting to certain events or stimuli, for example when a student is obeying class rules, complying with a teacher's requests, and participating in class activities as expected),

3. To value (i.e., a student displays behaviors consistent with one or more beliefs or attitudes in situations where she or he is not forced to comply or obey, and is convicted to demonstrate fair play and values of sportsmanship during competitive games),

4. To organize (i.e., a student is committed to a set of values and displays or
communicates his or her beliefs or values in other ways), and

5. To characterization (i.e., a student’s total behavior is consistent with the values she or he internalized, - for example when a student displays consistency between his feelings, thoughts, and behaviors).

Characterization is what we work towards in the intentional design of our assessment and feedback learning processes. Whilst it is a challenge to measure the affective qualities, the process of observations, peer discussions, reflections, conflict mediation and goal setting is invaluable to our students’ learning. It creates a safe learning environment for our students to come into contact with their inner beliefs and values, seek to understand the perspectives of others and deconflict any differences they share. Hence, it is crucial to involve and engage our students in the process of meaningful assessment and feedback practices to prepare them to be future ready and of good character.

3. **Problem Statement**

As Singapore moves into the endemic stage of managing COVID-19, there has been a greater emphasis on blended learning in schools to minimise disruptions to learning. Our students need to be ready to face the rapidly changing world and thrive in collaborative learning environments while demonstrating resilience, inclusiveness, empathy and good decision-making skills.

How do we nurture our students to become self-directed and reflective learners through PE? How do we create a culture of thinking and learning in PE? How do we develop character in PE? Would the use of an affective assessment and/or feedback tool help learners learn, reflect and respond with positive behaviours during PE lessons and competition?

Specifically to two schools in Singapore of similar profiles, we have three areas of concerns:

1. Highly competitive nature of students who adopts a win-at-all-cost attitude and struggles with conflict management
3. Lack of ownership and motivation in learning.

4. **Methods And Approaches**

In this project, two Singapore PE teachers explored various formative strategies to increase student’s involvement in learning where students play a role in generating information that provides feedback on their learning and performance.

**Psychomotor & Cognitive Domain**
A key approach is to equip students with the ability to collect relevant performance data such as complete passes, shots on targets appropriate to the games taught. The students will be given opportunities to share their observations and reflect on their personal, self or team’s performance during skills practice, small-sided game or full-modified games.

**Affective & Cognitive Domain**

An interactive process, a progressive outcome to characterize positive values, and investing towards a positive and inclusive classroom culture is our ultimate goal. In our study, we explored the Learn-Reflect-Respond approach to develop in our students self-awareness, the learned value of inclusiveness, as well as conflict management and resolution skills. We employed a learner-centric approach through collaborative and interactive efforts to enable our students in authentic learning and empower them to be the change-makers they can be.

**Subjects**

The participants in this project were students from two secondary schools of mixed gender across a range of learning profiles from Secondary 1 - 5, aged 12 to 16 years old. Some of the games taught in school were frisbee, netball, badminton, football, and tchoukball.

**5. Data Analysis & Results**

**Psychomotor and Cognitive Domain:**

In the area of psychomotor and cognitive domain, evidence on student’s work are randomly selected to illustrate what has happened in PE lessons. The student’s work is also a reflection of the teacher's role in getting students more active in the learning process. Each unit of games' teaching spans across 8 to 10 weeks for each unit.

![Figure A: Sample of Secondary 4 student’s collection of relevant data in mini whiteboards after a frisbee lesson](image)

While teaching the game of ultimate frisbee, students are required to collect relevant
performance data such as complete and incomplete passes. Students who were in charge of collecting performance data were called "Coaches". Routines were set to ensure that "coaches" could perform their tasks.

One of the ways to get our students more involved in generating feedback for their personal and team performance is to get them to place the mini whiteboard on the field to allow students to discuss their performance.

After a few lessons, more competent students suggested collecting other performance data, such as the number of assists and points scored, as they wanted a more holistic view of their performance. Other suggestions for performance data include the number of interceptions and blocks.

Figure B: Sample of Secondary 3 student’s collection of relevant data after a football lesson

Figure C: Sample of Secondary 1 student’s collection of relevant data after a Netball lesson
Above are samples of student’s work in monitoring their learning process through the collection of relevant performance data based on the lesson objective(s) for the day. Examples of data collection are the number of successful execution of skills such as passing, shooting in sports and games.

**Affective & Cognitive**

In our endeavor to build a positive school culture where we envision our students to engage and enjoy the process of a self-refereeing game, we decided to conduct the designed Tchoukball module for our Secondary Ones. Values inculcation takes time, and is worth the investment to develop students of good character. Taking this into consideration, we designed our Tchoukball module to span across 12 weeks, where our students experience the five spirit score components individually before they are introduced to the full spirit score assessment sheet. To provide a platform for our students to demonstrate their learning and engage in an authentic learning experience, students will participate in an intra-class and inter-class competition for application and learning.
The teacher's knowledge and understanding of the class profile is critical in the process of the deliberate planning of student groups. Students will be pre-assigned to groups, and will have to learn to work one with another over a series of at least 4 to 5 lessons. Teachers may choose to keep the groupings the same throughout, depending on the rationale and learning outcome he/she wants to focus on and achieve. Below are examples of the Check-In Cards that every group will collaboratively work on to deepen their understanding of the spirit score component, and to agree upon a common consensus as a reference point for their future observations and feedback.

For every spirit score component, students would have gone through the check-in discussions, learnt a new skill or concept and engage in a modified game which best illustrates the skills, concepts and values learnt. Groups are tasked to be a critical peer and give meaningful
feedback to their opponents based on the experience in the game. Groups discuss based on the spirit score component for that week, share their observations and provide suggestions on how to improve, and/or what they hope to see/experience in upcoming game sessions.

Figure H: Sample of a Post Tchoukball game group discussion to provide a score based on the categorical rubrics [Spirit Score Component: Fouls & Body Contact]

Figure I: Sample of a Post Tchoukball game reflection and sharing to provide opponents critical feedback for learning [Spirit Score Component: Fouls & Body Contact]
**NOTABLE EVENTS / COMMENTS FOR LEARNING!**

<table>
<thead>
<tr>
<th>Notable Events / Comments:</th>
<th>Notable Events / Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>They would have communicated more as</td>
<td>In today's game, there wasn’t a lot of communication involving both sides of the opponents. Scoring was easy and it was tough to decide on the final score. Both teams had their own thoughts. Let's discuss properly before the games in future so we can enjoy the game better.</td>
</tr>
<tr>
<td>only student A, communicating to his/her teammate while the rest were just</td>
<td>Student B:</td>
</tr>
<tr>
<td>standing around, mostly wondering what to do.</td>
<td></td>
</tr>
<tr>
<td>Student C:</td>
<td></td>
</tr>
<tr>
<td>There were many who played and lacked the communication. There were many passes that failed due to lack of communication rather than lack of skills.</td>
<td>When we tried to explain to them why a score was made, a final score was made, or that the scores were counted wrongly, they did not care and did not want to discuss or agree with us. They counted on their scores and continued in the game.</td>
</tr>
<tr>
<td>Student D:</td>
<td></td>
</tr>
<tr>
<td>We felt that introducing their own teammates into the game is very</td>
<td>Student A &amp; B:</td>
</tr>
<tr>
<td>important as this includes everyone and also finding out the</td>
<td></td>
</tr>
<tr>
<td>strengths and weaknesses of each team members, helping them and</td>
<td></td>
</tr>
<tr>
<td>teaching them for help when in need. Also, learning from your</td>
<td></td>
</tr>
<tr>
<td>teammates and opponents helps to improve the atmosphere and also</td>
<td></td>
</tr>
<tr>
<td>helps everyone learn from each other.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Figure J: Sample of a Post Tchoukball game group discussion to provide a score based on the categorical rubrics**

[Spirit Score Component: Communication]

**Figure K: Sample of a Post Tchoukball game reflection and sharing to provide opponents critical feedback for learning** [Spirit Score Component: Communication]
Feedback is a complex process, and can be made more complex with the different students’ responses. Hence, our teachers’ facilitation is key to enabling our students through the learning process. The samples of students’ feedback and discussion artifacts above suggests that our students’ involvement in the cognitive and affective process of learning is critical to their
cognitive and character development, both through the direct involvement and interactive process between peers. Hence, we believe in a process-driven curriculum that provides every learner a safe platform to learn, unlearn and re-learn to become a better version of themselves. Additionally, our students hold a key role to build and uphold positive peer support relations one with another through positive peer helping and influencing efforts in our PE classroom.

6. Discussion & Findings

Observations about students' behaviour in class are as follows.

1. Higher engagement and involvement level of students in monitoring and evaluating their performance at various task(s).
3. Stronger peer-peer relations due to increased opportunities for peer bonding efforts (Peers work together in a pair or group to monitor their peers’ performance in a practice task and/or groups’ performance in a small-sided game through observation, data collection and analysis).
5. Higher cognitive and behavioural engagement in understanding and acting upon feedback given. Positive change in behaviour leading to improved peer relations and performance during skills practice or game play.

While the opportunity to increase a student's level of involvement in their learning seems to be an exciting endeavour, there are practical considerations to consider when designing and implementing an effective and engaging lesson based on strategies involving formative assessment and raising student feedback literacy. PE Practitioners should carefully consider the practical implementation of formative assessment strategies.

The effective implementation of a PE lesson, where students are required to take greater responsibility for their learning, requires deliberate planning, including student's readiness in PE lessons to logistics and administrative support.

We also need to be mindful that formative assessment strategies do not compromise the Academic Learning Time (ALT) (Harrison, 1987) in PE, which provides students with opportunities to acquire movement skills. Any strategy to collect data for learning has to be effective and engaging.

We have explored two frameworks to guide us in our design of formative assessment based lessons. One way is using the STEP framework for Physical Education or Sports lessons by Kiuppis, 2018, aimed at providing a supportive learning environment and meeting the needs of students from diverse learning needs through modification of space, task equipment and people. The STEP framework helps PE teachers to design age-appropriate learning tasks for students.
based on their learning needs and physical proficiency skills.

Another framework explored was PEEP (People, Environment, Equipment, Process). We have found it helpful to use the framework of PEEP, where the original intent is to identify hazards as part of the risk assessment workflow. We adapted the PEEP framework to guide the planning of formative assessment based lessons.

PEOPLE: One key consideration in designing effective formative assessment tasks is the readiness of students and teachers to take on a learner's stance towards physical education where students are actively involved in monitoring, analysing and evaluating their data to address their learning needs. Another critical consideration is teachers' competencies to effectively incorporate formative assessment-based lessons where the teachers can provide feedback that moves learners forward, activating students as learning resources for one another and owners of their learning.

ENVIRONMENT: Another consideration factor is the learning culture one hopes to build within the class and school. What is a student’s perception of the subject? What are the school's perceptions of Physical Education? In the past, Physical Education lessons were often seen as playtime instead of learning new skills to lead an active and healthy lifestyle, where the physical domain was often emphasized more than that of the cognitive and affective domains. In today’s world, PE has evolved and shifted from mere play to intentional sense-making, to its current state of intentional meaning-making and learning through play. Thus, ensuring an inclusive and positive classroom culture must be built in order to positively impact our students’ motivation and provide a safe learning environment to effectively engage our students in formative assessment processes.

EQUIPMENT: In the deliberate design of the learning tasks, it is essential to think through how we can best modify and manipulate the tasks, constraints, space, etc. to create affordances and success for every child. Apart from the equipment for sports and games teaching, there is also a need to consider the resources or logistics required for students to effectively collect and collate data for evaluating their learning progress.

PROCESS: Lastly, what are the classroom routines put in place by the PE teacher to create a conducive learning environment? What are the learning and thinking routines to ensure that students in PE lessons are ready to do their part as self-directed and future-ready learners?

In summary, the table below captures the key planning considerations for formative assessment based lessons.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| PEOPLE   | ● Student’s readiness  
          | ● Teachers’ competencies  
          | ● Grouping considerations |
### ENVIRONMENT
- Classroom culture
- School culture
- Individual’s perception of PE

### EQUIPMENT
- Sports equipment
- Learning resources
- Logistics, stationeries etc

### PROCESS
- Pedagogical approaches
- Classroom Management
- Learning and thinking routines

## 7. Conclusion

Practical strategies underpinned by assessment and feedback literacy has positively impacted our students’ motivation, behaviour and attitude in PE classes. Some observations include higher student engagement, positive and inclusive classroom culture and thinking players who deliberate on their actions, behaviour and choices. The evidence based on our student's work suggests that the intentional design and development of assessment and feedback processes in a PE classroom can improve student learning outcomes. It provides opportunities for an enriching learning experience whilst empowering our students to be future-ready learners who take ownership of their own learning.

### References:


Contribution of Price, Location, and Facilities to Interest in Renting Futsal Fields After the Covid-19 Pandemic

Agung Nugroho 1, Boby Helmi 2, Ade Evriansyah Lubis 3, Rinaldi Aditya 4, Fadhil Rashid Alfarisyi 5

{agung_nugroho@student.uns.ac.id 1, sibobhelmi@gmail.com 2, lubisadee@gmail.com 3, rinaldiaditya@gmail.com 4, fadhilrasyidal@gmail.com 5}

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia 1, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia 2, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia 3, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia 4, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia 5

Abstract. This study aims to determine the effect of rental prices, field locations, and physical facilities on interest in re-renting futsal fields after the Covid-19 pandemic. The respondents of this study were 40 people consisting of players and team managers who had rented the field at least twice. Data were taken using a questionnaire distributed to respondents who fit the criteria. Data processing was carried out using SPSS version 17. The results showed that the variables of rental price, field location, and physical facilities had a partial and simultaneous effect on the interest in re-renting the futsal field.

Keywords: Rental Prices, Field Locations, Physical Facilities, Re-rental Interest.

1 Introduction

The Covid-19 pandemic that has occurred in Indonesia has been going on for the last two years or so. The government is still trying to overcome it by making Covid-19 an endemic where we will live side by side with this virus which in the end will become an ordinary virus that doesn't need to be worried about anymore. The pandemic has changed people's lives in various fields of life, all activities have turned online, be it school, work, or shopping, including changes to a healthier lifestyle with sports.

One of the most popular sports after this pandemic is futsal. Even though many futsal field businesses were closed, now many have started to operate again. Futsal is a sport favored by young people so many futsal field owners complete their futsal field facilities according to the needs of young people, for example, a field with standard carpets, cleanliness of the place, a large parking lot, changing rooms, and clean bathrooms. This is done so that the players who rent the field have a pleasant and satisfying customer experience. This good experience is
important for the field owner so that the players who are members of these various teams rent back for regular training and even hold tournaments.

Purchase interest, which in this study is defined as a rental interest in the services offered, is an important factor in a business because consumer decisions in renting services are based on interest and interest arises as a result of positive stimuli that lead to consumer desire or motivation to rent in the future. The definition of repurchase interest according to Hasan (2018) that repurchase interest is a purchase interest based on past purchase experiences. High repurchase interest reflects a high level of satisfaction from consumers.

Factors that encourage tenants to lease the field, among others, are competitive prices, easy-to-reach locations, complete and clean facilities, promotions carried out by business owners, and so on. Playing futsal is not only a reason to maintain physical fitness, but it is also a place to socialize with young people, students, students, employees make a lot of teams to just fill time outside of routine and strengthen friendships. This potential is captured by business owners as a business opportunity so the location of the field is the first step to be considered. The right location of the futsal field can boost the interest of tenants, for example, the location of the field close to office areas and campuses is a favorite area to visit. The construction of a field in the middle of a residential area is also an option to attract the interest of residents whose priority is the aspect of comfort and security. Events and tournaments can also be used as opportunities for business owners to sell jerseys and sports equipment. The addition of cafe or canteen facilities is usually sought after by players and spectators to chat. The start of the reopening of the futsal field after the Covid-19 pandemic was warmly welcomed by the players. The field owner must arrange a re-business strategy to remind consumers that the field area is ready to be rented out again. The addition of cafe or canteen facilities is usually sought after by players and spectators to chat. The start of the reopening of the futsal field after the Covid-19 pandemic was warmly welcomed by the players. The field owner must arrange a re-business strategy to remind consumers that the field area is ready to be rented out again. The addition of cafe or canteen facilities is usually sought after by players and spectators to chat. The start of the reopening of the futsal field after the Covid-19 pandemic was warmly welcomed by the players. The field owner must arrange a re-business strategy to remind consumers that the field area is ready to be rented out again.

Research (Sunarti, 2016) with title Analysis of Factors Forming Rental Interest and Its Influence on Futsal Field Rental Decisions states that five variables are forming rental interest, namely Price, Promotion, Facilities, Availability of Contact Persons, and Location. The dominant factor in this research is the price factor. Research by Faisal Hardiansyah, et al (2019) with the title The Effect of Location and Price on Purchase Decisions at Singapore Restaurants in Makassar City states that the location variable has a negative and insignificant effect on the purchasing decision variable. The price variable is positive and has a significant effect on the Purchase Decision.

Research (Nora Pitri Nainggolan, 2018) titled Analysis of Factors Affecting Consumer Buying Interest in Buying a House in Batam City states that the variables of Product Quality, Price, Location, and Promotion partially and simultaneously affect consumer buying interest in buying a house. Mitchel and Denny Bernadus' research (2018) with the title The Effect of Location, Facilities, Products, Prices and Lifestyle on Interest in Buying Apartments Phase 4 Ciputra World Surabaya states five variables that influence interest in buying apartments,
namely location, facilities, product, price, and lifestyle. The results of the analysis show that location, facilities, and product factors have no significant effect on buying interest, while price and lifestyle have a significant effect on buying interest.

Futsal fans who continue to experience an increase in the city of Medan are arrested by entrepreneurs for setting up futsal fields in various locations. It is recorded that some futsal fields were established. Based on the background of the problems described above; then the problems in this study can be formulated as follows: Do the variables of Rent Price, Location, and Facilities have a partial influence on the Interest in Renting Futsal Fields after the Covid-19 Pandemic? and Do the variables of Rent Price, Location and Facilities have a simultaneous influence on Interest in Re-rental of Futsal Fields after the Covid-19 Pandemic? This research has a goal to be achieved. The objectives of this study are: To provide empirical evidence of the rental price variable.

According to Kotler and Armstrong in Krisdayanto (2018), price is the amount of money paid for services or the amount of value that consumers exchange to benefit from owning or using goods or services. Another opinion says, Price according to Fadil and Priyo (2015) is the amount paid by consumers to get a product or service offered by the seller. Wirjono Prodjodikoro in Sumiasi (2015) that Lease is an agreement to rent goods, with the result that the recipient is not the owner, but the user. According to Kotler and Armstrong (Asaloei, 2018), there are four price indicators, namely Price Affordability, Price Compatibility with Product Quality, Price Competitiveness, and Price Compatibility with Benefits.

According to Heizer and Render (Mardiasih, 2019), Location is a driver of costs and revenues, so location often has the power to make a company's business strategy. The strategic location aims to maximize the company's business profits. Location according to Lupiyohadi (Nora Pitri Nainggolan, 2018) is a place where the company's products are located. Location is very influential in determining the potential market that the company can reach. According to Fandy Tjiptono in Luthfan Fasari and Wahyu Hidayat (2018), location indicators are Location Affordability (Access), Location Smoothness (Traffic), and Proximity to Residence (Visibility). Kotler in Apriyadi (2017) argued that "everything that is physical equipment and is provided by the service seller to support consumer convenience. So facilities are physical resources that exist before a service can be offered to consumers. According to Syadiansyah (2017), the indicators for Facilities are Completeness of Facilities, Condition of Facilities, and Benefit of Facilities. According to Fandy Tjiptono (2015), re-renting interest is different from loyalty, if loyalty reflects a psychological commitment to a particular brand or product, while repurchase behavior only involves buying the same brand over and over again. According to Hasan (2018), there are several explanations regarding indicators of buying interest, namely: Transactional interest, namely the habits of individuals who want to buy a product, Referential interest, namely individual habits that suggest products that have been consumed by others to participate in buying and consuming the product, Preferential interest, which is an interest that describes the behavior of someone who has a primary preference for the product. This preference can only be changed if something happens to the product they like. The framework for this research is as follows:
H1: Rent price has a partial effect on Re-rental Interest
H2: Field Location has a partial effect on Re-rental Interest
H3: Physical Facilities have a partial effect on Re-rental Interest
H4: Rental Prices, Field Locations, and Physical Facilities have a simultaneous effect on Re-rental Interest

2 Methods

The sources of data used in this study are primary data. Primary data is data obtained directly from respondents who can be obtained from respondents' answers to the questionnaire given by the researcher. Questionnaires were distributed directly to respondents using a Likert scale of 5. Data was obtained indirectly through intermediaries (obtained and recorded by other parties and then published) for example journals and textbooks that became theoretical references in this study.

According to (Handayani and Ririn, 2020) population is the totality of each element to be studied which has the same characteristics, it can be individuals from a group, event, or something to be studied. The population of this study was all Futsal players on the Futsal Field in Medan City. According to (Siyoto, and Sadik, 2015) the sample is part of the number and characteristics possessed by the population or a small part of the population members taken according to certain procedures so that they can represent the population. Sugiyono in (Asaloei, 2018) used Roscoe's sample size theory in determining the sample size. Based on the explanation of the theory, the number of sample members is at least 10 times the number of variables studied. In this study, there are 4 variables, namely 3 independent variables and 1 dependent variable. Then the sample taken is 10 times 4, which is 40 samples.

The sampling technique in this study used a purposive sampling technique, namely sampling by determining specific characteristics according to the research objectives, and using a
convenience sampling technique, namely sampling based on the availability of elements and the ease of obtaining them. The samples in this study were players or users of STOK Bina Guna futsal field rental services who had certain criteria: Respondents who used the services at the STOK Bina Guna Futsal Field more than once and Respondents who were easy to find and had free time to fill out questionnaires.

Re-rental interest is purchase interest based on past purchase experiences. High interest in re-renting reflects a high level of satisfaction from consumers. The indicators for variable interest in re-renting are as follows: Transactional interest, Referential interest, and preferential interest. The rental Price is a payment or compensation for the temporary use of an item or service by another person. The indicators for the rental price variable are as follows: Price Affordability, Price Compatibility with Product Quality, Price Competitiveness, and Price Compatibility with Benefits.

A location is a place of business that greatly affects the desire of a consumer to come shopping or get the services needed. The indicators for Field Location variables are as follows: Location Affordability (Access), Location Smoothness (Traffic), and Proximity to Residence (Visibility). Facilities are everything that can facilitate and expedite the implementation of a business and are the facilities and infrastructure needed to carry out or facilitate an activity. The indicators for the Facility variable are as follows: Completeness of Facilities, Condition of Facilities, and Benefit of Facilities. The results of the questionnaire obtained were tested using Data Quality Tests, namely Validity Test and Reliability Test, Classical Assumption Test, and Hypothesis Testing using the Multiple Linear Regression Test.

3 Results

Validity Test

Rental Price Variable (X1)

<table>
<thead>
<tr>
<th>X</th>
<th>r count</th>
<th>r table</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1.1</td>
<td>0.767</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X1.2</td>
<td>0.868</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X1.3</td>
<td>0.777</td>
<td>0.311</td>
<td>Valid</td>
</tr>
</tbody>
</table>

Table 1 shows the results of the r count > r table for each question item regarding the rental price variable. Then it can be determined that question items 1, 2, and 3 are valid.

Field Location Variable (X2)

<table>
<thead>
<tr>
<th>X</th>
<th>r count</th>
<th>r table</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>X2.1</td>
<td>0.844</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X2.2</td>
<td>0.584</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X2.3</td>
<td>0.743</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X2.4</td>
<td>0.647</td>
<td>0.311</td>
<td>Valid</td>
</tr>
</tbody>
</table>

Table 2 shows the results of the r count > r table for each statement item about the field location variable. Then it can be determined that question items 1, 2, 3, and 4 are valid.
Physical Facilities Variable (X3)

<table>
<thead>
<tr>
<th>X</th>
<th>r count</th>
<th>r table</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>X3.1</td>
<td>0.737</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X3.2</td>
<td>0.637</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>X3.3</td>
<td>0.796</td>
<td>0.311</td>
<td>Valid</td>
</tr>
</tbody>
</table>

Table 3 shows the results of the $r_{count} > r_{table}$ for each question item about the physical facility variable. Then it can be determined that question items 1, 2, and 3 are valid.

Rent Interest Variable (Y)

<table>
<thead>
<tr>
<th>Y</th>
<th>r count</th>
<th>r table</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1.1</td>
<td>0.800</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>Y1.2</td>
<td>0.646</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>Y1.3</td>
<td>0.737</td>
<td>0.311</td>
<td>Valid</td>
</tr>
<tr>
<td>Y1.4</td>
<td>0.900</td>
<td>0.311</td>
<td>Valid</td>
</tr>
</tbody>
</table>

Table 4 shows the results of the $r_{count} > r_{table}$ for each statement item regarding the variable of interest in releasing. Then it can be determined that question items 1, 2, 3, and 4 are valid.

Reliability Test

Rental Price Variable (X1)

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.828</td>
<td>3</td>
</tr>
</tbody>
</table>

Reliability Statistics

The results of the reliability test on the Rental Price variable with Cronbach's Alpha can be seen in Table 5 shows that the Alpha value > 0.6. Therefore, it can be determined that this research instrument is reliable.

Field Location Variable (X2)

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.779</td>
<td>4</td>
</tr>
</tbody>
</table>
The results of the reliability test on the Field Location variable with Cronbach's Alpha shown in Table 6 show that the Alpha value is $> 0.6$. Therefore, it can be determined that this research instrument is reliable.

Physical Facilities Variable (X3)

<table>
<thead>
<tr>
<th>Table 7. Physical Facility Reliability Test Results (X3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>.787</td>
</tr>
</tbody>
</table>

The results of reliability testing on the Physical Facilities variable with Cronbach's Alpha shown in Table 7 show that the Alpha value is greater than 0.6. Therefore, it can be determined that this research instrument is reliable.

Rent Interest Variable (Y)

<table>
<thead>
<tr>
<th>Table 8. Reliability Test Results of Re-Lease Interest (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>.807</td>
</tr>
</tbody>
</table>

The results of reliability testing on the variable of lease interest with Cronbach's Alpha shown in Table 8 show that the Alpha value is greater than 0.6, therefore it can be determined that this research instrument is reliable.

Classic Assumption Test Results

Normality test

<table>
<thead>
<tr>
<th>Table 9. Normality Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

The table above shows the results of the data normality test of 0.075 which is greater than 0.05, so it can be concluded that the data of this study are normally distributed.

Multicollinearity Test

<table>
<thead>
<tr>
<th>Table 10. Multicollinearity Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>X1</td>
</tr>
<tr>
<td>X2</td>
</tr>
<tr>
<td>X3</td>
</tr>
</tbody>
</table>

Based on the results of the multicollinearity test in table 10 above, it can be concluded that the rental price, field location, physical facilities, and interest in re-leasing are free from multicollinearity.
multicollinearity because the tolerance value limit is greater than 0.10 and the variance inflation factor (VIF) is smaller. out of 10.

Heroscedasticity Test

Figure 2. Heteroscedasticity Test Results

The scatterplot image above shows the distribution of data points as follows: 1) Data points spread above and below or around the number 0. 2) Data points do not collect only above or below. 3) The spread of data points must not form a wavy pattern that widens then narrows and widens again. So it can be concluded that the multiple linear regression model is free from the classical assumption of heteroscedasticity and is suitable for use in research.

Simple Regression Analysis

<table>
<thead>
<tr>
<th>Table 11. Multiple Regression Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Total_X1</td>
</tr>
<tr>
<td>Total_X2</td>
</tr>
<tr>
<td>Total_X3</td>
</tr>
</tbody>
</table>

The calculation results in the regression equation obtained 0.398 for the rental price coefficient, 0.086 for field locations, and 0.189 for physical facilities. Based on the results of these calculations, the regression equation can be formulated as follows:

\[ Y = 0.398X1 + 0.086X2 + 0.189X3 + 0.337X4 + e \]

Based on the above equation, the following understanding can be explained: 1) Rent Price has a regression coefficient of 0.398 and is positive, so it can be interpreted that the better or more competitive the Rental Price is, the higher the consumer's purchasing decisions. This means that if the regression coefficients of other variables remain, then a 1% change in rental prices
will increase purchasing decisions by 0.398. 2) Field Location has a regression coefficient of 0.086 and is positive, so it can be interpreted that the closer the Field Location, the higher the consumer's purchase decision. This means that if the regression coefficients of other variables remain constant, a 1% change in field location will increase the purchasing decision by 0.086. 3) Physical Facilities have a regression coefficient of 0.189 and are positive, so it can be interpreted that the better and more complete the Physical Facilities, the higher the consumer purchasing decisions. This means that if the regression coefficients of other variables remain constant, a 1% change in physical facilities will increase the purchasing decision by 0.189.

Hypothesis test

Partial Significance Test (Test Statistical \( t \))

<table>
<thead>
<tr>
<th>Variable</th>
<th>( T ) count</th>
<th>( T ) table</th>
<th>sig</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>3.260</td>
<td>1.985</td>
<td>.002</td>
<td>H1 accepted</td>
</tr>
<tr>
<td>X2</td>
<td>2.598</td>
<td>1.985</td>
<td>.001</td>
<td>H2 accepted</td>
</tr>
<tr>
<td>X3</td>
<td>2.400</td>
<td>1.985</td>
<td>.018</td>
<td>H3 accepted</td>
</tr>
</tbody>
</table>

Based on the results of the \( t \)-test in Table 12, the following results can be obtained: 1) The results of the \( t \)-test, the rental price obtained counts as 3.260 and a significance of 0.002. The value of the count is greater than the table and the significance of the rental price is less than 0.05, so it can be concluded that \( H_0 \) is rejected and \( H_1 \) is accepted. The rental price has a significant influence on the interest in releasing. 2) The results of the \( t \)-test, the location of the field obtained at a count of 2.598 and a significance of 0.001. The value of the count for store locations is greater than a table and the significance of store locations is less than 0.05, so it can be concluded that \( H_0 \) is rejected and \( H_2 \) is accepted. The location of the field has a significant effect on the interest in releasing. 3) The results of the \( t \)-test of physical facilities obtained a count of 2.400 and a significance of 0.018. The value of count is greater than the \( t \) table and the significance of physical facilities is less than 0.05, it can be concluded that \( H_0 \) is rejected and \( H_3 \) is accepted. Physical facilities have a significant influence on re-leasing interest.

Simultaneous Significance Test (F Statistics Test)

<table>
<thead>
<tr>
<th>( F ) count</th>
<th>( F ) table</th>
<th>Significance ( \text{sig} )</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>14,458</td>
<td>2,470</td>
<td>.000b</td>
<td>H4 accepted</td>
</tr>
</tbody>
</table>

Based on Table 13, the results of the \( F \) test above are obtained by \( F \) count of 14,458 (\( F \) table 2,470). The probability value is less than 0.05 (\( \text{sig} F \) count 0.000 <0.05), it can be concluded that \( H_0 \) is rejected, which means that the variable rental price, field location, and physical facilities together affect the interest in releasing.

Coefficient of Determination

<table>
<thead>
<tr>
<th>( R^2 )</th>
<th>( R^2 ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.266</td>
<td></td>
</tr>
</tbody>
</table>
Based on table 14 above, the results of Adjusted R. Square obtained a value of 0.803. This shows that only 80.3% of the variation of interest in re-leasing can be explained by the variables of rental price, field location, and physical facilities. While the remaining 19.7% is explained by other variables that are not included in the research model.

4 Discussion
Partial Significance Test (Test Statistical t)
Based on the results of the t-test, the following results can be obtained: 1) The results of the t-test, rental price obtained tcount of 3.260 and a significance of 0.002. The value of tcount is greater than ttable and the significance of the rental price is less than 0.05, so it can be concluded that H0 is rejected and H1 is accepted. The rental price has a significant influence on the interest in releasing. 2) The results of the t-test, the location of the field obtained tcount of 2.598 and a significance of 0.001. The value of tcount for store locations is greater than ttable and the significance of store locations is less than 0.05, so it can be concluded that H0 is rejected and H2 is accepted. The location of the field has a significant effect on the interest in releasing. 3) The results of the t-test of physical facilities obtained tcount of 2.400 and a significance of 0.018. The value of tcount is greater than ttable and the significance of physical facilities is less than 0.05, it can be concluded that H0 is rejected and H3 is accepted. Physical facilities have a significant influence on re-leasing interest.

Simultaneous Significance Test (F Statistics Test)
Based on the results of the F test above, Fcount is 14,458 (Fcount 14,458 > Ftable 2,470). The probability value is less than 0.05 (sig Fcount 0.000 < 0.05), it can be concluded that H0 is rejected, which means that the variable rental price, field location, and physical facilities together affect the interest in releasing.

Coefficient of Determination Test
Based on the results of the Adjusted R. Square test, a value of 0.803 was obtained. This shows that only 80.3% of the variation of interest in re-leasing can be explained by the variables of rental price, field location, and physical facilities. While the remaining 19.7% is explained by other variables that are not included in the research model.

5 Conclusion
The rental price variable has a significant and positive effect on interest in releasing. This means that better and more competitive rental rates increase interest in releasing. Affordable rental prices are the hope and attraction for tenants not to move to another futsal field. Field location variables affect the interest in re-leasing because the easier and more strategic a field location will be, the easier it will be for tenants to find a location, especially if the location is easy to reach using public transportation. Such a location attracts interest in re-renting a futsal field. Variable physical facilities affect the interest in releasing. Complete physical facilities allow field tenants to simultaneously carry out activities in one place.
6 References


The Formation Of The Physical Condition Of Students Through A Game Gobak Sodor Year 2021

Ahmad Al Munawar¹, Dicky Hendrawan², Dewi Maya Sari³, Muhammad Syaleh⁴, Pedomanta Keliat⁵, Ahmad Habibi⁶

{a.almunawar16@gmail.com¹, dickyhendra77.dh@gmail.com², dewi2612270@gmail.com³, msyaleh3@gmail.com¹, keliatpedomanta@gmail.com⁵, habibiahmad@gmail.com⁶}

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia ¹, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia ², Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia ³, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia ⁴, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia ⁵, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia ⁶

Abstract. The purpose of this study was to determine the effect of the Gobak Sodor game on physical conditions, especially the agility component. The research was carried out at the Madrasah Tsanawiyah Laboratory of the State Islamic University of North Sumatra (MTs Lab UINSU), the research time was in September 2021 for four weeks. The research sample was all students of class VII-1 MTs Laboratorium UIN SU for the academic year 2021/2022 with a total of 32 students. The method used is an experimental method using test and measurement techniques. The instrument in this study is an agility test (agility run test). Based on the results of the research and discussion, it was obtained that the t-count = 20.047; this value is compared with the t-table value (dk=n-1=31; α =0.05) obtained 1.69. So that t-count > t-table is obtained, thus the hypothesis stated: Gobak sodor game has a significant influence on the agility element in class VII-1 MTs Laboratory UIN SU in the 2021/2022 academic year.

Keywords: Agility, Gobak Sodor.

1 Introduction

The physical condition is a unified whole that is systematic and cannot be separated. Someone who can be categorized as having fitness is a person who is able to go through his daily activities without experiencing significant fatigue so that person is able to continue with additional activities. Physical condition is an indicator of a person in completing the task of movement or activity that he is doing well.

Physical condition is the most dominant basic preparation to perform maximum physical appearance. The basic components of physical condition in terms of the Muscular concept include: endurance, strength, power, speed, flexibility, agility, balance, and coordination.
coordination). Judging from the metabolic process consisting of aerobic (aerobic power) and anaerobic power (anaerobic power).

Physical activity that is carried out regularly will be able to increase a person's immunity or resistance to viruses or diseases, especially during the covid 19 pandemic the immune system is needed by the body to fight infection, reduce the influence of toxins in the body and by increasing antigenic and immunogenic.

This study explores the level of physical condition of students through playing the traditional game of gobak sodor where students are given an exercise program for some time through playing traditional games. Gobak sodor is a traditional game that requires team cohesion and good physical condition, especially in the agility aspect.

Agility (agility). Agility is the ability to quickly change the direction of the body or body parts without disturbing balance. Agility is a combination of strength, speed, accuracy, balance, flexibility, and neuromuscular coordination. So, agility is not just speed but must have good flexibility of the joints of the body. Because agility is the ability to change the direction and position of the body quickly and precisely when moving without losing body balance. Thus, a person who is able to change direction in different positions at high speed with good movement coordination means that he has quite good agility as well.

2 Method

The method used in this study is an experimental method with the aim of testing and proving a hypothesis. The experiment carried out is to improve the physical condition of students through the game gobak sodor.

The purpose of this study is to provide a real, factual and accurate picture of the effects that occur. This study is also intended to clearly determine the effect of the gobak sodor game on the formation of students’ physical conditions. The population is the whole object or subject that is in an area and fulfills certain requirements related to the research problem. In this study, the population was all students of class VII MTs Laboratorium UIN SU Medan in 2021 with a total of 120 people. According to Sudjana "the sample is part of the number and characteristics possessed by the population" then the sample in this study used a sampling technique aimed at class VII-I with a total of 32 students. To obtain data in this study used physical condition measurement instruments in the form of Agility test with zigzag run test (Kirkendal. D.R. 1987)

3 Result And Discussion

Based on the results of calculations carried out using the t-test formula, pre-test data with post-test were obtained for the variable elements of the students' physical condition, it was obtained that the t-count = 7.01; this value is compared with the t-table value (dk=n-1=31; =0.05) obtained 1.69. So that the t-count > t-table is obtained, thus the hypothesis stated: Gobak sodor game has a significant influence on the elements of physical condition of students in grades VII-I MTs Laboratorium UIN SU Medan for the 2021/2022 academic year can be accepted as true.
By carrying out the gobak sodor game practice for one month by students, it turned out to have resulted in a significant improvement in physical condition from the results of the pre-test to the post-test. The average score of the students' physical condition at the time of the initial test was 8.16 while at the time of the final test it increased to 9.47 (an increase of 16.09%).

In carrying out daily activities, physical condition is something that is absolutely owned by someone in completing their activities. With good physical condition it will be correlated with one's ability and fitness.

The gobak sodor game is a traditional game that needs to be preserved because in addition to having cultural values, this game also has an element of fitness in maintaining one's physical fitness. This is felt in every movement displayed in this game where there are physical components that must be in good condition to do this game. The most dominant physical component in this game is agility. In a game the element of excitement must also be present, for this reason this game is a complete design in developing the physical condition of children because elements of play, joy, fitness and social training are present in it.

4 Conclusion
Gobak Sodor game has an effect on increasing students' physical condition significantly with an increase of 16.09%

5 Acknowledgement
This research was conducted in the 2021/2022 academic year which was fully supported by the Bina Guna Health and Sports College. The research team would like to thank the Head of STOK Bina Guna, dr. Hj. Liliana Puspa Sari, S.Pd, M.Kes who has given the widest opportunity to the research team.

References
Analysis Of Down Passing Movement Using The Kinovea Application On Extraculicular Students Of State Junior High School 6 Percut Sei Tuan

Benny Aprial M1, Liliana Puspa Sari2, Alan Alfiansyah Putra Karo-karo3, Hardodi Sihombing4, Eka Abdurrahman5, Ibrahim6, Fery Adrian7

{bennyaprial.m@gmail.com1, lili.binaguna@gmail.com2, alanalfiansyahputra03@gmail.com3, hardodisihombing@gmail.com4, ekaabdurrahman04@gmail.com5, ibrahim@unimed.ac.id 6, feryadrian@gmail.com7}

Abstract. The method combines quantitative methods and qualitative methods. This research method aims to aim to obtain data that is more comprehensive, valid, reliable, and objective. The combined method (mixed methods) combines quantitative and qualitative research with the number of athletes being 2 people as samples in this study. The data in this study used Kinovea software to make professional athletes as comparison athletes and to obtain motion analysis as an assessment of the correctness of motion. Based on the motion analysis carried out, the researcher makes assessment indicators to obtain data by making sections of the initial position, contact with the ball, and follow-up movements using five camera angles from the right, left, top, front and rear. The results of the kinovea software analysis for the prefix position are very good (15%), good (12%), moderate (4%), poor (4%), very poor (65%). the position of implementation in the categories is very good (37.5%), good (37.5%), moderate (6%), poor (6%), very poor (13%). the position of the category ending is very good (8%), good (23%), moderate (2%), less (2%), very less (65%). The results of the analysis using category prefix position experts are very good (16.66%), good (66.66%), moderate (16.66%), poor (65%), very poor (5%), good (5%), poor (33%), very poor (57%) categories. the position of the category ending is very good (0%), good (75%), less (25%), very less (0%).

Keywords: Analysis of Down Passing Motion, Volleyball

1 Introduction

According to Herdiansyah (2013; 230) analysis is an activity of thinking to break down a whole into components so that it can recognize the signs of components. From the description above, the authors conclude that analysis is an activity of seeing and investigating the movement
sequence of an object by comparing one treatment with another. In this case it is the treatment of passing under volleyball.

Volleyball is a sport played by children and adults, both women and men. The game of volleyball basically adheres to two principles, namely technique and psychology. The technical principle is that the player passes the ball with the waist up, back and forth into the air over the net so that he can get the ball away from the opponent's field as soon as possible to seek victory in a sporting manner. The psychological principle is to play happily and cooperate well (Suharto HP, 2004: 1-2).

According to Nuril Ahmad (2007: 20) "in volleyball there are several basic techniques that must be mastered. The basic techniques in volleyball games consist of serving, passing under, passing over, blocking and smashing. Mastery of basic techniques is very important in order to play volleyball well. To master these basic techniques, it is necessary to practice basic techniques continuously and earnestly so that you can easily master volleyball techniques.

Regarding the expression regarding the importance of basic techniques in volleyball games, the researchers made repeated observations and observations on the extracurricular student athlete training sessions at SMPN 6 Percut Sei Tuan, especially libero since, the results of observations and observations of researchers found that in the process of athlete training extracurricular students SMPN 6 Percut Sei Tuan conducted exercises related to all the basic techniques of playing volleyball which consisted of serving, passing under, passing over, blocking, and smashing.

Kinovea is software that basically is needed by someone to measure something that cannot be seen by the foresight of the eye. This software is equipped with a camera. Kinovea can be used to slow down a movement and stop the movement, measuring length, angle of body segments, speed and acceleration of motion and time. This simulation can be done but not directly. The results of the recorded images can then be transferred to a computer, so that the recorded video images can be analyzed according to the wishes of the researcher.

Mechanics is a branch of science from the field of physics that studies the motion and changes in the shape of a material caused by mechanical disturbances called forces. Mechanics is the oldest of all branches of physics. Galileo is the founder of analysis and experimentation in the science of dynamics. Meanwhile Newton summarized the phenomena in dynamics in the laws of motion and gravity.

Biomechanics is a combination of the disciplines of applied mechanics and the sciences of biology and physiology. Biomechanics concerns the human body and almost all living things. In biomechanics the principles of mechanics are used in drafting, analyzing, designing and developing equipment and systems in biology and medicine. Movement biomechanics analysis can be carried out qualitatively and quantitatively (McGinnis, 2005:347). Quantitative analysis of motion performance or aspects is measured based on numbers or numbers, while qualitatively the appearance of movement is evaluated only based on the sight of the observer.

In terms of the biomechanics of the swinging movement of the arm during lower passing, it is more dominated by the strength of the arm muscles, while the muscles located at the base of the upper arm and forearm play an active role during the impact (meeting) between the proximal part of the arm and the ball where the arm is flexed with the help of the biceps brachii muscle. At the time of impact of the arm with the ball there is a momentum related to the speed and
mass of the object that is moving, if the arm when impacted by the ball moves quickly there will be an increase in momentum in the arm against the ball, so that in the downward passing movement, the momentum must be controlled by player. Because when passing down it releases a certain amount of momentum so that the ball can fly the right distance to arrive at the target. In volleyball game, underhand passing is the simplest basic technique that should be perfectly mastered by volleyball players, but the treatment is not done haphazardly, there are movements that need to be adjusted and properly practiced so as to give perfect results. In line with the above, an accurate explanation of the implementation of underpassing is needed. Information will be very accurate if it is obtained based on research. Analysis of the movement of the underpass will provide detailed information regarding the steps of each movement in the implementation of the underpass.

2 Method

This type of research is mixed methods research, namely a method that combines quantitative methods and qualitative methods. This research method aims to aim to obtain data that is more comprehensive, valid, reliable, and objective. In the combined method (mixed methods) combines quantitative and qualitative research. Sometimes qualitative research is first followed by qualitative research, or vice versa. We first look at the characteristics of the data in the field. In the quantitative method, the nature of a single reality, classified, concrete, observable, measurable. Qualitative method: the nature of multiple reality, holistic, dynamic, construction results and understanding. Whereas in the combined method: the nature of multiple reality, can be classified, observed and the result of meaning construction.

3 Result

The conclusion from the expert assessment related to sample 2 can be concluded that sample 2 is already in the good category based on the expert's point of view regarding the stages carried out when carrying out underhand passing in volleyball games.

The conclusion results from all the data that has been analyzed using the Kinovea software, the researcher gets the results by making a percentage of the success rate in this study as follows: The percentage of success that has been analyzed using the Kinovea software at the initial position stage of the category is very good (15%), good (12%), moderate (4%) less (4%), very less (65%).

The conclusion from all the data that has been analyzed using the Kinovea software is that the results obtained by the researchers making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the implementation stage of the category is very good (37.5%), good (37.5%), moderate (6%), less (6%), very less (13%).

The conclusion of all the data that has been analyzed using the Kinovea software is that the results obtained by the researcher making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the
category ending position stage is very good (8%), good (23%), moderate (2%), less (2%), very less (65%).

The conclusion from all the data that has been analyzed using the Kinovea software is that the results obtained by the researcher making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the implementation stage of the category is very good (5%), good (5%), less (33%), very less (57%).

The conclusion from all the data that has been analyzed using the Kinovea software is that the results obtained by the researcher making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the stage of the category ending position is very good (0%), good (75%), less (25%), very less (0%).
Based on the data above, it can be concluded that the assessment using the Kinovea software obtained different results from the assessment carried out by experts, this was due to the limitations of experts using only sight. So the use of Kinovea software in assessing the correctness of motion is needed to cover the limitations of these experts.

4 Conclusion

Based on the results of the research conducted and discussed in the previous chapter IV, it can be concluded as follows:

1. The results of the Kinovea software analysis show that the overall movement of the underpass technique based on the correctness of the motion is still in the very poor category.

2. The results of the expert assessment analysis show that the overall movement of the underpass technique based on the correctness of the movement is in the good category.

References

The Effect Of Traditional Games On Left Muscle Power For Children Aged 10-12 Years Old In The Village Of Percut Sei Tuan Kelurahan Tanjung Rejo In 2021

Devi Catur Winata¹, Andi Nur Abady², Syarul Efendi³, Mawardinur⁴, Filli Azandi⁵, Reza Valnachand⁶

{Devicatur45@gmail.com¹, Andi.nurabady@gmail.com², fendiasrul@yahoo.co.id³, nurmuward818@gmail.com⁴, filliazandy@gmail.com⁵, rezavalnac@gmail.com⁶}

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia¹, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia², Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia³, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia⁴, Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia⁵

Abstract. This study aims to determine the effect of the traditional engklek game on leg muscle power in children aged 10-12 years in Percut Sei Tuan Village, Tanjung Rejo Village in 2021. This research is an experimental research carried out by taking the initial data (pretest) then doing the treatment (treatment) and after that doing the final test (posttest). The source of data in this study is the results of student tests in the form of performance (psychomotor). To analyze the data in this study and to find out the results of the study, the results of the post test were seen. Hypothesis analysis from the pre-test and post-test of the influence of the traditional engklek game obtained tcount of 7.120 and ttable of 1.70 with a significant level =0.05 meaning tcount ttable means Ho is rejected and Ha is accepted. So it can be concluded that the traditional engklek game has a significant influence on basic jumping motion activities in children aged 10-12 years in Percut Sei Tuan Village, Tanjung Rejo Village in 2021

Keywords: Traditional Engklek Game, Leg Muscle Power

1 Introduction

This Word document can be used as a template for papers to be published in EAI Core Proceedings. Follow the text for further instructions on text formatting, tables, figures, citations and references.

The pattern of child development, the most vulnerable age is elementary school age (10-12 years). At the age of 10-12 years, they are in pre-adolescent development, which physically and psychologically at this time they are approaching puberty. The development of physical,
cognitive, emotional, mental, and social aspects of elementary school children requires ways of conveying and intensity of knowledge about sex and reproductive health that are different from other age stages.

Aspects of motor development is one aspect of development that can integrate the development of other aspects. Physical motor development is defined as the development of the elements of maturity and body movement control. Physical development has a very important role in a child's life, either directly or indirectly. Directly the physical development of a child will determine the child's skills in moving. While indirectly, physical growth and development will affect the child's view of himself and the child's view of others, physical development goes hand in hand with motor development. Disorders of physical motor development at the age of elementary school children become a separate obstacle in their activities, including, children will have difficulty playing, writing, erasing the blackboard and so on.

Traditional games are types of games that contain cultural values which are essentially ancestral heritage that must be preserved. In traditional games there are games that are competitive in nature and there are also games that are prioritized only as recreation or in other words to fill spare time. The grouping of this game itself there are individual, team, and also between groups. If we observe the activities carried out by children, traditional games require good physical readiness, because they require skills such as dexterity of the feet and hands, sharpness of thinking/analyzing and good body flexibility/flexibility. The traditional game itself also combines many elements of art such as dance, singing and even magical elements can also be involved in it.

According to Sukirman Dharmamulya (2004) in his book, the cultural values contained in traditional games include: practicing independent attitude, daring to make decisions, full of responsibility, honesty, attitude controlled by opponents, cooperation, mutual help and care, defending group interests, have a democratic spirit, obey the rules, full of calculations, accuracy in thinking and acting, not whiny, brave, acting politely, acting flexible. So many values are contained in traditional games. Educational content as well as creative and reliable human values will be formed in the child's soul so that they will not give up.

Characteristics of children aged 10-12 years in the village of Percut Sei Tuan Keurahan Tanjung Rejo downstream are children who have good motor development and like games so they look so happy and cheerful in the midst of the current pandemic. However, the type of games played by children in Percut Sei Tuan Village, Tanjong Rejo Village, is a form of passive game such as gagjet, playing fish, and sitting or hanging out on the side of the road.

Therefore, this study aims not only to examine leg muscle power, but also to introduce traditional games that they may not get in school. Moreover, with the COVID-19 pandemic which has not yet ended, children are not allowed to go to school yet, so the researchers took the initiative to introduce and see how the influence of the traditional engklek game on leg muscle strength in children aged 10-12 years in the village of Percut Sei Tuan, Tanjong Village. rejo.

Children aged 10-12 years in Percut Sei Tuan village, Tanjong Rejo sub-district, have various characteristics, both in terms of physical, social, behavioral and growth aspects, so the researchers took several children who have characters according to their needs. This form of
research uses cluster sampling to make it easier for researchers to collect data and not create a crowd to avoid the transmission of the Covid-19 disease.

Tests and measurements as well as evaluations carried out in the field for 4 weeks were carried out to reveal the truth of the hypotheses that had been proposed. From the results of the pre-test carried out, it was obtained that the value range was from 1.19 to 1.63 with an average of 1.42 and a standard deviation of 0.14. Then, treatment was given and then after that, a post-test was carried out. From the post-test results obtained a range of values from 1.27 to 1.69 with an average of 1.50 and a standard deviation of 0.12. Then from the average pre-test and post-test, it can be seen that the average difference value is 0.079 with a standard deviation of 0.063 so that \( t_{count} \) is 7.120 with \( \alpha = 0.05 \) and \( t_{table} = 1.70 \).

2 Research Methods

The research design used in this study was the researcher conducted an initial test to see the basic abilities of the children as a sample (pre-test) which then the researcher would give treatment (treatment) to the research sample in the form of an engklek game in several meetings which then at the end of the meeting the researchers carried out a test, the end (post-test) to see the change/success of treatment.

The population in this study were all children aged 10-12 years in Percut Sei Tuan Village, Tanjung Rejo, totaling 32 children, in this case the researchers took research samples with total sampling technique or random samples, namely 32 children aged 10-12 years in Percut Sei Tuan, Tanjung Rejo village. "Instruments are tools at the time of research using a method" (Arikunto 2002:126). The instrument used in this study is a form of test that is considered to be able to measure leg muscle power in children aged 10-12 years using the Standing Long Jump Test (Widiastuti 2011). Here's the implementation:

a. The purpose of this test is to measure the ability of leg power.

b. Tools and materials: Equipment measuring tape / meter, marking lines, and relatively soft foundations such as mattresses and the like.

c. Implementation:

Starting position: Students stand behind the line with their legs slightly apart, bend their knees and swing their arms back and forth in preparation for jumping. Performance: Students jump forward, landing on one or two feet; do three jumps.

d. Scoring: The value is the distance of the jump (feet or inches) between the starting line to the nearest heel point. Only the best of the three jumps is recorded. If a student falls or steps back after landing, the measurement is taken from the point of contact of the body part closest to the atrat line, as opposed to the place of initial landing.

3 Results

From the results of hypothesis testing, it shows that there is a significant effect between pre-test and post-test on the engklek game on learning outcomes of basic jump movements without
prefixes for children aged 10-12 years in Percut Sei Tuan village, Tanjung Rejo village in 2021. This proves that by playing the traditional engklek game, it will be able to have a significant impact, namely increasing the basic movement activity of jumping without a prefix in children aged 10-12 years. By introducing and implementing this engklek game, the child does not feel or realize that he is being trained, but the child is immersed in games that create joy so that children aged 10-12 years do not feel bored or bored, especially in the midst of the current pandemic, where schools have not met face-to-face completely.

For children aged 10-12 years old, there is a need for forms of play that can accommodate all the needs of children, be it their needs/instincts to move freely and agilely as well as teach students how to behave, socially and cooperate. For this reason, the game is considered an appropriate medium to fulfill these needs.

Traditional games are considered ancient and obsolete. But in essence, traditional games are very learning media, this can be seen in terms of children's psychomotor movements as well as in terms of children's cognitive and social. Hopefully with the rejuvenation of traditional physical education learning games, it will be more interesting in addition to preserving the nation's culture. The engklek game is considered relevant to improving the basic movement ability of jumping without a prefix, this is evidenced by research that has been carried out by the researchers themselves.

From the results of the research conducted, the hypothesis shows that H0 is rejected and Ha is accepted. H0 shows that there is no significant effect between the engklek game and jumping motion activities without prefix in children aged 10-12 years in Percut Sei Tuan village, Tanjung Rejo village in 2021. Ha shows a significant effect between engklek games and jumping motion activities without prefixes on children aged 10-12 years in Percut Sei Tuan village, Tanjung Rejo village in 2021. So it can be concluded that the traditional engklek game has a significant effect on basic jumping motion activities in children aged 10-12 years in Percut Sei Tuan village, Tanjung Rejo village in 2021.

4 Discussion

Leg muscle strength is very important for children aged 10-12 years where at that time is a period where gross motor movements work to produce more powerful movements. Power is one of the most important biomotor components in jumping motion. Legs that have a large muscle explosive power, will allow high jump results as well. The strength of the repulsion ability depends on the quality of the leg and lower leg muscles that the jumper has. As stated by Harsono (1988) "that the strength of the leg muscles is the ability of the muscles to generate tension against a pressure". (p.15), then Woeryanto (1988) says that what is meant by "explosive power of leg muscles is: strength (strength) is the ability or potential of a muscle to produce a dynamic tension, namely movement against pressure (resistance) or overcoming a load or static tension, which produces tension without movement. The movement referred to in this study is a traditional game movement, because in addition to being fun, it can also raise the spirit and culture of traditional games.

This is also in line with what was stated by Sukintaka (1992:16) in his book which says "traditional games are games that have been trusted by children in an area traditionally". What
is meant by tradition here is a game that has been played and passed down from one generation
to another. In line with that Suherman and Mahendra (2001:6) "learning movement skills for
children to master skills in various sports is the main responsibility of physical education
teachers". Referring to what the expert said, it is clear that the development and growth of a
student is the responsibility of the physical education teacher, therefore physical education
teachers can adopt traditional games as one of the materials taught in their learning.

Playing at the age of 10-12 years can also grow a child's character to be better, this was also
expressed by W. Devi Catur (2020) in his research he revealed that playing can grow character
in children, especially in outdoor games interacting together. with friends and have a social spirit
and care for others.

Based on this, the researchers concluded that traditional games can increase leg muscle strength
in children aged 10-12 years in Tanjung Rejo village in Precut Sei Tuan village. And it is hoped
that by playing the traditional engklek game, it can increase leg muscle strength and have
characters who are able to interact and understand the values of budaejo in the village of Precut
Sei Tuan. And it is hoped that by playing the traditional engklek game, it can increase the
strength of the leg muscles and have characters who are able to interact and understand the
existing cultural values.

5 Conclusion

This study aims to increase leg muscle strength in children aged 10-12 years in the village of
Precut Sei Tuan, Tanjung Rejo sub-district in 2021. Based on hypothesis testing, it can be
concluded that the traditional engklek game has a significant effect on basic jumping motion
activities in children aged 10-24. 12 Years in Percut Sei Tuan Village, Tanjung Rejo Village in
2021

References

TERHADAP PEMBENTUKAN KARAKTER PADA SISWA SDN 067250 MABAR. Visipena,
11(2), 352-363.
Nuansa.
POWER OTOT TUNGKAI PADA SISWA KELAS III SD SWASTA AMAL BAKTI TAHUN
SENAM INDONESIA BERSATU DALAM MENINGKATKAN KEBUGARAN TUBUH BAGI
GURU-GURU OLAH RAGA TINGKAT SMP DI ACEH TIMUR PADA MASA PANDEMI COVID
Development Of The Concept Of Outcome-Based Education Rhythmic Gymnastics Courses

Ika Endah Puspita Sari1, Yusra Nasution2, Khairul Usman3, M. Irfan4

{ikaendah049@gmail.com1, yusranasution@unimed.ac.id2, khairulusman@unimed.ac.id3, Irfan@unimed.ac.id4}

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia1, Universitas Negeri Medan, Indonesia2, Universitas Negeri Medan, Indonesia3, Universitas Negeri Medan, Indonesia4

Abstract. The purpose of this research is to produce a learning tool based on Outcome-Based Education in the Rhythmic Gymnastics course as an achievement of the MBKM Main Performance Indicators (IKU) for Collaborative and Participatory Classes. The stages of the research method carried out are using the Borg and Gall concept which describes ten steps. The research includes research and information collecting, planning, developing preliminary form a product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation. The conclusion of this study is that the Outcome-Based Education concept of rhythmic gymnastics in the scope of primary and secondary education has a composition of achievements in the form of Semester Learning Plans (RPS) and Teaching Materials which refers to OBE achievements with Collaborative and Participatory Class.

Keywords: Development, Gymnastic, Outcome Based Education

1 Introduction

Merdeka Learning Campus (MBKM) is the basis for the Curriculum of the Ministry of Education, Culture, Research, and Higher Education (Kemdikbudristek) which is designed as support for the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning National Standards for Higher Education (Peraturan Menteri Pendidikan Dan Kebudayaan Republik Indonesia Nomor 3 Tahun 2020, 2020). Standards that will be achieved on the MBKM basis include graduate competencies, learning content standards, learning process standards, learning assessment standards, lecturers and education staff standards, learning facilities and infrastructure standards, management standards, and learning financing standards.

The development of the MBKM concept that is integrated with the industrial era 4.0 is the development of lectures with the concept of Outcome-Based Education (OBE). The implementation of OBE is the design of lecture activities that are packaged for the International class. The context of OBE includes the formation of graduates who are able to achieve learning
which includes assessment of attitudes, knowledge, and skills stated in the formulation of Graduate Learning Outcomes (CPL).

OBE achievements can be seen from the outcome based curriculum (OBC) achievement, namely the preparation of a study program curriculum with a body of knowledge study, namely through the development of Semester Learning Plans (RPS), teaching materials, and lecture assessment instruments. The application of OBC is the first step in the formation of lectures which are designed for one semester. The next achievement is outcome based learning and teaching (OBLT) which is applied with direct lectures which includes the application of learning methods and techniques to achieve Graduate Learning Outcomes (CPL). Finally, the achievements that must be developed are outcome based assessment and evaluation (OBAE) which is a series of overall assessments of lectures (Kemenristekdikti, 2018).

The development of OBE really needs to be developed at the Bina Guna Sports and Health College as an activity that can realize the Vision to excel in the fields of education and sports, as well as the role of optimizing the achievement of Key Performance Indicators (IKU) in building collaborative and participatory classrooms. The application of OBE is implemented through a course, namely Rhythmic Gymnastics which will be an example of the application of lectures integrated with MBKM.

OBE-oriented rhythmic gymnastics courses will be packaged through a smart classroom-based learning design, namely through the use of Smart TV technology as a medium for student learning in studying lecture material. This rhythmic gymnastics will also develop at the same time as a stimulus for the emergence of physical activity work on alternative prevention from COVID-19 which has not stopped until now. The OBE-based Rhythmic Gymnastics course will be the beginning of the development of lectures in the Study Program with the development of MBKM (Safiudin et al., 2020).

The implementation of Outcome-Based Education in the MBKM-based Rhythmic Gymnastics Course for the High School of Sports and Health of Bina Guna is based on research that has been carried out previously with the title "Development of Gymnastics as an Alternative for Covid-19 Prevention" with proper data acquisition by fulfilling a 92% assessment for the movement element, gymnastics and 90% for the physical impact caused by gymnastics carried out by gymnastic movements.

The OBE concept of results-based education is an educational concept that bases every part of the education system around its goals. Results-based methods have been adopted in the education system by taking into account inputs in the education system such as finance, infrastructure, and others. Process observers focus on processes for controlling, organizing, and imparting knowledge in learning.
2 Method

In the MBKM-based rhythmic gymnastics course for the STOK Bina Guna PJKR Study Program, the OBE idea is being developed using a research and development (R&D) approach. Research, often known as RnD, is development research that helps create and evaluate goods in response to research needs (Sugiyono, 2016). The method for conducting the research was based on the concept proposed by Borg and Gall (1989), which outlines ten research steps, including information gathering, planning, development of a preliminary product, preliminary field testing, revision of the main product, main field testing, revision of the operational product, operational field testing, revision of the final product, and dissemination and implementation. Research is used to establish designs for the OBE for the Rhythmic Gymnastics Course, and development is used to make and test the final items (Sugiyono, 2017).

3 Discussion

The results of the research obtained are:

1) Research and Information Collecting

Collecting information, analyzing needs, and reviewing literature in the implementation of Rhythmic Gymnastics course development. The results of this stage obtained data results, namely:

2) Planning

Determine the formulation of the development problem in the study of the OBE concept development model. The rhythmic gymnastics course is "how is the application of OBE in the OBE-based rhythmic gymnastics course?". The OBE orientation is packaged through a smart classroom-based learning design, namely through the use of Smart TV technology as a learning medium for students to explore lecture material. The OBE-based Rhythmic Gymnastics course is the beginning of the development of lectures in the Study Program with the development of MBKM (Safiudin et al., 2020).

3) Develop Preliminary Form A Product

Determine the CPL and CPMK which are packaged in the lecture RPS and integrated into the developed teaching materials. CPL and CPMK in Rhythmic Gymnastics courses is

4) Preliminary Field Testing

The initial testing phase of the class taking the lectures and collecting data using a survey instrument filling technique on the implementation of OBE in rhythmic gymnastics courses.
The results of the OBE product trial results for the rhythmic gymnastics course are the Semester Learning Plans achieved 57% which means that it illustrates that the RPS does not yet have an OBE indicator. Suitability with course outcomes, and OBE achievements in the aspect of research methods are 58%, which means that they do not have eligibility in the implementation of lectures.

5) Main Product Revision

Make improvements from the results of the initial field trials based on the data obtained and analyzed.

6) Main Field Testing

The main test was carried out on the class that took part in the lecture. Data was collected using a survey instrument filling technique.

The results of the OBE product trial results for the rhythmic gymnastics course are the Semester Learning Plans achieved 77% which means that it illustrates that the RPS has enough OBE indicators. Have conformity with course outcomes, and OBE achievements in the aspect of research methods.
research methods are 78%, which means that they are quite feasible in the implementation of lectures.

7) Operational Product Revision

Make improvements from the results of the main field trials and are ready to be operationalized based on the data obtained and analyzed.

8) Operational Field Testing

Operational testing was carried out on classes that took part in lectures and data was collected using survey instrument filling techniques.

![Figure 4 Trial III OBE Rhythmic Gymnastics](image)

The results of the OBE product trial results for the rhythmic gymnastics course are the Semester Learning Plans achieved 89% which means that it illustrates that the RPS reaches a good category that is having OBE indicators. the material is very good in conformity with the outcome of the course, and the OBE achievement in the aspect of the research method is 89%, which means that it is good to have feasibility in the implementation of lectures.

9) Final Product Revision

Carry out repairs in the final stage from the results of operational field trials and are ready to be operationalized based on the data obtained and analyzed.

10) Dissemination and Implementation

Disseminating and implementing products. Reporting product results through scientific publications and distributing products to Study Programs.

The next stage is Final Product Revision and Dissemination and Implementation in the process of achieving product improvement in accordance with the results of the third revision. After the product is developed again from the evaluation results, so that product dissemination and implementation is achieved. Rhythmic gymnastic products were developed as a physical fitness enhancer which includes exercise intensity and exercise duration. The product achievement results will then be implemented and disseminated to the community in filling out daily activities to adapt to new habits and improve physical fitness.
4 Conclusion

The conclusion of this research is the concept of Outcome-Based Education of rhythmic gymnastics in the scope of primary and secondary education has a development composition in the form of Semester Learning Plans (RPS) and Teaching materials that explicitly state the learning goals that must be attained before the learning process is complete and make reference to OBE achievements in collaborative and participatory classes; (1) ensuring that learning outcomes are reached through curriculum design, learning opportunities, and learning methodologies; (2) tailoring the assessment process to each student’s learning achievement and assessment; and (3) offering remediation and enrichment.

References

Effect Of Training Methods, Precision And Feedback On Gateball Sports Stroke Skills

Ramadan

{ramadan.raju@gmail.com}

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Indonesia

Abstract. This gateball sport is a cheap sport which can be found easily both when done individually and in groups, it cannot be separated from that gateball is also favored by many adults, old, young and children, football is not just a game and a match but also a sport. a social phenomenon that has a deep meaning, such as understanding between players during training and matches and everyone who sees football must have opposing thoughts such as the existence of decisions that should be shot instead of being passed, which should be heading instead controlled it often happens, football will look beautiful, sweet and can entertain the audience if each player has a high ability both at the time of issuing basic technical skills. Gateball is a sport that requires skill, both when the gateball stroke, sparking the gateball ball. Gateball players will be effective in the game if they are as good as patterned skills starting from things that are easy to difficult. This happens because there is still no understanding of more varied training methods. So that the training process seems monotonous and boring, the data above shows that the exercises that have been carried out so far are still experiencing big obstacles because there is no diversity of training methods. So it can be concluded that coaches should still emphasize, reflect and hone their abilities to be able to continue to develop looking for issues as an interesting and not boring training model for athletes today, or in the future.

Keywords: Model of Practice, Gateball Skills, 12-15 Years Old.

1 Introduction

This Word document can be used as a template for papers to be published in EAI Core Proceedings. Follow the text for further instructions on text formatting, tables, figures, citations and references.

Sports is one way to improve the quality of Indonesian people, and it aims to build character and personality, and discipline and high sportsmanship, as well as increase achievement, which can create a healthy and developing sense of national pride. people now it has always been an important part of the human body, where this human life requires very complex movements that lead to health, pleasure and well-being, from an early age to the end of life.
The sport of goalball was developed by Eiji Suzuki in 1947 in the small town of Memuro in Hokkaido, Japan. Goalball came to Indonesia through Bali around 1994 by foreign tourists who bring the sport to Indonesia. The game-based training method is expected to provide innovation and attraction for the participating coaches and athletes to make a series of games that form the nature of the game and after a while somewhat increases both defensive and offensive maturity, which leads to basic goal ball techniques that have a different composition and can be understood and easy to do. Training methods designed and implemented with the right strategy and training process can influence and contribute to the development of basic techniques in novice athletes.

This is because more versatile training methods are not yet known. To make the training seem monotonous and boring, the above data shows that there are still big obstacles in the training that has been done so far, because there is no variety in the training methods. So it can be concluded that coaches must continue to emphasize, reflect and polish their skills in order to continue to develop, seeking to make things interesting and not a boring training model for athletes today or in the future. Therefore, to overcome the main problem of the goal ball club, a solution or some kind of solution must be found.

Then, a positive impact on the development and progress of novice athletes requires maximum effort from all parties, and it is not easy. Based on the above background, the researchers have a great interest in conducting a study on "the effect of training methods, accuracy and feedback on shooting ability in goalball sports".

### 2 Problem Focus

The focus of the problem in this study is the effect of training methods, accuracy and feedback on gateball sports stroke skills.

### 2.1 Problem Formulation

Based on the background of the problem and the focus of the problem above, the formulation of the problem in this study is:

Based on the background of the problem, problem identification, and problem limitation related to this research, the formulation of the research problem is as follows:

1. Is there an effect of stroke skills using the student training method of PJKR STOK Binaguna Medan?
2. Is there an effect of stroke skills using the accuracy of the training of PJKR STOK Binaguna Medan students?
3. Is there an effect of stroke skills using student feedback from PJKR STOK Binaguna Medan?
4. Is there an interaction between training methods, accuracy and feedback on the stroke skill learning outcomes of PJKR STOK Binaguna Medan students?
2.2 Usefulness of Research Results

Based on the formula of the above problem, the usefulness of the results of this study offers alternative solutions to the needs of users to improve the quality of education in this case:

1. To help coaches, coaches and the community in the process of improving gateball sports achievements
2. To make it easier for athletes to carry out the gateball basic technique training process
3. To be used as a product in the form of a gateball technique training method
4. For researchers themselves, they can enrich and add to the repertoire of knowledge, especially those related to the development of gateball training models.
5. For gateball can contribute to the interests, improvement and development of sports in the future.

In the final stage of this research, problem solving results will be obtained, then the application of research results that have useful values can be stated as follows: For trainers, the results of this study can be used as an alternative choice of how to teach physical education subjects in other schools, for lecturers can be used as an alternative in implementing a training process that has the same characteristics as gateball games and the like.

Contributions to trainers, the results of this study can be used as a comparison with methods/styles to train children in learning movement in general. The results of this study will be useful for researchers for broader and in-depth research efforts for other branches. As for the scientific community, the results of this research can add knowledge and insight.

3 State Of The Art

State of the art (SOTA) research is like a building that has a strong foundation or wisdom so that the building can stand strong. The foundation in a study is based on similar research that has been carried out by previous researchers, both their own research and research conducted by others. SOTA aims so that researchers can find out information about the trend of popular research that concentrates on a problem. That way researchers can find gaps to produce good research by predicting the direction and goals of research problems that are currently being carried out.

The author has collected several international and national journals from previous studies which are used as references for this dissertation research in the hope that this research can produce updates from previous studies.

4 Road Map
According to Indrawan & Yaniawati (2017:32) Road Map or research roadmap is very important for a researcher to build competence and continuity and sustainability of research. This Road Map can help researchers so that the direction of our research is in line with the scientific field that forms like a chain with the aim of directing the scientific field at a respectable level. The Road Map in this study is as follows:

**Figure 1 research road map**

### 4.1 Conceptual Description

1. **Learning Outcomes**

   In the educational process, learning outcomes are all skills and results achieved through the teaching and learning process which are expressed by numbers or values as measured by learning outcomes tests. This means that learning outcomes can allow students to know to what extent the abilities they have mastered against something they are learning (Anurahman, 2009:35). The word learning has several meanings including learning is a conscious effort made by individuals in changing behavior for the better through training and experience involving cognitive, affective and psychomotor aspects to obtain certain goals (Sudjana, 2009:22). According to Nana Sudjana, learning outcomes are the abilities that students have after receiving their learning experiences.

   The first step is to determine the goals that must be clear and clearly formulated to facilitate the activities to be carried out. To obtain data or information, appropriate tools or instruments are needed, if there are none, the instruments should be made first. Once there is or information is collected then it is processed statistically. The results of an evaluation assessment will only be meaningful if the results are compiled in the form of a written report so that it is easy and can be read by others. In addition, it can be stored and used when needed again.
Thus, to evaluate the process of football subjects, especially the material for passing under its reliability or level of difficulty, determine it in the form of scores or letters. Furthermore, the score is processed into the final value, determining the ranking and so on.

Based on the above description, it can be interpreted that learning outcomes mean students' mastery of one or more learning tasks after a certain period of learning process and experience. Examples of accepted learning outcomes are provided by tests that use test instruments that have been tested for validity and reliability and that can ultimately be assigned points or scores.

4.2 History of Gateball

Gateball or goal ball is a type of sport that uses a ball bat (stick) and is played by two teams facing each other (Suryanto, 2011). Gateball was invented in 1947 in the small town of Memuro, in Hokkaido, Japan. Eiji Suzuki is the creator of the sport which is currently popular in Indonesia. In the midst of the chaos after World War II, he wanted to give something to children who didn't have toys. This sport was inspired by the game "croquet" (a wooden ball game), since then gateball has spread throughout Japan. Now gateball is spreading in various parts of the world thanks to Japanese emigrants and has been played in more than 49 countries and every 4 (four) years the last world cup is held in Niigata, Japan in 2014 and is the XI world cup organized by the World Gateball Union (WGU).

According to Yudik Prasetyo: “Naturally gateball is not a heavy game, and can be done with slow and gentle movements. Gateball is safe because there is no direct body contact, gateball is physically healthy because it is carried out in an open place, it is also spiritually enriching because it trains communication and thinking strategies. According to Suryanto: “Gateball or goalball is a unique sport, because it is played simultaneously for recreational purposes while achieving achievements. Gateball players do not discriminate between age, gender (young and old, male and female) it is a safe sport, does not require excessive energy, no physical contact, and the ball rolls on the ground.

One example of a recreational sport is gateball, now gateball has become increasingly popular in Indonesian society. Gateball is generally done by several people and is done in an open field. Not only done outdoors, gateball can also be done indoors. The uniqueness of the sport of Gateball is that it does not need extraordinary physical toughness to become a player. The age factor is also not an obstacle to playing gateball at national and international events. Therefore, gateball is often referred to as a sport without limits.

4.3 Gateball Facilities and Infrastructure

1) Gateball Field

The Gateball field is rectangular in shape with an inner line of 15 x 20 meters surrounded by an inside line and an outside line. The surface of the field is flat and grassy or using artificial turf. The distance between the inner and outer lines is 50-100 centimeters parallel to the inner line.

And has a color that contrasts with the field.

The angles formed by the inside line are called angles 1, 2, 3, and 4. While the starting area is 2 meters on line 4, with a distance of 1 meter from angle 1 to 3 meters from angle 1.
4.4 Exercise Factors

In doing the exercise, there are training factors that can achieve success in achievement. According to Bonpa (1990: 56) that the training factors include physical preparation, technical preparation, psychological in theory should be incorporated in all sports programs.

1) Physical Preparation

The development of a thorough physical condition is very important, because without a good physical condition, one will not be able to follow the exercises perfectly. Physical exercise is a work process that is carried out systematically and continuously where the load and intensity of the exercise is increasing day by day, so that in the end it provides a comprehensive stimulus to the body and improves physical and mental abilities together. Physical exercise in principle is to put physical pressure on the body regularly, systematically, and continuously, thereby increasing the ability to do work. While the components of physical condition that must be trained and developed by an athlete to support maximum performance are cardiovascular endurance, strength endurance, muscle strength, flexibility, stamina, agility, and power.

2) Technical Preparation

Technical preparation is agility to master the movement techniques needed so that athletes are able to make movements in the sport they are engaged in, for example kicking a ball, heading a ball, receiving a ball, and so on. Technical training is intended to form and develop motor or developmental habits (muscular neurons), the perfection of the movement technique is very important because it will determine the overall movement.

3) Tactical Preparation

Tactics in sports can be interpreted as tactics used to gain victory by using individual, physical, and mental technical abilities. While the preparation of this tactic can be done in various ways:

a. Hold as many matches as possible as a practice of technique execution.

b. Exercises with special emphasis on planned tactics.
c. Giving random theories about knowledge of tactical theory given the pattern of the match system, knowledge of game and match rules, and the effect of training in matches.

4) Psychological Preparation

Psychological mental preparation of a player is no less important than the three factors above. According to Harsono (1998: 1001) mental training is an exercise that emphasizes the development of athlete maturity as well as emotional and impulsive development in order to enhance the athlete's mentality, especially if the athlete is in a complex stressful situation. So psychological mental development has a goal that is in accordance with increasing training to face the match. The formation of a high mentality is the athlete's ability to deal with difficult and unfavorable situations patiently and understandably. The four factors mentioned above must be given in balance. In general, the mistake made by the coach is to ignore the psychological factor which is actually very important because the coach only focuses on physical preparation, technique, and tactics.

4.5 The Nature of Accuracy (Accuracy)

According to Suharno (2003: 35), accuracy is the skill to move an object so that the suggestion is right, so that the goal is achieved properly. In other words, accuracy is a factor needed by someone to achieve the desired target. The better one's accuracy ability, the more skilled an athlete is to give direction to the target with a certain purpose and purpose. Accuracy is an important factor in the sustainability of strategy in a sports competition.

Accuracy can be in the form of movement (performance) or as the accuracy of the results (results). Accuracy is closely related to the maturity of the nervous system in processing input or stimuli that come from outside, such as being right in assessing space and time, right in distributing energy, right in coordinating muscles and so on. As long as the movements that are within the coordination limits are relatively simple, precision training can be given to children who are still in their growing age, especially the nervous system. Meanwhile, for children who have entered their teens, precision training may be given with the involvement of more complex muscle coordination.

Accuracy is a person's ability to control free movement of a target. This target can be a distance or maybe a direct object that must be hit with one part of the body (Sajoto, 1988: 18). Suharno (1985: 32) states that the benefits of accuracy include; (1) Improve athlete achievement, (2) Train children's movements to be effective and efficient, (3) Prevent injury, (4) Facilitate mastery of techniques and tactics. People who have good accuracy can control the movement from one target to another. From the opinion above, it can be concluded that accuracy is the ability to move towards a certain target by involving several supporting factors and being well coordinated effectively and efficiently. In gateball sports, accuracy is needed and becomes something that cannot be separated, where the game will not be able to go according to the strategy planned by the team captain, because to shoot the ball, put the ball into the gate, place the ball in the desired place. requires precision. Several factors that affect the accuracy in this gateball sport are the distance to shoot the ball, the direction the ball enters from the gate, and field conditions that are not up to standard.
4.6 Theoretical Framework

1. The effect of training methods on gateball sport sparking skills

In the implementation of mastery of gateball sport sparking skills, the benefits are very large in the gateball game. Because in gateball sparking skills, mastery of basic techniques is very important, so that gateball sports sparking skills can be done well. Good mastery of basic techniques will be the key to success in terms of quality (effective and efficient passing learning outcomes). To get the basic techniques of sparking gateball skills that are good and permanent, it takes a relatively long practice. In line with the results of previous research, Setiawahyu, (2017) stated that there was an interaction between teaching style and initial ability to learn football skills. In addition, the role of the teaching style of a teacher/lecturer will also affect the level of achievement of sparking gateball skills for students. Train students to immediately respond to stimuli from the lecturer, uniform, according to instructions, Equalizing appearance, there is a fixed method, imitating methods, similarity and accuracy in responding, maintaining standards of beauty, increasing the spirit of togetherness, efficiency in the use of time and creativity.

Disadvantages of reciprocal teaching style in gateball sparking skills learning are; students are not active so that this reciprocal relationship does not occur in learning and it is difficult to control students who have low abilities. In teaching the exercises, the subject matter of the basic technique of gateball sport sparking skills is presented sequentially part by part and explained by the lecturer through demonstration. When viewed from the stages of learning the motion of the learning process, students before starting to learn do not yet have a complete picture of the basic techniques of gateball sport sparking skills, this will make it difficult for students to carry out a series of basic technique movements for gateball sport sparking skills.

4.6 Theoretical Framework

1. The effect of training methods on gateball sport sparking skills

In the implementation of mastery of gateball sport sparking skills, the benefits are very large in the gateball game. Because in gateball sparking skills, mastery of basic techniques is very important, so that gateball sports sparking skills can be done well. Good mastery of basic techniques will be the key to success in terms of quality (effective and efficient passing learning outcomes). To get the basic techniques of sparking gateball skills that are good and permanent, it takes a relatively long practice. In line with the results of previous research, Setiawahyu, (2017) stated that there was an interaction between teaching style and initial ability to learn football skills. In addition, the role of the teaching style of a teacher/lecturer will also affect the level of achievement of sparking gateball skills for students. Train students to immediately respond to stimuli from the lecturer, uniform, according to instructions, Equalizing appearance, there is a fixed method, imitating methods, similarity and accuracy in responding, maintaining standards of beauty, increasing the spirit of togetherness, efficiency in the use of time and creativity.

Disadvantages of reciprocal teaching style in gateball sparking skills learning are; students are not active so that this reciprocal relationship does not occur in learning and it is difficult to control students who have low abilities. In teaching the exercises, the subject matter of the basic
technique of gateball sport sparking skills is presented sequentially part by part and explained by the lecturer through demonstration. When viewed from the stages of learning the motion of the learning process, students before starting to learn do not yet have a complete picture of the basic techniques of gateball sport sparking skills, this will make it difficult for students to carry out a series of basic technique movements for gateball sport sparking skills.

2. Style feedback on gateball sport sparking skills in high-motivated students

The number of repetitions of the movement parts of the basic technique material for gateball sports sparking skills in each meeting is determined by the trainer/lecturer. The large number of sting tests determines the success of students in learning the basic techniques of sparking gateball skills, so students inevitably have to carry out what the coach/lecturer tells them to do. The feedback given by the trainers/lecturers in groups during the learning process can have a feedback effect or vice versa. For students who make a wrong move and then are given feedback, they will quickly correct their mistakes immediately. But for students who make the right movements and are always disturbed by feedback given by the teacher/lecturer at school because other students make mistakes. So it can be assumed that the learning outcomes of gateball sport sparking skills using the training method for students who have high motivation.

5 Research Hypothesis

The research hypothesis according to James (2016) is a proposition which is a temporary answer to the research questions contained in the formulation of the problem which is a statement. Researchers formulate research hypotheses based on a theoretical framework. Based on theoretical studies and theoretical frameworks, several hypotheses were obtained, namely:

1) There is an effect of the training method on the sparking skills of the STOK Binaguna sport gateball.

2) There is an effect of precision training on the sparking skills of gateball sports in physical education students at STOK Binaguna Medan.

3) There is an effect of feedback on the results of the practice of gateball sports sparking skills for STOK Binaguna Medan students

4) There is an interaction of training methods on the learning outcomes of the gateball sports sparking skills of STOK Binaguna Medan students

5) There is an effect of training method for gateball sparking skills of STOK Binaguna Medan students who have high accuracy.

6) There is an effect of feedback on the sparking skills of the STOK Binaguna Medan students who have high accuracy.

7) There is an effect of training method for gateball sparking skills of STOK Binaguna students who have low motivation.

8) There is a feedback effect on gateball sports sparking skills of STOK Binaguna Medan students who have low motivation.
5.1 Research Methodology

1. Research Objectives

This research requires a process that must go through various stages to produce a conclusion. This study aims to determine the effect of precision and feedback training methods on gateball sport stroke skills. The specific objectives in this study are as follows:

Operationally, this research aims to determine:

1. The effect of the gateball sport stroke skill training method as a whole.
2. The effect of accuracy on the overall gateball sport stroke skills.
3. The effect of feedback on the overall gateball sport stroke skills.
4. The interaction between exercise methods and motor skills on the overall gateball sport stroke skills.
5. The effect of training methods on gateball sport stroke skills in students who have high motivation.
6. The effect of accuracy on gateball sport stroke skills in students who have high motivation.
7. The effect of feedback on gateball sport stroke skills as a whole in students who have high motivation.
8. The effect of the exercise method on the overall gateball sport stroke skills in students who have low motivation.
9. The effect of accuracy on the overall gateball sport stroke skills in students who have low motivation.
10. The effect of feedback on the overall gateball sport stroke skills in students who have low motivation.

5.2 Place and Time of Research

This research was carried out at the High School of Sports and Health, Medan Binaguna in the Recreational Health Physical Education study program which is located at Jl. Alum inum Raya No. 77 Medan Deli, North Sumatra province. The implementation of the research, which began in July 2022, was used for preparation, determination of research samples and preliminary tests to collect data on motivation from the samples used. Furthermore, the initial data is used to determine the high-precision and low-precision groups. This research plan will be carried out at STOK Binaguna Medan. The research implementation time will be planned for 9 months starting from the preparation of the research proposal.

6. Research Method

The method used in this study is an experimental method with a 3 x 2 design. The definition of design refers to the view of Sudjana (2005:109-12), ie. the experimental units are grouped into
cells so that the experimental units within the cell are relatively homogeneous, and the number of experimental units per cell is equal to the number of treatments under study. Treatments were randomly assigned to experimental units in each cell. The $3 \times 2$ factorial matrix is:

<table>
<thead>
<tr>
<th>training method (A)</th>
<th>A1</th>
<th>A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>accuracy (B)</td>
<td>C1</td>
<td>C2</td>
</tr>
<tr>
<td>Tall ($B_1$)</td>
<td>$A_1B_1C_1$</td>
<td>$A_2B_1C_2$</td>
</tr>
<tr>
<td></td>
<td>$A_1B_1C_1$</td>
<td>$A_2B_1C_1$</td>
</tr>
<tr>
<td>Low ($B_2$)</td>
<td>$A_1B_2C_1$</td>
<td>$A_1B_2C_2$</td>
</tr>
<tr>
<td></td>
<td>$A_2B_2C_1$</td>
<td>$A_2B_2C_2$</td>
</tr>
</tbody>
</table>

### 6.1 Population and Sample

1. Research Population

Sugiyono (2010:80) says that the population is a generalization area consisting of objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then drawn conclusions. The target population in this study were all students of the second semester of STOK Binaguna Medan, totaling 100 male and female students.

2. Sampling Technique

The sample is part of the number and characteristics possessed by the population. The sampling technique in this research is using random sampling. From the total population of 100 people, 50 people were taken randomly as samples in the study. The sample is then tested for motivation with the aim of knowing the level of accuracy of each sample. The test results are then ranked 1-50. From the 50 students, the level of motivation accuracy was measured based on the opinion of Ferducci (1980:176) on the following calculations:

1. The high-accuracy group category is students who are included in the 27% of the highest scores.

2. The category of low accuracy group is students who are included in the 27% lowest score.

From the test results, the rankings were then taken 27% (13 people) from the top as the group that had high accuracy and 27% (13 people) from the bottom as the group with low accuracy skills, so the total number of samples to be given treatment was 26 person. Meanwhile, those that are not included in the upper 27% and lower 27% are not used because they clarify the difference between the upper and lower samples. Furthermore, dividing the sample into three groups, namely as a group that uses the exercise method group I, a group that uses the accuracy of group II and a group that uses feedback from group III which has been tested for its level of accuracy.
6.2 Data Collection Techniques

In accordance with the research design, there are two kinds of data that must be collected: (1) data on stroke learning outcomes, and (2) Motivation data. To obtain data on gateball sport stroke skill training data as well as data on accuracy using tests and measurements. To measure the stroke results of the inner gateball sport with an instrument made by the researcher.

1. Gateball stroke practice test
   
   a. Conceptual Definition

   Hitting the ball (stroke) in a soccer game according to Suryanto (2012: 3) is an attempt to move the ball from one point to another using a gateball stick. The basic hitting technique also has variations, namely side strokes, front strokes.

   The results of the instrument trial were analyzed using Pearson's product moment correlation. The complete calculation can be seen in the following calculation:

6.3 Reliability test using

1. Operational definition

   Accuracy is the result of a questionnaire test of the athlete's accuracy before being treated and expressed by a score. The accuracy test instrument used in this study was a questionnaire. The results of the accuracy measurement are used as a grouping of sample members, namely high accuracy and low accuracy.

2. Data analysis techniques

   To analyze the data in this study, a two-way Analysis of Variance (ANOVA) technique was used with a treatment design by level 2 x 3 at a significant level of α = 0.05. Before performing the analysis of variance, as a condition for meeting the data analysis requirements, the sample normality test was first performed with Liliefors, while to find the level of homogeneity of the population variance using the Barlett test. Furthermore, if there is an interaction (the result of the ANOVA calculation), it is continued with the Tukey test which aims to determine the significance level of calculated F with a significance level of α = 0.05.
References

The Proposal of SEMERC Model to Enhance Fundamental Movement Skills in Table Tennis

Chanoknat Rattanachaloemwong 1, Sathin Prachanban 2, Anan Malarat 3, Kasem Pantusa 4

{nokyoong_pe@hotmail.com 1, drsathin@gmail.com 2, ananma@swu.ac.th 3, kasempantusa@gmail.com 4}

Physical Education department, Srinakharinwirot University 1, Physical Education department, Srinakharinwirot University 2, Physical Education department, Srinakharinwirot University 3, Physical Education department, Thaksin University 4

Abstract. The aim of this article was to propose the instructional model for enhance fundamental movement skills of grade 7 students. Through information; concepts and educational theories synthesizing of Robert Gagne', Flipped Classrooms and Cooperative learning. The instructional model was SEMERC Model that consisted of 6 elements: 1) S : Self-Study 2) E : Self Evaluation 3) M : Motivation 4) E : Expand Knowledge 5) R : Response and Feedback and 6) C : Construction. Students can learn through basic movement activities and games. They can reasonably practice and problem solving reflectively to inquire the best answers. Teacher’s role should encourage students through self-directed learning, give an advice, feedback, motivate them to get more practice and drawn conclusions by themselves. SEMERC Model can be develop basic movement skills that lead to table tennis skills.

Keywords: Instructional Model, Fundamental Movement Skills, Table Tennis.

1 Introduction

Table Tennis may be a well known wear within the word. Competitions are held on numerous levels and and is included in universal competitions such as: Ocean Recreations, Asian Recreations, and Olympic Recreations. Table tennis has numerous components such as: Serve, Return, Forehand drive, Strike drive, and Crush. All of this has distinctive challenges and requires different mechanical abilities and capacities such as: Stand, Adjust, Development, Dexterity, Coordination. In understanding [1], it is important to give top priority to the importance of physical fitness in junior high school table tennis instruction in order to ensure that table tennis instruction achieves the expected results. Especially in professional table tennis matches, a table tennis player regularly has to endure at least 50 minutes of intense training. When physical capacity is depleted, it can affect the final outcome of the game and even drop out in a short period of time. In this way, strengthening the physical fitness of elementary school students can greatly improve the physical fitness of students, develop an interest in table tennis, and develop the physical strength to reliably complete important
teaching and preparation tasks. When teaching table tennis, it is important to use your hands to speed up the game, such as swinging your arms or raising your legs. Secondly, physical fitness preparation can promote the quality of the arms, legs and feet of elementary school students and the quality of the core according to their actual needs, so that they can easily complete the activity steps of daily table tennis training and teaching. Essential developmental skills (FMS) are the essential building blocks of motor skills and are considered to be the foundation for a person to develop higher developmental groups and contextual physical activity [2]. He has two subsets of FMS that are performed in an upright or bipedal posture.

Skills to control movements and questions [3]. Motor skills require broad physical development and may include movements such as walking, sprinting, jumping, hopping, and sliding [4], [5], [6]. Question control skills, on the other hand, are more passive and include skills such as hitting, throwing, kicking, catching, throwing the ball overhand, and rolling the ball underhand. [2] Says good basic motor skills contribute to physical development, Cognition, and children's social skills. These are the foundations for living. In accordance with [7] Teaching basic movement skills in physical education lessons 1 period per week for a period of 6 weeks. Positively affects the ability to move fundamentally, Level of physical activity, and Self-awareness of physical fitness Therefore, basic motor skills are important for the development of sports skills. Because if the student has good basic movement skills, it will result in good athletic skills.

Current teaching and learning Table tennis, though, is a popular sport But the development process also has problems with table tennis skills. This makes the learner under-skilled. This is because teaching has neglected basic motor skills. Basic movements are so important to practice in order to master them, leading to athletic skills. The learning process must incorporate basic swaying skills. So the researchers thought about developing SEMERC Model to enhance fundamental movement skills in table tennis. By drawing on the theoretical concept of Robert Gagne' Cooperative learning and Flipped Classroom. Design 6-step learning By the learner through the SEMERC Model.

Critical developmental skills are developmental blueprints that relate to different parts of the body and set the stage for physical performance. Critical development skills are the basic development or progenitor design of the more specific and complex skills used in games, entertainment, and certain sports. Physical competence is an individual's ability to train his or her body to perform an activity correctly and safely and to recognize the physical, social, cognitive and enthusiastic qualities necessary to do so. Gymnastic-like exercises promote further development of all developmental patterns. [8] Basic Developed Skills This is a form of development that involves specific body parts such as arms, legs, abdomen, head, and also running he skills. Bounce, pick, throw. Hitting and matching. These skills are fundamental to a child's development. This is also because it allows students to develop more complex skills.

This asset bunches abilities and exercises beneath three principal development aptitude categories:

Locomotor abilities include the body moving in any heading from one point to another. Locomotor aptitudes in this asset incorporate strolling, running, evading, bouncing, jumping and skipping.
Steadiness aptitudes include the body adjusting either in one put (inactive) or whereas in movement (energetic). steadiness abilities in this asset incorporate landing, adjust (inactive and energetic) and turn.

Manipulative abilities include dealing with and controlling objects with the hand, the foot or an execute (adhere, bat or racquet). Manipulative abilities in this asset incorporate tossing and catching, striking with the hands, feet and an execute (e.g. kicking, volleying, batting and spilling).

Table Tennis could be a prevalent wear within the world. Competitions are held on numerous levels and is included in universal competitions such as: Ocean Recreations, Asian Recreations, and Olympic Recreations. Table tennis is played on a difficult table which is isolated by a net. Players stand in mirror images of each other and hit balls of light across the table with small circular paddles. Adding spin to the ball reduces the chance of hitting the ball more than once. Therefore, players tend to turn the ball over at some point and give the opponent a serve. Table tennis is played both individually and in pairs. Both men's and women's categories are played. Table tennis is played according to the rules of the Worldwide Table Tennis League (ITTF). Table tennis skills include [9]

In table tennis, the grip is the way the player holds the racket. He has three racket grips, and some players have one or both.

Penhold:
This hold is named because the write operation is performed after the hold. This involves rotating the player's middle, ring and pinky fingers around the racket. This way of holding the bat is called the Chinese style.

Wave hands:
As the title suggests, this type of handshake occurs after a handshake. In Europe and the United States, many players use this grip, so it is also called the Western grip.

Forehand drive:
The forehand or forehand shot is often the first and most basic skill a table tennis player learns. This swing occurs when the ball hits the side of your body that holds the paddle. At the peak of the bounce, the player rotates their body and arms to return the ball over the net. The forehand punch should mirror the motion of hitting the ball with the palm of the hand with the thumb pointing up.

Impact drive:
Backhand, or punching power, is the most important skill a table tennis player needs to learn. This swing occurs when the ball flies toward the non-clubface side of the player's body. In these situations, players can change positions and use footwork to create a forehand swing, but often the ball is quicker to do so. They use punch swings. They move the racket over the center of the body and hit the ball behind the racket.

Additional fee:
On a table tennis serve, he shoots the ball out of his hand and bounces it once to any part of the table on his side and on the net side. Serves are made at the start of each Table 10 rally.
There are countless variations of the serve used by the best table tennis players, but the most important basic forms are his forehand serve and his slap serve. The best serves have to be well placed and confuse your opponent.

footwork:

A fast foot is fundamental to becoming a competent table tennis player. A player needs to be able to react quickly to a ball hit on his side, and good footwork is the best way to reach the ball on time. A table tennis player needs to be able to move side to side, inside and outside. This means you need to be able to move your feet quickly to the left and right of the table, from front to back. In table tennis, these two movements should be practiced the most, but sometimes players cross their legs.

2 Methods

This hypothesis states that there are several different types or levels of learning. A characteristic of these classifications is that each type requires a different kind of instruction. Gagne recognizes his five main categories of learning.

Linguistic data, mental abilities, cognitive processes, motor skills and behavior. Various internal and external conditions are very important for any form of learning. For example, learning cognitive processes requires a way to find unused solutions to problems. To memorize states of mind, learners must be exposed to valid verbal expressions and persuasive arguments. Gagné recommends that intellectual skill learning tasks can be arranged in an order that reflects their complexity.

Recognition, reaction speed, method tracking, use of formulas, distinguishing features, improving conception, applying show and performing problem solving. The essential point of the chain of command is to distinguish between prerequisites that must be met to facilitate learning at each level. Recognition of requirements is done through a formal review of the study/training contract. Learning command chains is a prerequisite for teaching order.

In expansion, the hypothesis traces nine directions occasions and comparing cognitive forms: [10]

(1) picking up consideration (gathering) : Since learning learner is in a few way situated and responsive to approaching data, picking up consideration is the self-evident to begin with occasion that must happen in instruction. The significance of attention was moreover examined within the past chapter. where it played a conspicuous part in Keller's show of motivational plan. Ordinarily, picking up consideration is fulfilled by a few sort of boost alter, which may be rehashed in different shapes all through a lesson to recapture students' consideration when they show up to be off-task. Illustrations incorporate the instructor calling out specific students' names, utilizing verb such as 'Listen up, everyone,' or turning the lights on and off. In intervened instruction, picking up consideration might take the shape of blazing signals on the screen or the sound of beeps demonstrating "Explore for a message on the screen."

(2) educating learners of the objective (hope) : We saw within the past chapter the effect that self-desires can have on inspiration. A comparative case is hoding an hope almost what one is
to memorize will impact ensuing handling of data related to that anticipation. In case, for case, learners are mindful and arranged to memorize certain data, they will be more alarm to any jolts related to that objective. Hopes are effortlessly set up by basic explanations of directions objectives, references to what understudies will be able to do after instruction, or shows of expected learning results. It ought to be noted that all understudies, whether youthful or develop, will create desires almost what they are gathered to memorize any guidelines circumstance. When the instructor or guidelines fabric isn't unequivocal approximately learning objectives (or they are in struggle with one another), understudies are likely to require their prompts from what happens in lesson and what shows up on tests (Driscoll et al., 1990).

(3) invigorating review of earlier learning (recovery): invigorating review of earlier learning can be as straightforward as reminding learners of what was examined the day some time recently, or final week, in course. Typically frequently served within the speedy audits with which numerous instructors start each exercises, In a few occasions, in any case, basic updates are not sufficient. It at that point gets to be fundamental to reestablish the prerequisite information or abilities by a few practice activity (Gagne & Driscoll, 1988). An illustration can be seen within the taking after convention, taken from Driscoll and Dick's (1991) perceptions of an eighth review science instructor approximately midway through an guidelines unit on light and focal points.

Significant exertion is frequently required for learners to exchange earlier information to unused circumstances, indeed when they are mindful that they have such important information (Salomon & Perkins, 1989). Besides, learners may basically discover it less demanding to inquire somebody else for the reply than to figure it out for themselves. In situations in which the process of tackling issues is an ideal of instruction, self ses sou be incited in ways that advance their perseverance in "staying with it."

(4) displaying the jolt (particular discernment): This event upon what is to be learned. In case the objective of instruction is data procurement, at that point the boost may comprise of a reading material chapter, address, or film containing the substance. I, on the other hand, the specified result is mental expertise learning, at that point the most successful jolt is one that unmistakably shows distinctive highlights of the concept or run the show to be learned. In Driscoll and Dick's (1991) perceptions, Tor example, the concept of center used by the textbook is a graph highlighting its basic features and by the educator employing a light box, focal points, and chalk clean. Within the last mentioned case, the teacher emphasized essential features of the concept through signals and verbal clarifications as she conducted the demonstration. Presenting the stimulus for motor skill or cognitive technique learning consists of illustrating the craved result or giving verbal bearings. For attitude learning, the boost may be a exhibit of the specified activity or choice, for the most part by a show. For all sorts of results, the boost introduction ought to emphasize particular features or fundamental components of the craved result in arrange to facilitate the forms of design acknowledgment and selective recognition.

(5) giving learning direction (semantic encoding): Occasion 5: Giving Learning Direction. is given in instruction moreover depends upon the specified result, but the essential prepare to be Lucilitated is semantic encoding. Particularly, instructional activities ought to advance the passage of what is to be learned into long. Term memory in a meaningful way. Here is where
a educator or guidelines basic and one of a kind architect ought to allude to the learning conditions that are to each sort of learning result.

(6) inspiring execution (reacting) : Guidelines Occasions 1 through 5 apparently guarantee that learning has happened, i.e., that what was to be learned has been adequately encoded and put away in long-term memory. Occasion 6, at that point, empowers the learners to affirm their learning--to themselves, their instructors, and others. It requires the learner to create a execution, ing that's an suitable pointer of what was learned. Remem arning mu st be inferred from behavior, so for this occasion, an in address to reply concerns what behavior will serve as the finest record of the required learning objective. The aim of eliciting execution is for learners to illustrate what they have learned without penalty. In other words, this occasion gives an opportunity to gage advance, with the presumption that mistakes are still experiencing rectification and execution is still being made strides. The following occasion, at that point, gives the learners with data valuable for affecting execution enhancement.

(7) giving criticism (support) : Having appeared what they can do, learners ought to be given instructive criticism on their execution. This suggests, for information and aptitudes that call for discrete answers, telling the learners whether or not their answers are redress. On the off chance that inaccurate, input ought to help learners in recognizing and adjusting their mistakes.

(8) surveying execution (recovery) : Keep in mind that learning was characterized in terms of a alter in behavior or execution that holds on over time. In other words, a unused ability must be performed dependably some time recently most instructors will agree that it has been well learned. Hence, after learners have had opportunities to illustrate and refine their information, it may be formally evaluated. This occasion is regularly carried out through unit or chapter ventures, p#rtfolios,skill exhibits, and so on. It moreover ten the premise on which understudy grades are allote d. Indeed with this occasion occu rg so late in a lesson, be that as it may, Gagne and Driscoll (1988) state desirable for each adjust performance to be given suitable input.

(9) enhancing retention and exchange (generalization) : Occasion 9: Upgrading Maintenance and Exchange. In spite of the fact that this is often the last event within the arrangement, directions exercises to enhance retention and exchange are frequently built into the instruction at a much earlier stage. It has as of now been proposed, for occasion, that a assortment of illustrations and settings Occasion 9: Enhancing Maintenance and Exchange. In spite of the fact that this is the final event within the arrangement, guidelines exercises to enhance maintenance and exchange are habitually built into the instruction at a much earlier phase. It has as of now been recommended, for occurrence, that a assortment of cases and settings

A few definitions of agreeable learning have been defined. The one most broadly used in higher instruction is likely that of David and Roger Johnson of the College of Minnesota. Concurring to the Johnson and Johnson demonstrate, agreeable learning is instruction that includes students working in groups to achieve a common objective, beneath conditions that incorporate the following components: [11]

(1) Positive interdependency. Group individuals are obliged to depend on one another to attain the objective. In case any group individuals come up short to do their portion, everybody endures results.
(2) Person responsibility. All understudies in a bunch are held responsible for doing their share of the work and for authority of all of the fabric to be learned.

(3) Face-to-face promotive interaction. In spite of the fact that a few of the gatherwork may be allocate led out and done exclusively, a few must be done intelligence, with gather members providing one another with feedback, challenging thinking and conclusions, and perhaps most vitally, instructing and empowering one another.

(4) Suitable utilize of collaborative aptitudes. Understudies are empowered and made a difference to create and hone trust-building, administration, decision-making, communication, and strife administration aptitudes.

(5) Gather preparing. Group members set bunch objectives, occasionally evaluate what they are doing well as a team, and recognize changes they will make to operate more successfully within the future.

All sound cooperative relationships have these five essential components display. This is often genuine of peer mentoring, accomplice learning, peer intervention, grown-up work bunches, families, and other agreeable connections. This conceptual "measuring stick" ought to characterize any agreeable relationship.

3 Result

Positive Interdependency

A major requirement for well-organized instruction is for students to accept 'sink or swim together'. Under a comfortable learning environment, students have her two tasks.

1) learn what is presented and 2) make sure that all members of the group learn what descends. The technical term for this double duty is positive interdependence. Positive interdependence is that sophomores are connected to their groupmates in ways that they cannot succeed (and bad habits are reversed) unless they do so and/or It happens when you realize that your own efforts must be combined with those of your group mates. Positive interdependence encourages students to:

1) ensure that our work benefits our groupmates and their work benefits us, and 2) collaborate in small groups to maximize everyone's learning and share assets. Provide common support and support, and celebrate victories together. A clear recognition of positive interdependencies achieves:

(1) Each bunch member's endeavors are required and vital for bunch victory (i.e., there can be no "free-riders").

(2) Each bunch part includes a special commitment to create to the joint exertion since of his or her assets and/or part and assignment obligations.

Face-to-Face Promotive Interaction

Positive interdependency comes about in promotive interaction. Promotive interaction may be characterized as people empowering and encouraging each other's endeavors to attain, total assignments, and create in arrange to reach the group's objectives. In spite of the fact that positive interdependency in and of itself may have a few impact on results, it is the face-to-
face promotive interaction among people cultivated by the positive inter-relationships, and mental alteration and social competence. Promotive interaction is characterized by people giving each other with productive and viable offer assistance and help; trading required assets, such as data and materials, and preparing data more productively and successfully; giving each other with input in arrange to make strides their consequent execution; challenging each other's conclusions and thinking in arrange to promote higher quality choice making and more noteworthy knowledge into the issues being considered; supporting the effort of exertion to realize common objectives; affecting each other's endeavors to attain the group's objectives; acting in trusting and dependable ways; being motivated to endeavor for mutual benefit; and keeping up a direct level of excitement characterized by moo uneasiness and push.

Person Accountability/Personal Duty

Among the early pilgrims of Massachusetts there was a saying, "In case you are doing not work, you are doing not eat." Everybody had to do their reasonable share of the work. The third basic component of agreeable learning is person responsibility, which exists when the execution of person understudies is evaluated, the comes about are given back to the person and the gather, and the understudy i s held capable by bunch mates for contributing his or her reasonable share to the group’s victory. It is critical that the gather knows who needs more help, bolster, and support in completing the task. It is additionally vital that gather individuals know they cannot "catch a ride" on the work of others. When it is troublesome to distinguish members' commitments, when members' commitments are repetitive, and when individuals are not mindful for the ultimate gather result, they may be seeking a free ride. This can be called social loafing.

Interpersonal skills and small group skills

A fourth fundamental component of fun learning is the proper use of interpersonal and small group skills. To foster efforts to achieve common goals, students should:

1) get to know and trust each other, 2) communicate accurately and clearly, 3) recognize and support each other, and 4) resolve conflicts in a meaningful way[12],[13]. Gathering socially gifted students and telling them to adjust doesn't mean they can do it. We are not naturally impulsive and know how to interact meaningfully with others. Interpersonal and small group skills don't magically come into play when you need them. Students need to be taught the social skills necessary for quality collaboration and encouraged to use them to work productively in fun groups. The entire collection flow area is based on the concept that social skills are the key to collection efficiency [13].

The higher the social competence of the students and the more emphasis the teachers put on teaching and using social skills, the higher the expected outcomes in the study group. Lew and Mesch [14], [15], [16], in their consideration of the long-term use of learning capacity, found that reward contingencies for social skill use, positive interdependence and academic opportunity examined the impact of Accomplishments are carried out in fun learning packages. As part of the eligibility requirements, students are prepared for four social skills each week, and each participant in a comfortable group is instructed by the instructor that all participants demonstrate three of her four social skills. I received two test reward points when I observed the. The results suggest that a combination of positive interdependence, academic
motivation for all group members to perform well, and social skills opportunities led to high grades.

Gather Preparing

The fifth basic component of agreeable learning is gather handling. Successful gather work is impacted by whether or not bunches reflect on (i.e., prepare) how well they are working. A process is an identifiable arrangement of occasions taking put over time, and handle objectives allude to the arrangement of occasions instrumental in accomplishing result objectives [13]. Gather preparing may be characterized as reflecting on a bunch session to: 1) depict what part activities were supportive and unhelpful, and 2) make choices almost what actions to proceed or alter. The reason of bunch handling is to clarify and improve the adequacy of the individuals in contributing to the collaborative endeavors to attain the group’s objectives.

Flipped classroom

Flipped classrooms can be used as part of broader instructional development, including blended learning, inquiry-based learning, other teaching approaches, and tools that integrate flexible and competent learners [17]. Furthermore, this is a model that helps learners take personal responsibility for their learning [18]. Flipped classroom demonstrations provide an environment that includes extension-based exercises and real-world exercises to help learners better understand the topic during the lesson. Instead of imagining a date from the instructor during the course, learners are able to see how they feel by watching course recordings, listening to podcasts, reading e-books, and meeting peers online. Recognize what you are learning to do. Learners have access to these extensive sources at any time. This allows instructors to spend more time communicating with each user. The most important goal is to enable learners to learn more seriously [17].

Flipped classroom show could be a part of a wide learning activity which covers mixed learning, inquiry-based learning and other instructive approaches and the apparatuses that coordinated flexible, efficient learners [17]. Other than, it is also a show which contributes to create learners take their possess learning responsibilities [18]. Flipped classroom approach emerged from the thought to supply instruction at home watching recordings rather than conventional classroom instruction. In the classroom the time spend to internalize the already given data by teacher with distinctive methods. This is accomplished through video records given already. Teachers have the chance to urge included with understudies actually. In this way, the time went through in classroom is utilized viably [19].

With its least complex definition flipped classroom approach is communicated as “what is done at school done at domestic, homework done at domestic completed in class” [20].

In this approach some time recently the course the understudies observe hypothetical portion of lesson by means of numerous types of gear such as online recordings, introductions, learning administration frameworks and take notes, plan questions almost the parts that they don't get it [21]. Amid course they accomplish supporting exercises such as finding answers together to the questions they arranged some time recently lesson, group working, issue tackling, discourse and making an deduction [22]. Flipped classroom is an approach that exchanges learning duty from instructor to the understudy [23].
clarified conventional flipped classroom demonstrate as “what is done at school done at domestic, homework done at domestic completed in class”. In traditional flipped classroom approach students come to course by observing the address video of past night. The lesson begins with brief questions and answers. In the event that there are focuses in address that are not caught on, they are clarified comprehensively. Within the rest of time, the instructor makes exercises based on addressing and gives one to one bolster to understudies. In this kind of course structure, the lessons are always given as address video arrange out of course period and the educator never teach lesson specifically. Appropriately, students are given opportunity to memorize by talking about. In this approach not a educator centered course but a understudy centered lesson is in address and the educator is in course as fair a direct. In flipped classroom approach time is rebuilt. In any case, in conventional approach educating of subject takes the foremost of course time. Course movement periods in conventional approach of and class activity periods in flipped classroom.

4 Discussion

Flipped classroom approach has four diverse components. It is communicated that in arrange to instructors accomplish this approach, they ought to take this four component into thought. The properties of this approach which its English correspondence is “Flip” are clarified like this by alluding to begin with letters:

F (“F”lexible Environment): It demonstrates arrangement of time and put flexibility of learning.

L (“L”earning Culture): In conventional educator centered approach the source of information is educator. In flipped classroom approach there's move from educator centered approach to understudy centered approach.

I (“I”ntentional Substance): Flipped classroom teachers both think approximately how instruction is utilized to supply familiarity and how they can create cognitive understanding of understudies.

P (“P”rofessional Teacher): The duty of flipped classroom teachers is more than the ones utilizing conventional approach. Flipped classroom teachers persistently watch understudies amid the course, assess their considers and make feedbacks. From the concept and hypothesis, it can be summarized as appeared in Table 1.

<table>
<thead>
<tr>
<th>Concept Theory of Gagne, Flipped Classroom, and Cooperative Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gagne</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1. Gaining attention</td>
</tr>
<tr>
<td>2. Informing learners of the objective</td>
</tr>
<tr>
<td>5. Providing learning guidance</td>
</tr>
<tr>
<td>7. Providing feedback</td>
</tr>
<tr>
<td>8. Assessing performance</td>
</tr>
<tr>
<td>9. Enhancing retention and transfer</td>
</tr>
</tbody>
</table>

Table 1
From the synthesis of concepts, the whole theory comes out as the SEMERC Model as shown in Table 2.

<table>
<thead>
<tr>
<th>Theory</th>
<th>Step 1 Self-Study</th>
<th>Step 2 Self-Evaluation</th>
<th>Step 3 Motivation</th>
<th>Step 4 Expand Knowledge</th>
<th>Step 5 Response and Feedback</th>
<th>Step 6 Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gagne</td>
<td>Gaining attention</td>
<td>Informing learners of the objective</td>
<td>Stimulating recall of prior learning, Providing learning, Guidance</td>
<td>Presenting the stimulus</td>
<td>Eliciting performance, Providing feedback, Assessing performance</td>
<td>Enhancing retention and transfer</td>
</tr>
<tr>
<td>Flipped Classroom</td>
<td>Design, Prepare, Share video</td>
<td>Change, Divide into groups</td>
<td>Positive interdependence, Individual accountability, Face-to-face, Promotive interaction</td>
<td>Present work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperative Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Appropriate use of collaborative skills, Group processing</td>
<td></td>
</tr>
</tbody>
</table>

From Table 2, Concept Basic theories used in the development of SEMERC Model. Shown as a model, as shown in Figure 1.
The analysis and synthesis of principles, concept Theory and documentation make it possible to get the concept SEMERC Model to enhance fundamental movement skills in table tennis. It consists of 6 stages.

S = Self-Study : Pre-class learning by learning through learning materials and conducting in person outside the classroom. Students learn from practice and practice that produces useful knowledge and experience.

E = Self Evaluation : Assessment of sports skills by passing a skills test to assess one's abilities. The test has criteria that determine the student's ability.

M = Motivation : Motivation the child's desire to learn. Teachers use problems or situations that are in the child's interest to challenge them to think independently and find answers. This is to examine the child's knowledge and experience in order to prepare them for the next stage of learning activities.

E = Expand Knowledge : It is the application of the knowledge generated to associate it with prior knowledge or concepts that or conclusions have been drawn to describe another situation or event.

R = Reaction and Input : Having appeared what they can do, learners ought to be given enlightening criticism on their execution. This infers, for information and aptitudes that call for discrete answers, telling the learners whether or not their answers are redress. In case inaccurate, input ought to help learners in recognizing and adjusting their blunders.

C = Construction : All students have the opportunity to represent the work and knowledge that the members of each group create. It uses a variety of presentation methods based on the child's abilities and interests.

5 Conclusion
Application of movement principles relating to each skill are provided where appropriate. It is important. Because, If you have good Fundamental Movement skills, it will lead to good sports skills. SEMERC Model can be develop basic movement skills that lead to table tennis skills. Students can develop Fundamental Movement Skills in Table Tennis Through this model. The hallmark of this Model is that Child-centered learning and practice on their own before class. Then take a Self Evaluation. In addition to that, this model encourages learners to want to learn. Have fun and enjoy studying, Group collaboration. Finally, students can understand and summarize their own knowledge. The teachers are the guide to learning. This model should be applied to students to show results.

References


[25] Bergmann, J. & Waddell, D. To flip or not to flip?. Learning and Leading With Technology, 2012; 39(8).

The Role of Recreation Leaders and The Operating of Recreational Activities in educational institutions New Normal era

Jiranuwat khamplew¹, Sumonratree Nimnatipun²

{jiranuwat.khamplew@g.swu.ac.th¹, sumonratree.nimnatipun@g.swu.ac.th²}

Faculty of Physical Education, Srinakharinwirot University ¹, Faculty of Physical Education, Srinakharinwirot University²

Abstract. At present, the behavior modification is completely changed especially during the COVID-19 pandemic. Human being was confined to spent some time in solitude, as well as being forced to stay more on the online platform. Human relationships have been declined and causes many problems. Meanwhile, the educational institutions also have particularly in changing the way for students’ development. Various educational institutions have to adjust from normal learning management through a new normal learning management. As result, it affects students’ development in many areas, specially using recreational activities in school. This article aims to explain the importance of recreational activities in educational institution, as well as the major role and the challenge of recreation leaders under social changing. The result from this article can use for the guidelines in driving recreational activities in educational institutions to be effective, and develop youth in society to have more quality in the future.

Keywords: Recreation, Recreation Leaders, Recreations Activities.

1 Introduction

While the global community is facing the pandemic of COVID-19. It is more affective with all people in the society than other crisis that ever happened before. This pandemic is not only affected with the illness or death, but also included with people well-being widely. Human beings are inevitably turned in their lifestyles. All of them were solitarily confined to a private area, and also being forced to stay with online platform. Such situations above cause a serious with human health in term of physically, socially, emotionally, and intellectually. It causes to deteriorate in human health.[1]

The group of youths and students in various educational institutions are clearly affected by this situation. Their learning behavior must be adopted in a new way. Educational institutions also have to change their teaching management from onsite to online during COVID-19 pandemic. On this period, it caused a huge impact on youth and students. Many youths and students are
limited in learning due to lack of educational equipment, lack of internet connection, which causing to inequality in education. As a result, youths and students have faced with stress that affect their mental health. In addition, those youths and students were not developed in various skills that occurred in school for instance they will lack of interaction in the classroom, lack of interpersonal interaction, as well as lack of organizing recreational activities in educational institutions. For these reasons, the quality of life of those youths and students is also reduced since an educational institution is not only just a place to provide education, but it is also a place to provide other welfares or services related to the quality of life and well-being of those youths and students. Therefore, when faced with the situation of COVID-19 pandemic, the resulting damage will be affected with the quality of life for those youths and students.

When the COVID-19 pandemic being ease up, “New Normal” are apparent from many sectors which shown different lifestyle from the past, and people are also normally familiar with it. Educational institutions are one of the important roles to coach both of youths and students in terms of developing thinking skills, knowledge, and educating social values. Besides, educational institutions also help to create learning experiences in various fields for students who study in educational institutions. Therefore, it is necessary to find new ways to develop many skills in various fields, especially by using recreational activities. The examples are included with sports activities, health promotion activities, social service activities, save environments activities, and morals and ethics activities. These activities all have the goal for developing students to be physically, socially, emotionally, intellectually, and mentally. All mentioned activities must be performed or driven by the recreational leaders in schools for youths and students in educational institutions.

Hence, finding a guideline and model for driving recreational activities in education institutions is a great challenge for the leaders to be a guideline to drive recreational activities to be effective, and also develop youths in our society to have a good quality of life.

2 How is recreation in educational institutions importance?

Recreational activities are very important for students and youths in various educational institutions. It is not only helping to develop all students and youths to have a good quality of life, but all students and youths will also have various skills and essential experiences for their future life. In each educational institution must be found the way to encourage students in educational institutions to engage with recreational activities during their study. Therefore, students and youths can meet the criteria that educational institutions was set. The conducting of recreational activities in the educational institutions is such an important case because the youths and students can learn new skills and experiences to adapt and keep up with rapidly changing in today’s global society. Obviously seen that the conducting of recreational activities affects life balance in the modern society, especially youths and students who are studying at the schools. All of them are human resources to sustainably develop our country in the future. Therefore, conducting the recreational activities in educational institutions is extremely essential and important to promote a good quality of students and youths’ life in educational institutions.

At present, various forms of recreational activities are used in many educational institutions, so that the students and youths can participate followed by their own interests. For example, in
form of congregate, clubs, groups or associations where students gathered for conducting the activities during their studies. These recreational activities will be organized to enhance skills for both youths and students in the educational institutions. There are many forms of the activities for instance sports activities, volunteer activities, environment conservation activities, the activity to enhance morals and ethics, and the activities to promote arts and culture. The aims of all activities are to develop students to be intellectually, socially, emotionally, physically, and mentally. Moreover, it is also an activity that enhances experiences and skills of youths and students in various ways to meet the needs of students in term of exercise and enjoyment. This is consistent with the benefits and values of recreational activities. When comparing such other activities, it can be seen that student activities are all recreational activities.

As mentioned above, it can be seen that the recreational activities in the educational institutions is important unavoidably. Since recreation is a science that humans use as a solution to promote quality of life to meet the body need. These recreational activities can help to relieve tiredness, physical and mental fatigue of the person who participate voluntarily. Recreational activities are thus contributing to youths and students who are in each educational institution to have a good quality of life. This will lead to emotional, social as well as intellectual development. As an educational institution should find the ways to encourage youths in to participate in recreational activities. Whether it is student activities in school or extracurricular activities in order to develop youths and students in society to be a quality population in the future.

What are the important roles of recreational leaders in schools?

Recreational leaders have duties and roles to manage and drive the recreational activities in order to achieve the objectives and goals efficiently. The recreational activities consist of the purpose of activities, selection of activities, place arrangement, method of operation, health and safety in carrying out activities, as well as summarizing and evaluating the results of that activity. Besides, recreational leaders should have knowledgeable and understanding the principles and theory of recreation. Moreover, they have the ability to transfer the knowledge, advise and assist participants in all activities, and have management skills in various fields for example, a variety of techniques to lead the activities and have a good relationship with the participants in recreational activities. It can be seen that the recreation leaders are very important in various organizations, which will be able to drive the recreational work of that organization to achieve the goals effectively.

Therefore, recreational leaders in educational institutions are the personnel that are important for the operation in the field of recreational activities. They will play an important role in driving recreational activities to achieve their objectives, as well as effectively lead to the goal of developing youths and students in the educational institutions. In addition, student leaders are required to act as moderators for student activities or recreational activities whether the role of student council, or leaders of student club. All of them play an important role in driving student activities or recreational activities in educational institutions to benefit the students in the institution. These student leaders are necessary to have knowledge, skills, and positive attitude about recreational activities. They also must understand the roles and duties of the work not only training and self-development or seeking knowledge, but it is also included with integrating various of knowledge to keep up with current situations and social changes at all times.
How has recreation in educational institutions in the New Normal era changed?

It has been almost two years for COVID-19 pandemic, causing youths and students cannot go to schools or any educational institutions. In the meantime, bad effects with all school closures are occurred in terms of learning, emotional, mental, and future opportunities. Together with the bad effect with the quality of life and well-being of youths and students. This phenomenon of COVID-19 pandemic prevents youths and students from going to school. Educational institutions, teachers, and lecturers cannot manage their teaching as in the past. Hence, they have to turn to online teaching method, which causing many problems affected youths and students. Whether it is stress, deteriorating physical and mental health, decreasing interpersonal interaction, as well as the deteriorating the quality of life of youths and students. When the COVID-19 pandemic is decreasing, “New Normal” was mentioned from many sectors. This is a result of adjusting to normal life in a new way with the problem of COVID-19 pandemic that is not the end. However, learning of youths and students must be continued. As a result, educational institutions have to adjust and learn to conduct teaching and learning in new way to develop youths and students. Therefore, distance education and the use of technology for learning has become the new way of Thai education. Causing teachers and lecturers become aware of new knowledge which is truly important and necessary for the learning of youth and students in the midst of this change.

Because of the various problems and limitations related to the COVID-19 pandemic, it affected with student development in the field of recreational activities in educational institutions. For instance, school closure through the government policy, limiting the number of people for organizing an event, public health restrictions on preventing the spread of COVID-19, as well as the paranoia that may arise with youths and students. Such directly impact affecting the implementation of recreational activities in educational institutions. Therefore, there must be a change in form. This is a very challenging and important problems that educational institutions and recreational leaders have to deal with and must find the ways and methods to develop youths and students in their own educational institutions.

The challenges of recreational leaders in educational institutions for the New Normal Era

There are various challenges of recreational leaders in educational institutions under the New Normal. Closure of school and transform to online teaching and learning during COVID-19 pandemic are a huge impact on youths, students, parents, teachers, and other accessories. Many youths and students have limited access to the online platform, maybe it is because of the lack or equipment, internet signal which bring about to disparity in education, causing youths and students to lose concentration in their learning as well as affecting their health. In addition, there are many be other additional problems that affect youths and students from learning online, for example, they do not want to turn on the camera during online classes because they were ashamed of their own living conditions. It is not only making people less interact to each other, but the social relationships are also decreased correspondingly.

As mentioned problems above, it is a challenge for recreational leaders in the new normal era to find a way for implement the recreational activities to meet the needs of youths and students as well as develop their skills in various fields. By the challenges of such problems, there are many things that recreational leaders need to focus on either mental rehabilitation or building confidence among youths and students. Organizing the activities have to in accordance with their needs by focusing on health and mind. Being online for a long time, it causes youths and
students need for regular recreational activities. As recreational leaders have to seek new approaches in organizing activities to meet their needs under the spread of COVID-19 measurement. The government policy may be a one of the conditions for conducting activities in the present and future situations. In order to protect and build the confidence for the participants, this is therefore an important issue that recreational leaders in schools should avoid. In addition, the conducting of various activities will also need to focus on the promotion and development of health and mental. Due to youths and students have been affected by physical and mental health regarding the spread of COVID-19 for a long time. Hence, recreational leaders must be aware of the health problems of those youths and students.

Another challenge that recreational leaders in educational institution have to deal with is creating recreational activities related with online and hybrid platforms. Although the spread of COVID-19 will be declined, the prevention and countermeasures of many sectors still continue to recognize. When the epidemic will again intensify, we have to turn to online platforms, or there may be other options. As recreational leaders have to deal with the situation that may arise in the future, which may not be only COVID-19 pandemic.

3 The guidelines for driving recreational activities in educational institutions in the New Normal era

From various problems that affect youths and students during COVID-19 pandemic, and the challenges of recreational leaders in educational institutions as mentioned above. Many sectors must urgently find the ways to prevent problems that may arise again as well as driving recreational work in educational institutions in the new normal era effectively continue. Therefore, the author will propose a guideline for driving recreational activities in the new normal era to benefit with recreational leaders in educational institutions, as well as being alternative ways to develop youths and students to have a good quality of life, and also be a good person in the society as followed:

Survey the needs of recreational participants among social change.

Of course, survey the needs of recreational participants is the thing that recreational leaders must do firstly. Because of conducting recreational activities, recreational leaders must organize the activities to meet the needs of participants. In which participants will choose to participate in activities that meet their own needs to develop their emotions and create new experiences in their life. However, in such a changing the conditions, the needs of recreational participants will also change. With the conditions of preventive measures against the spread of COVID-19, and changing people lifestyle are resulted with changing format and method for some activities. Besides, the worry about the spread of COVID-19 is one of the reasons that participants may choose a new type of activities. Therefore, as a recreational leader in the educational institutions, it is essential to explore the needs of recreational of youths and students in schools in order to know their desire to participate in recreational activities in the midst of social change.

Give a priority with health learning activities along with academic learning.

The implementation of recreational activities in educational institutions during new normal era is another important aspect for developing youths and students, which recreational leaders must focus on. From problems that affect youths and students during the pandemic of COVID-19 or
online learning, it greatly affects the health of youths and students in terms of physically, mentally, socially, emotionally, and intellectually. These things affect the quality of life of those youths and students a lot. Therefore, in terms of recreational activities in the educational institutions, it is important to focus on health learning activities along with academic learning. It included with organizing activities that improve physical or physical fitness for instance sport activities, health promoting exercise, and so on. Moreover, organizing activities that enhance social and emotional skills is very important because it can express youths and students’ emotion. For example, singing, acting, music, and drama. In addition, the activities that enhance interpersonal skills like speech, language, communication, literature, and social activities should be added to enhance the well-being of youths and students.

Take the advantages from technology and digital trends in activities and learning processes.

Due to the recent of COVID-19 pandemic, youths and students have been forced to stay in online platform for a long time. Although the epidemic situation has been declined, we cannot predict whether the situation will escalate again or not. Maybe there are other problems that we cannot predict will happen again in the future. Therefore, we are inevitably forced to live in the technological and digital trend, it makes us have to learn how to benefit from using technology in digital trend. As recreational leaders must have plan and find the new patterns and methods of recreational activities by using existing technology in the activities. Computer, smartphone, tablet, computer program, and online media are examples of technological equipment which benefit in recreational activities.

Create the hybrid activities.

Once recreational leaders have skills to use, understand, create, and access digital technology. The recreational leaders must do next is finding patterns and guideline for recreational activities in educational institutions by taking advantages from modern and digital technology to conduct the recreation activities in a mix or hybrid form. Because of in conducting activities, recreational leaders must not only focus on the general participants, but recreational leaders must also focus on patients infected with COVID-19 pandemic or those who are in the quarantine. All of them will need to be developed in various fields as well. This also includes those who are not comfortable participating in onsite activities. Participating in online recreational activities by using technology is another option that recreational leaders must focus on. Hence, creating hybrid or mixed activities between onsite and online format is another approach to conduct recreational activities in educational institutions.

4 Choose recreational activities that are safe and opened up to a new world.

With this rapidly changing social situation, recreational leaders must focus on various forms and methods in conducting recreational activities in educational educations. Recreational leaders must be open-minded, find new ways and new methods in carrying out recreational activities to keep up with safety of the participants. It is not only the safety of the epidemic, but recreational leaders must also consider other safety concerns related to the activity. Whether it is the safety of life and property, safety of mental and emotional, or even the safety of the privacy and lifestyles of the participants. As recreational leaders must understand the social change context, and also understand the laws and privacy policies of the participants. These are all small
factors that educational leaders may have overlooked. Therefore, in conducting the recreational activities in educational institutions, recreational leaders need to focus on these things in the face of social change in this new normal era.

5 Conclusion

Recreational leaders in educational institutions are very important personnel in the implementations of recreational activities. Due to they are the key player in driving recreational activities in educational institutions. The goal is to develop youths and students in educational institutions to become quality citizens in the future. From the problems of epidemic of COVID-19 in the past, it has greatly affected youths and students in various educational institutions. They should be developed and rehabilitated in terms of health and well-being, and learning loss for not doing recreational activities in the past. It causes many problems for examples, problem of stress, problem of deteriorating physical and mental health, and problems of reduced interpersonal relationship of youths and students. Therefore, the recreational leaders in educational institutions is necessary to prepare and find new ways to support recreational activities, as well as must be prepared to deal with the challenges that may occur. In addition, as recreational leaders should find the ways to drive recreational activities in educational institutions amid social change in the new normal era.

**Figure 1** The guidelines for driving recreational activities in educational institutions in the New Normal era

The examples are survey the needs of recreational participants in the mist of social change, focus on health learning activities along with academic learning, take advantages of technology and digital trends in recreational activities, and learn processes by applying digital technology in their learning, and so on. Moreover, educational institutions and recreational leaders need to accelerate the learning process with recreational activities in the new normal era. Besides, recreational leaders have to create values for youths and students to choose new forms of recreational activities, and have to build their confidence when they have to face with different problems. Finally, as recreational leaders have to promote and support recreational activities in the educational institutions as a tool for development of youths and students. All of them will be a good quality and be good personnel for the society in the near future.
References


The Media Literacy in the 21st Century of Physical Education Teacher-Student

Nantawan tongpitak¹, Jaturon Mahakanok², Mathee Kaewsanit³, Sathin Prachanban⁴, Kasem Pantusa⁵

¹{n.tantawan@gmail.com, jатурน์@gmail.com, mathee.kae@g.swu.ac.th, dr.sathan@gmail.com, kasempantusa@gmail.com}

Abstract. The factors affect the information technology perception and skill of teacher-student in Physical Education is media literacy skills preventing the misunderstanding of media without judgment, lack of responsibility, both for oneself and others. Misunderstanding of the media causes rights violations and reduce the media beneficence. The objective of this research was to analyze the elements of media literacy among Physical Education teachers by conducting a survey with 600 Physical Education teacher-students studying at universities that enrolled Physical Education Courses in Thailand. The subjects were collected by the multistage random sampling method. The results showed that all 25 variables were important in measuring the media literacy skills of Physical Education teacher-students. Importantly, the variables used to measure the media literacy skills of Physical Education teacher-students are correlated.

Keywords: Media Literacy, Physical Education, Teacher student.

1 Introduction

The 21 Partnership for 21st Century Skills [1] presents a conceptual framework for learning of 21st century learners consist of: 1) Core subject and 21st Century Themes, 2) Learning and Innovation Skills, 3) Information Media and Technology Skills, 4) Life and Career Skills. The 21st Century learners must have 21st Century Skills as learning tools. These are live-long learning skills that advantage them in work (Pearson Education, Inc, 2009). Additionally, these skills will benefit their learning, career, and living. Information media and technology skills include information literacy and media literacy. Importantly, media literacy is one of the essential skills that learners in the 21st century must have to live under the disrupted changes of the 21st century.

The concept of media literacy skills was established in the 17th century in Germany. In accordance to the UNESCO World Conference on Media Literacy in Grundwald, Germany, the
The term "Media Literacy" has similar meanings to several words, depending on the used reference and country or the organization. The "media literacy" is used in the United States, whereas media education is commonly used in Australia and European countries. The "Media Literacy" is commonly used as a state of media cognition, influence and impact of the media, ability to analyze media output, ability to interact with media, as well as the ability to produce and disseminate media for specific purposes. Similarly, the "Media. However, the Aspen institute (1992, cited in Aufderheide, P, 1993) [3] defines media literacy skills as the ability to access, analysis, evaluation, and production of content from a wide range of media, consistent with the Learning for the 21st Century report. The report mentioned that the skills needed to work and live in the 21st century comprise of 5 components (Center for Media Literacy,2008) [4] namely, access skills, analytical skills, evaluative skills, creating skills, and participating skills. Media literacy skills are cognitive and intellectual developments whose ultimate goal is to create knowledgeable media recipients. Understanding of the media and the productivity of the media can differentiate opinion from reality, accurately judge what the media project, be an energetic and active recipient of the media, understand self & society as well as participating and appropriately comment toward medias. Thereafter, the Physical Education teacher-student should have properly knowledge in media literacy.

Physical Education is a field of study that aims to produce quality and effective Physical Education teachers. The Physical Education teacher-student must be high-potential candidates who can pursue future teacher careers. Physical Education teacher-students need to be able to develop their physical, mental, and social performance. The development of teacher-students comprises of 3 elements, namely 1) developing learners in physical fitness supporting lifelong learning, 2) developing learners in mental and psychological health providing them with a strong mind, indomitable to obstacles, athletes mind, forgive others, and 3) developing learner in social skills so that they can live happily with others. Currently, developing learners to be able to meet all three competencies requires new approaches that can effectively access those techniques from information technology media on the Internet, rapidly access, and be able to aware of media propaganda. Moreover, the teacher-student should be aware of abuse and intoxicated by various forms of latent computer games. These might affect the students as antisocial or difficulties in learning surrounding environment. Therefore, the teacher-students in Physical Education must have the ability to use information technology media in a timely manner and use information technology materials to explore those new knowledge and techniques for effectively developing learners.

However, media literacy is the most effective skill of the teacher-student in Physical Education. The skilled learner will be protected from media critic, responsibility lacking, both for oneself and others, misuse of media causes rights violations. Moreover, the skilled learner will effectively use of media. to its fullpotential. As a teacher in Physical Education and as a program committee is interested in studying the 21st century skills in media literacy of Physical Education teacher-student. The result will be further used as information to improve the Physical Education curriculum.

2 Methods
The objective is to analyze the elements of media literacy of Physical Education teacher-student. The samples used in this research are: Physical education teacher-student studying at universities teach Physical Education courses in Thailand, academic year 2018, 6 universities in 6 regions. There are university in Bangkok, Northern, Northeastern, Central Region, Eastern and Southern regions. The sample is 600 people gathered by using G*Power 3.1 at the effect size of 0.2, the α is 0.05, and the power of the test is 0.95. Five groups of 490 people were used as controlled group. The questionnaires were electronically collected. Therefore, an additional sample size of approximately 20% was determined to obtain a sample size of 600 people by Multistage Random Sampling. The questionnaires used in the research is a 21-century media literacy test of Physical Education teacher-student, 5-level estimation, and 25 items. The data was analyzed by using Factor Analysis: FA with a ready-made statistical program.

3 Results

Findings: The results model analyzes the affirmative component of the Physical Education teacher-student's media literacy skills model is structurally straight. The statistical values used to verify the model's straightness are chi-square = 251.056, df = 217, p = 0.0562, CFI = 0.997, TLI = 0.996, SRMR = 0.017, RMSEA = 0.014, and chi-square/df = 1.157.

Regards the consideration of the 5 elements, 25 variables, found that all elements were statistically significant at the .01, ranging from 0.667 to 0.991. It shows that the variables used to measure the media literacy skills of Physical Education teacher-students are correlated as shown in the Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Element weight</th>
<th>SE</th>
<th>Z-test</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element 1: Access Skill</td>
<td>0.851**</td>
<td>0.015</td>
<td>55.185</td>
<td>0.725</td>
</tr>
<tr>
<td>1. Physical Education teacher-student can choose to use media or develop new approach to access information from various media such as books, newspapers, journals, and electronic media such as the Internet, facebook, Line, Instagram.</td>
<td>0.672**</td>
<td>0.023</td>
<td>29.299*</td>
<td>0.451</td>
</tr>
<tr>
<td>2. Physical Education teacher-student can fully recognize and understand the content, information, news and details from various media.</td>
<td>0.717**</td>
<td>0.022</td>
<td>33.120</td>
<td>0.515</td>
</tr>
<tr>
<td>3. Physical Education teacher-student can seek information from a various media without limiting it to a particular type of media, or prefer to use only certain types of media to seek information, such as using merely facebook.</td>
<td>0.667**</td>
<td>0.022</td>
<td>29.904</td>
<td>0.446</td>
</tr>
<tr>
<td>4. Physical Education teacher-student can gather information and select relevant and useful types of information according to the aims from various media channels.</td>
<td>0.767**</td>
<td>0.018</td>
<td>42.934</td>
<td>0.588</td>
</tr>
<tr>
<td>5. Physical Education teacher-student can effectively observe, remember, understand, and tell</td>
<td>0.737**</td>
<td>0.019</td>
<td>38.502</td>
<td>0.544</td>
</tr>
</tbody>
</table>
or explain the meaning of specific terms, symbols, and techniques of communication.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Element</th>
<th>SE</th>
<th>Z-test</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element 2: Analyze Skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Physical Education teacher-student can effectively distinguish fraud,</td>
<td>0.907**</td>
<td>0.012</td>
<td>73.575</td>
<td>0.822</td>
</tr>
<tr>
<td>exaggerated proposals, opinions, and propaganda.</td>
<td>0.703**</td>
<td>0.020</td>
<td>35.142</td>
<td>0.494</td>
</tr>
<tr>
<td>7. Physical Education teacher-student can effectively distinguish pros</td>
<td>0.724**</td>
<td>0.019</td>
<td>38.169</td>
<td>0.525</td>
</tr>
<tr>
<td>and cons of the media presentations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Once Physical Education teacher-student have decided to gather</td>
<td>0.762**</td>
<td>0.017</td>
<td>43.777</td>
<td>0.581</td>
</tr>
<tr>
<td>information from any media, they can effectively distinguish pros and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cons, as well as effects toward themselves and other.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Physical Education teacher-student can accurately and comprehensively</td>
<td>0.763**</td>
<td>0.017</td>
<td>44.500</td>
<td>0.582</td>
</tr>
<tr>
<td>tell or explain the main objectives and latent objectives of various</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forms of media.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Physical Education teacher-student can reasonably give reasons to</td>
<td>0.790**</td>
<td>0.016</td>
<td>48.006</td>
<td>0.624</td>
</tr>
<tr>
<td>support the results of their own media analysis.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 3: Evaluate Skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Once Physical Education teacher-student have decided to gather</td>
<td>0.991**</td>
<td>0.011</td>
<td>93.631</td>
<td>0.982</td>
</tr>
<tr>
<td>information from any media, they can make critical or reasonable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decisions to believe or disbelieve the information.</td>
<td>0.758**</td>
<td>0.017</td>
<td>45.566</td>
<td>0.574</td>
</tr>
<tr>
<td>12. Physical Education teacher-student can choose to receive information</td>
<td>0.742**</td>
<td>0.017</td>
<td>42.450</td>
<td>0.551</td>
</tr>
<tr>
<td>from media that are creative and useful to themselves and others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>according to their aims and denying or blocking useless or unproductive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>information from the media.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Physical Education teacher-student know and understand the hidden</td>
<td>0.785**</td>
<td>0.015</td>
<td>51.267</td>
<td>0.617</td>
</tr>
<tr>
<td>information and can effectively judge the accuracy, appropriateness,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and quality of information from those media.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Physical Education teacher-student use moral, ethical, and</td>
<td>0.750**</td>
<td>0.017</td>
<td>43.271</td>
<td>0.563</td>
</tr>
<tr>
<td>democratic principles to judge the value of information from the media.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Physical Education teacher-student use their previous experience</td>
<td>0.784**</td>
<td>0.016</td>
<td>50.474</td>
<td>0.615</td>
</tr>
<tr>
<td>to judge the accuracy and appropriateness of information from various</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>media based on moral, ethical, and democratic principles.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element 4: Create Skill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Physical Education teacher-student can design media presenting</td>
<td>0.953**</td>
<td>0.011</td>
<td>87.984</td>
<td>0.908</td>
</tr>
<tr>
<td>information, knowledge and opinions</td>
<td>0.774**</td>
<td>0.016</td>
<td>47.503</td>
<td>0.599</td>
</tr>
<tr>
<td>Variable</td>
<td>Element weight</td>
<td>SE</td>
<td>Z-test</td>
<td>R²</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------</td>
<td>-----</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>17. Physical Education teacher-student transparent presenting information and based on responsibilities and ethics.</td>
<td>0.786**</td>
<td>0.016</td>
<td>50.328</td>
<td>0.618</td>
</tr>
<tr>
<td>18. Physical Education teacher-student produce media through the process of planning, scripting, and researching content to appropriate design media.</td>
<td>0.780**</td>
<td>0.016</td>
<td>48.978</td>
<td>0.609</td>
</tr>
<tr>
<td>19. Physical Education teacher-student can effectively edit and disseminate information from various types of media.</td>
<td>0.805**</td>
<td>0.014</td>
<td>57.705</td>
<td>0.647</td>
</tr>
<tr>
<td>20. Physical Education teacher-student constructively express their opinions and suggestions to criticize information, values, beliefs, opinions, facts, as well as persuasion, propaganda, and exaggerated propositions or hidden information.</td>
<td>0.834**</td>
<td>0.015</td>
<td>57.048</td>
<td>0.695</td>
</tr>
<tr>
<td>Element 5: Participation Skill</td>
<td>0.903**</td>
<td>0.012</td>
<td>74.012</td>
<td>0.816</td>
</tr>
<tr>
<td>21. Physical Education teacher-student engage in critiques and comments on information from the media published in various ways to ensure accuracy and beneficence.</td>
<td>0.778**</td>
<td>0.016</td>
<td>47.294</td>
<td>0.606</td>
</tr>
<tr>
<td>22. Physical Education teacher-student engage in collaboration media or leverage other people's media for the dissemination of accurate and useful information to society.</td>
<td>0.771**</td>
<td>0.016</td>
<td>47.132</td>
<td>0.594</td>
</tr>
<tr>
<td>23. Physical Education teacher-student interact with others in critiques and openly express their opinions to the media on the basis of responsibility and ethics.</td>
<td>0.785**</td>
<td>0.016</td>
<td>49.512</td>
<td>0.615</td>
</tr>
<tr>
<td>24. Physical Education teacher-student respect the right and freedom to express the opinions of others through various media.</td>
<td>0.708**</td>
<td>0.020</td>
<td>34.571</td>
<td>0.501</td>
</tr>
<tr>
<td>25. Physical Education teacher-student give other people the opportunity to engage in critiques, comment, collaborate, and make appropriate use of their media.</td>
<td>0.702**</td>
<td>0.020</td>
<td>34.670</td>
<td>0.493</td>
</tr>
</tbody>
</table>
A1
A2
A3
A4
A5
B1
B2
B3
B4
B5
C1
C2
C3
C4
C5
D1
D2
D3
D4
D5
E1
E2
E3
E4
E5

A
B
C
D
E
F

0.67
0.67
0.67
0.77
0.74

0.70
0.72
0.76
0.76
0.79

0.74
0.76
0.79
0.75
0.78

0.79
0.77
0.78
0.81
0.83

0.79
0.77
0.79
0.71
0.70

0.70
0.76
0.78
0.75
0.78

0.85
0.90
0.99
0.95
0.90

F
4 Conclusion

According to the data, the 25 variables are important variables in measuring the media literacy skills of Physical Education teacher-student. It has been shown that the variables used to measure the media literacy skills of Physical Education teacher-student are access skills, analyze skills, evaluate skills, create skills, participation skills, all of which are correlated. The result is also used as a guide for the development of Physical Education courses in Bachelor's degree modernizing technology and transferring knowledge effectively.

References

Effect Of Self-Confidence By Self-Talk Skill Training On Anxiety In Korfball Shooting

Naphatchakorn Vanapanich1, Phichayavee Panurushthanon2

{jteeless@gmail.com1, nantanak@g.swu.ac.th2}

Srinakharinwirot University, Bangkok Thailand1, Srinakharinwirot University, Bangkok Thailand2

Abstract. The research aims to study and compare the results of self-talk skills training on anxiety in Korfball shooting and Korfball shooting tests among 40 Korfball players who were selected by simple random sampling and based on the results of the Korfball shooting test scores. The population were divided into an experimental group of 20 players and a control group of 20 players. The experimental group received self-talk skills training with Korfball training, but the control group only received Korfball training. The duration of the training was eight weeks. The Revised Competitive State Anxiety Inventory - 2 (CSAI-2R) was used to measure the anxiety and self-confidence of all of the players and the variable data was measured by mean, standard deviation, an independent t-test and a paired t-test. The results showed the comparison of self-confidence and anxiety regarding the Korfball shooting skills of the experimental group and the control group. The experimental group received self-talk skills, resulting in an increase in self-confidence, which was greater than that of the control group. Regarding the anxiety associated with Korfball shooting, it was found that the experimental group who learned self-talk skills had decreased physical and mental anxiety. It was found that the experimental group, who received self-talk skills, were more capable at Korfball shooting than the control group without the self-talk skills.

Keywords: Self Talk, Self Confidence, Anxiety, Korfball

1 Introduction

Sports psychology is a branch of sports science that is important and necessary for use in the development of sports people both physically and mentally. This is to develop sports abilities and sportsmanship. Sports psychology involves all sports individuals, including coaches, athletes and sports spectators. It is also an important part of training and competitive because sports psychology helps in the perception of one's own abilities. Feeling good about yourself, your job, motivates you to learn, effectively affecting the development of sports ability.

It also helps to develop a person both physically and mentally.[1] Therefore, all involved, including teachers, coaches and athletes should apply the skills of sports psychology to
competence development their abilities, must be continuously and systematically and understandably until it can be used as part of life.

The ultimate ability of sports depends on three important and interrelated elements: the physical component; Mental composition and environmental elements. Although developing an athlete's physical abilities to their full potential is of the utmost importance and necessity but effectively putting that talent or potential on display in a competitive situation is absolutely necessary because there are psychological factors that are important factors in controlling thoughts, emotions, feelings and self-awareness in various fields, allowing control of physical play to its fullest potential[2]. As[3] research found, sports psychology skills affect the ability and persistence of athletes to compete.

Anxiety with sports competition can occur both before and after competition. It also plays an important role in the competition. Athletes’ anxiety will affect their ability of athletes. This will adversely affect the athlete and the outcome of the competition. And anxiety may cause athletes to show abnormal symptoms such as excitement, etc. concentrating on a competition. As [4] study of anxiety in rugby football players found that experimental groups that received mental skills training had less physical and mental anxiety than control groups that did not receive mental skills training. Therefore, self-confidence should be strengthened in athletes.

Self-confidence is an important component of mental performance. It is a factor that is associated with the highest athletic ability. [5] Said self-confidence is a characteristic that is the highest demand for sporting success, according to [6] said that the characteristics of self-confidence are the highest expectations for success in sport. Therefore, strengthening self-confidence can be practiced in many ways. [5] Such as Performance Accomplishments, Acting Confidently, Thinking Confidently, Self-Talk, Imagery, physical training and preparation but self-talk is a popular way to build self-confidence because it is an easy, convenient, quick and suitable for use it in real situations.

Self-Talk is important because it reinforces and reorganizes your thoughts about yourself in a positive way to help athletes gain confidence and self-esteem before competition or sport skills. It will help to develop a sense of control over the situation, which is essential to the outcome of a match. Therefore, all athletes need to know how to create short sentences to talk to ourselves. Good self-talk sentence must be related to a specific, challenging, attainable goal. According to [7] research a study of 150 athletes using self-talk skills, divided into four training topics, found that most athletes used self-talk skills to increase their confidence.

Korfball is a combination of many sports, such as basketball, netball, and handball, etc. by using the basic skills of playing such as shooting, passing, movement, and physical performance. Athletes must have agility, strength and, speed but the most important skill for Korfball is the shooting skills. The Korfball post maximum height is 3.5 meters from the ground. Therefore, training to develop specific skills in sports, physical skill including mental skills, these three skills particularly affect the performance of an athlete, especially when an athlete faces difficult situations or anxiety and stressful situations. Mental skills are very important to the performance of an athlete at that time.

The importance of self-confidence affects athletic ability, and studies show that self-talk skills can increase self-confidence and reduce sports anxiety. Therefore, the researcher is interested in studying the effects of self-talk skills training to increase self-confidence and reduce anxiety.
among Korfball players as a guideline for development of the highest abilities of athletes. The researchers hope that this research will be useful in study of self-confidence techniques for anxiety and techniques of athletes mental performance training.

2 The Purpose of Research

a. To study and compare the effect of self-talk skills training on anxiety and self-confidence in Korfball shooting skills.
b. To compare the Korfball shooting skills of the self-talk group with those without self-talk skills training.

3 Method

Participants

Korfball athlete of Srinakharinwirot University 40 participants who participated in 2nd Thailand Korfball Championship and divided the samples in to 2 groups, 20 people each group, selected by simple random sampling (scores from the Korfball shooting test, Sort scores high-low, alternately)
The control group, the group receiving the Korfball training program.
The experimental group, the group received the Korfball training program along with the self-talk training program.

Instruments

a. Self-Talk skills training program

Self-talk skills

a) Relax by breathing (Relax)
b) Stop thinking by following your breath (Stop)
c) Say it using the words “I know I can (Shoot a goal, shoot the ball straight, shoot into the basket, release the ball with two hands)”

Keywords: Relax, Stop, Talk

Relax by breathing perfectly

Recommended breathing methods that must be breathing from the diaphragm only during training[8]
a. Athletes must imagine that the lungs are divided into three sections based on the upper, middle, and lower levels.
b. The athletes try to inhale until the bottom is full first by pulling down the diaphragm and pushing the abdomen out.
c. Then breathe until the middle is full by expanding the chest cavity by lifting the rib and chest higher.

d. Then let the athletes try to take a full breath of the upper by raising the chest and raising the shoulders.

e. All 3 steps must be continuous in the same rhythm. For the first phase of training session may be divided into parts. When athletes can do all three steps and should hurry to train all three parts to be the same step as soon as possible.

f. When the athletes has completed all three steps of breathing, the athletes should hold their breath for a few seconds. Then exhale by contracting the stomach or collapse the stomach. Lower his shoulders and chest to expel the air from lungs. Finally, the athletes should try to contract or inflate the stomach again in order to exhale all the breath. The athletes should feel that the breath in the lungs has been completely expelled.

Stop thinking by following your breath.

The athletes should be focus on their breath, start when your breath touches the tip of your nose, flows through the trachea, lungs, stomach, up to navel and flows out. Try to get athletes to feel the warm air flowing through their body. In case the athletes loses interest and think otherwise, stop and think about your next breath.

At this stage, athletes are only allowed to think about their breath, not thinking about other things, to stop thinking.

Considerations for self-talk skills training

Breathing techniques should be practiced at the beginning of training in a quiet environment, warm and comfortable environment. When athletes have been trained to be fluent, their may be able to train in the other places with external disturbances.


c. Korfball shooting test program

The Korfball shooting test is based on the actual situation in the Korfball sport.

a) In the test, a total of 4 points will be tested, divided into 2 in front of the Korfball goalpost and 2 behind the Korfball goalpost (both points are divided into left and right sides).

b) At each point, the researcher will give the participants shooting a total of 5 shots at each point, a total of 4 points equal to 20 times, and record the results at each point per person.

c) In this test, the researcher will determine the point of standing before the test subject receives the ball and movement in the form of Korfball shooting. Every time the test subject take a shot, they must stand at the point specified by the researcher.
**Figure 1** Shows the pattern of the Korfball shooting test created by the researcher.

**Procedure**

The researcher started from giving all participants Korfball shooting test in all 4 points, 5 goals each point, and record the results of Korfball shooting test that was obtained to divide the participants into 2 groups: The experimental group and control group. After that, all subjects took the Revised Competitive State Anxiety Inventory-2 (CSAI-2R) for 8 weeks, collecting data for three periods: Pre-test (Week 0), Post4 (Weeks 4), and Post 8 (Weeks 8) by conducting a questionnaire 30 minutes before simulating the competition situation, all 3 times. The experimental group conducts the Korfball training program and after finished the Korfball training program 5 minutes left, the self-talk program will be start immediately, it takes 15 – 30 minutes each session of self-talk skills training, will be conducted 3 times a week, in a total of 8 weeks. The control group completed the Korfball training program without self-talk skills training for 8 weeks.

**Data Analysis**

Take the self-confidence test results, anxiety, and the ability of score Korfball shooting tests in Pre-test (Week 0), Post4 (Weeks 4), and Post 8(Weeks 8) of the experimental group and the control group were analyzed by using a statistical package for the social science (SPSS) as follows: Find the mean (\( \bar{x} \)) and standard deviation (S.D.) of age, self-confidence, and anxiety of the experimental group and the control group. Test the differences between the experimental group and the control group. In week 0, 4, and 8 using the Independent for t-test was used to test the statistical significance at the .05 level. Test for differences within groups. In week 0, 4, and 8 of the control group and the experimental group by using Paired t-test at a statistical significance level of .05.

**4 Results**

Table 1. Compare the anxiety according to the situation between the experimental group and the control group. During Pre-Test(Week0), Post4 (Weeks 4), and Post8 (Weeks 8). Somatic
anxiety found that there was no difference between the experimental group and the control group during week 0 (t = 1.12, p > .05) statistically, weeks 4 found a statistically significant difference at .05 (t = 2.66, p < .05). However, weeks 8 there was no difference in statistically (t = -.67, p > .05). Cognitive anxiety found that there was no difference between the experimental group and the control group during week 0 (t = -1.51, p > .05) statistically, weeks 4 found a statistically significant difference at .05 (t = .29, p > .05), including weeks 8 there was no statistical difference (t = -.64, p > .05). Self-Confidence, it was found that week 0 the difference was found (t = -5.03, p < .05) with a statistical significance at .05, Weeks 4 was found a statistically significant difference (t = -4.23, p < .05), and weeks 8 were also found a statistically significant difference (t = -.49, p <.05).

Table 2. Compare the Korfball shooting skills between the experimental group and the control group. During Pre-Test(Week0), Post4 (Weeks 4), and Post8 (Weeks 8). It was found that the shooting skills between the experimental group and the control group in week 0 was found the difference a statistically significant at .05 (t = - 3.75, p < .05), including weeks 4 here was a significant difference ( t = - 3.21, p < .05). statistically significant at .05, and weeks 8 was also found a significant difference ( t = - 4.56 , p < .05) statistically at .05.

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>S.D.</td>
<td>X</td>
<td>S.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 0</td>
<td>1.95</td>
<td>.49</td>
<td>1.80</td>
<td>.38</td>
<td>1.12</td>
<td>.26</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>1.97</td>
<td>.47</td>
<td>1.62</td>
<td>.35</td>
<td>2.66</td>
<td>.01*</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>1.26</td>
<td>.32</td>
<td>1.32</td>
<td>.27</td>
<td>-6.7</td>
<td>.50</td>
</tr>
<tr>
<td>Cognitive Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 0</td>
<td>2.26</td>
<td>.51</td>
<td>2.52</td>
<td>.56</td>
<td>-1.51</td>
<td>.13</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>2.33</td>
<td>.39</td>
<td>2.28</td>
<td>.66</td>
<td>.29</td>
<td>.77</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>1.80</td>
<td>.62</td>
<td>1.93</td>
<td>.63</td>
<td>-6.4</td>
<td>.52</td>
</tr>
<tr>
<td>Self-Confidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 0</td>
<td>2.26</td>
<td>.30</td>
<td>2.96</td>
<td>.54</td>
<td>-5.03</td>
<td>.00*</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>2.57</td>
<td>.41</td>
<td>3.22</td>
<td>.55</td>
<td>-4.23</td>
<td>.00*</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>3.25</td>
<td>.31</td>
<td>3.33</td>
<td>.64</td>
<td>-4.9</td>
<td>.00*</td>
</tr>
</tbody>
</table>

* significance level of .05

5 Discussion

According to the research results, athletes who have been trained in self-talk skills can increase their self-confidence while shooting and the comparison of the self-confidence anxiety effect on Korfball shooting skills between the experimental group and the control group. The results
showed that the experimental group who received the self-talk skills training had increased self-confidence than the control group while shooting. This shows that self-talk was another important skill in sport psychology that can give athletes or coaches a sense of self-confidence before competition or athletic performance. According [9] said “When being trained in self-talk skills, it will produce a clear effect, it can cause self-confidence and self-talk as another important skill in sports psychology. It can give athletes self-confidence before competitions or demonstrate their athletic skills because self-talk skills will be manner of repetition and able to organize their thoughts for themselves to be in a better way, self-confidence can be achieved. Sometimes mindfulness and action do not go together. When we talk to ourselves through the thought process. Therefore, when the self-talk is repeatedly emphasized, it will send a message to our body to feel the certainty that it performs the skill. As a consequence, the body will feel relaxed and result in being able to demonstrate or perform that skill to the fullest and have confidence in action.

[10] Self-talk skills affect confidence, and in addition, self-talk also affects many sports depending on the nature of speech.

According to this study was found that it’s important to training the self-talk skills while shooting a Korfball and also can increase self-confidence to athletes. [9] Discussed the guidelines for training the psychological skill that 1) Psychological skills must be described and explained until athletes accept that skills and recognize that skills are actually learned and have an impact on their performance. 2) There must be a quality training program to self-talk skills training. This research consisted of 3 steps: Step 1 – Breathe completely to give athletes muscle relaxation and various pressures to adjust the state of the body to be ready and relaxed. Step 2 – Breathing exercises to keep athletes calm so that they can stop thinking about everything and be ready to deliberately perceive the words they want to say to themselves intentionally. In a mentally focused state, athletes will have better positive words. And step 3 – talking to yourself, get athletes to say the words they want, such as “I know I can …………” add or say something that will reinforce their strength. Focused on the Korfball skills. In this study, the researches conducted a total of 8 weeks. It was found that athletes who received self-talk skills had increased confidence than those who did not. Self-confidence was increased after 8 weeks, indicating that a self-talk program can increase self-confidence in athletes. This was consistent with the research hypothesis: that athletes who received self-talk skills training had difference self-confidence after self-talk skills were trained. In a study on the effect of self-confidence by self-talk skills training on Korfball shooting anxiety, the research found that athletes who were received self-talk skills reduced somatic anxiety and cognitive anxiety. Anxiety is a feeling in response to an impulse. It’s a feeling of repression and uneasiness. It is also a feeling of anxiety when the body is under high pressure. Therefore, anxiety can occur when the person perceives, think, or assesses that the event has more effect than his or her ability to perform, making the ability to perform badly.

This is consistent with a study [2] found that athletes with high anxiety experienced a week before the competition and 30 minutes before the competition. However, anxiety can change according to the results of the game and the situation. But usually the anxiety according to the situation before the competition is higher while training.

According to the results of the self-talk skill training affecting anxiety in Korfball shooting, it was found that when comparing differences in scores of anxiety within group who were trained
in self-talk skills between pre-test (Week 0) and post8 (Weeks 8), the scores for somatic anxiety and cognitive anxiety were difference.

That’s consistent with the research results [11] it was found that somatic anxiety and cognitive anxiety were increase before the competition, and compared to the group that did not receive self-talk skills. When looking at the value of anxiety between the experimental group and the control group, it was found that there was no difference in somatic anxiety in week 0. However, after weeks 4, it was found that there was difference in the group who received self-talk skills training (The experimental group) had less somatic anxiety than the control group. This may be the results of an experimental group that has been trained in self-talk skills, resulting in an increase in self-confidence in performing the shooting skills. Therefore, self-confidence increases, anxiety decreases and the ability to perform the skill is improved accordingly. Consistent with research by [12] studied of athletes in self-talk skills by analyzing the content of self-talk can affect to increased confidence, increased self-confidence, effort control, and controls the emotional perception and response, and also cause automatic playback.

When looking at the comparison of Korfball shooting skills between the group who received the self-talk skills training (experimental group) and the non-self-talk skills group (control group) showed that athletes with self-talk skills increased their ability in Korfball shooting skills than the group who did not receive the self-talk skills training either in pre-test (Week 0), post4 (Weeks 4), and post8 (Weeks 8), it was shows that the self-talk programs can increase the self-confidence in athletes and reduce anxiety to improve their ability to making score in Korfball sport.

References


Effects Of Imagery With Music On Ability To Perform
Techniques Of Rhythmic Gymnastics

Panjarat Prawatyotin¹, Phichayavee Panurushthanon², Sumonratree Nimnatipun³

{looknam_rg@hotmail.com¹, nantanak@g.swu.ac.th², sumonratree@g.swu.ac.th³}

Srinakharinwirot University, Bangkok Thailand ¹, Srinakharinwirot University, Bangkok Thailand ², Srinakharinwirot University, Bangkok Thailand ³

Abstract. The purpose of this research is to study the effects of imagery with music on the ability to perform rhythmic gymnastics techniques. The sample was 20 rhythmic gymnasts and aged from 13 to 18. They were divided into 2 groups, with 10 gymnasts in each group. The first experimental group participated in imagery training and rhythmic gymnastics techniques and the second experimental group participated in imagery with music training and rhythmic gymnastics techniques, and trained for 3 days a week for 6 weeks. The results of the study were as follows: (1) the first experimental group participated in imagery training and rhythmic gymnastics techniques when comparing the ability to perform rhythmic gymnastics techniques in the Pre-Test, Post-Test One, Post-Test Two and Post Test Three with a statistically significant difference of .05; (2) the second experimental group participated in imagery with music training and rhythmic gymnastics techniques and their ability to perform rhythmic gymnastics techniques in the Pre-Test, Post-Test One, Post-Test Two and Post Test Three had a statistical significance of .05; (3) the second experimental group participated in imagery with music training and rhythmic gymnastics techniques are were better than the first experimental group in terms of their participation in imagery training and rhythmic gymnastics techniques.

Keywords: Imagery with music, Performance, Rhythmic gymnastics techniques

1 Introduction

Gymnastics, a sport which is included in the Olympic Games, has a total of 8 categories such as Men's Artistic Gymnastics, Women's Artistic Gymnastics, Rhythmic Gymnastics, Acrobatic Gymnastics, Aerobic Gymnastics, Trampoline Gymnastics, Gymnastics For All, and Parkour. Each of the movements of gymnastics mainly focuses on flexibility, excellent use of the muscles' strength, and good coordination. In addition, Rhythmic Gymnastics emphasizes greatly on the facial expression and character of movement with the apparatus, as well as being correlated to the music of choice [1]. Rhythmic Gymnastics is performed on the gymnastics carpet with one or more of the 5 apparatus such as rope, hoop, ball, clubs, and ribbon. There are 2 main categories of Rhythmic Gymnastics: Individual and Group Exercise. It is crucial that during a performance, rhythmic gymnasts must perform all the 3 groups of Difficulty of Body (DB) which includes Jump, Balance, and Rotation elements as described in the Rhythmic Gymnastics Code Of Points published by the Federation Internationale of Gymnastics (FIG).
Other than the apparatus movements with the technical or fundamental elements, every performance in Rhythmic Gymnastics must have dancing movements which manifests the style and rhythm of the music; all of the following must be performed altogether to create such unity and harmony. This is the reason why it is crucial for gymnasts, not only to excel in the body and apparatus skills but also to have an understanding of the music as it is absolutely necessary to take music and rhythm into consideration. If the gymnast doesn't move according to the music, the score will be deducted as one of the artistic faults. Being an elite gymnast is not easy; the gymnast must go through consistent and intensive training programs. Apart from the physical fitness, the gymnast should also have great mental fitness to be able to cope with stress or excitement (e.g. while performing complex elements, while being pressured by the coach, the association, or stress from any other external sources) because both can affect the overall performance of the gymnast.

Sports psychology is one of the principles of Sports Science, combining psychological knowledge into sports in order to achieve the optimal performance of the athlete and to study the relationship between the mental factors (the mind, emotions, thoughts, etc.) and how well the athlete does in competitions [2]. When the psychological techniques have been enforced correctly, it can be a good influence to the mental health and to the sport career. Nowadays, people give more attention to psychological training since it is a great tool to help athletes pursue their dreams and achievements better [3]. As for Rhythmic Gymnastics, psychological training is also important as it reinforces the mind and has a great impact in reducing stress levels. Music can also be calming and help relieve stress. Listening to competition music in rhythmic gymnastics while picturing the elements in the performance/routine can help with memorization and revision.

Music is another factor that can help athletes concentrate on the competition. Listening to music can assist imagination and the ability to simulate a setting or situation which can enhance the athletes' performance. According to [4], the research found that music can develop the sense of movement. Music can be used as a medium to guide the body movements. Other than just listening to the competition music, the researcher also attempted to picture each and every element in the routine with the music. Results are outstanding: better concentration, boosted confidence, and reduced anxiety. According to [5], the research states that listening to classical music together with the use of imagery training can help improve basketball shooting skills better than just using imagery training alone.

Imagery is a psychological technique that has been widely accepted in the sports psychology world. Imagery training is the action of picturing movements or skills inside the brain, rehearsing, before the physical event is done. The clearer the picture, the better presentation of the body as well as the better control of anxiety and better pain tolerance [6]. Therefore, athletes that went through imagery training can be better with self management and problem solving than those who didn't. The research [7] found that Sepak Takraw players who applied imagery with music to their ball-serving training had improved in the accuracy of their serves. Imagery with music can motivate athletes into learning the skill as it helps clear out the picture during the imagery process. For the stated reason, it is suggested that rhythmic gymnasts incorporate imagery into the current training regime to minimize competition mistakes, boosting confidence, and to increase the potential of each individual. The only condition is that imagery training must be repeated until the subject is able to picture all the movements clearly and as if they were watching a video of them performing inside their head.
then imagery could be beneficial and efficient in boosting the process of learning the physical skill.

From the stated, sports psychology and imagery has a positive impact on the training of the rhythmic gymnasts. The problem to be solved is that most gymnasts needed improvements in their Jump, Balance, and Rotation elements as well as how to incorporate technical elements to go with the flow of the music. The capability of doing so requires both the body and mental abilities to be fully expressed, so, only refining the technical elements is not sufficient to succeed. Therefore, mental development by means of imagery with music must be promoted for a benefit in both the development of the technical elements with the routine music of each individual and to flourish Rhythmic Gymnastics in Thailand.

2 The Purpose of Research

a. To study the effects of imagery and the effects of imagery with music on ability to perform techniques of Rhythmic gymnastics.
b. To compare the effects of imagery and the effects of imagery with music on ability to perform techniques of Rhythmic gymnastics.

3 Method

Participants

The sample that is used in the study are 20 rhythmic gymnasts from all over the country, being under Gymnastics Association of Thailand, ever had experience competing in the Youth Games (or higher), have ever been a representative of a province, and have been training together at the National Gymnastics Training Center of Thailand from 13 to 18 years of age. They were divided into two groups, with 10 gymnasts in each group, selected by simple random sampling (scores from the ability to perform techniques of Rhythmic gymnastics, Sort scores high-low, alternately). The first experimental group participated in imagery training and rhythmic gymnastics techniques and the second experimental group participated in imagery with music training and rhythmic gymnastics techniques.

Instruments

a. Imagery training program

It is a practice of thinking and sequencing the steps of doing rhythmic gymnastics techniques in 3 groups, including jump group, balance group, rotation group and routine (the one that is choreographed by the researcher). Practicing with experimental Group One, using only imagery training program. The duration of the experiment is 6 weeks and the imagery training session is done 3 times a week: on Tuesdays, Thursdays, and Saturdays.
b. Imagery with music training program

It is a practice of thinking and sequencing the steps of doing rhythmic gymnastics techniques in 3 groups, including the jump group, balance group, rotation group and routine with music (the one that is choreographed by the researcher). The length of the music is 45 seconds. Practicing with experimental Group Two, using only imagery with music training program. The duration of the experiment is 6 weeks and the imagery with music training session is done 3 times a week: on Tuesdays, Thursdays, and Saturdays.

c. Rhythmic gymnastics technique training program

Practice with the first experimental group. And the second experimental group. The duration of the experiment is 6 weeks and the technique of Rhythmic Gymnastics training session is done 3 times a week: on Tuesdays, Thursdays, and Saturdays. Practice of technical elements for 30 minutes, and routine practice with music for 1 hour (the one that is choreographed by the researcher). Practice 3 groups of rhythmic gymnastics techniques together with apparatus, including the balance group, rotation group and jump group.

The jump group

- Split leap

Fig. 1. Split leap created by the researcher

- Stag leap with back bend of the trunk

Fig. 2. Stag leap with back bend of the trunk created by the researcher

- Turning split leap (Jeté en tournant)
Fig. 3. Turning (Jeté en tournant) created by the researcher

Fig. 4. Split leap (Jeté en tournant) created by the researcher

The balance group

- Split with hand support

Fig. 5. Split with hand support created by the researcher

- Arabesque : high leg with trunk forward

Fig. 6. Arabesque : high leg with trunk forward created by the researcher

- Ring with hand support

Fig. 7. Ring with hand support created by the researcher
The rotation group

- Ring with support

Fig. 8. Ring with support created by the researcher

- Fouetté: Passé

Fig. 9. Fouetté: Passé step 1 created by the researcher

Fig. 10. Fouetté: Passé step 2 created by the researcher

- Penché: body bent at the horizontal, leg in back split, rotation on flat foot

Fig. 11. Penché: body bent at the horizontal, leg in back split, rotation on flat foot created by the researcher

d. Rhythmic gymnastics technique assessment form

This form of rhythmic gymnastics technique is assessed. The researcher has adapted a lot from assessment form for rhythmic gymnastics athletes' training for selection of athletes. Created by the Gymnastics Association of Thailand (2019), the researcher developed this test as a tool to test the ability to perform rhythmic gymnastics techniques. There are a total of 3
judges. The scoring criteria are as follows: Each exercise has a score of 5 points, including 9 exercises for a total of 45 points, and the other 5 points come from the overall listening of music.

**Procedure**

Firstly, the 30 gymnasts are allowed to stretch and warm-up for 30 minutes before they go through the evaluation process. The researcher then gives out 2 sets of pre-choreographed 45-seconds routines with music to each of the gymnasts, each is a different apparatus. The criteria is evaluated by how well the gymnasts perform the technical movements of rhythmic gymnastics that have been assembled in the routine. The researcher will then record the scores of each and every performance of the gymnasts. After ranking, the top 20 gymnasts will be ranked using the scores of their ball routine.

Imagery and imagery with music can be achieved by picturing and practicing the movements in their thoughts, chronologically. The differences are Group One only does imagery while Group Two does imagery with music. The duration of the experiment is 6 weeks and the imagery training session is done 3 times a week: on Tuesdays, Thursdays, and Saturdays, each group will only have 15 minutes for each imagery training session. Training procedures will be as follows. Group One only does imagery training for 15 minutes and Group Two does imagery with music for 15 minutes. The two groups will then have a small break of 5 minutes and a stretch and warm-up session for 30 minutes. Next will be a practice of technical elements for 30 minutes, small break for 5 minutes, and routine practice with music for 1 hour. The routine used in this experiment is the one that the researcher has choreographed by combining the technical elements of rhythmic gymnastics with music to be performed similarly to a competition routine, the difference is the duration: the experimental routine is shorter, only 45 seconds.

The process of thinking in each and every imagery training will be as follows. Both groups will be trained to rehearse the whole day of practice, starting from how they warm-up and how they will continue to practice the technical elements, picturing how they will do each Balance, each Rotation, and each Jump. Next, they will continue imagining the experimental routine (the one that is choreographed by the researcher), from the starting pose to the end. Both groups practiced the same, differences are Group One from experimental will have the routine is imagery without music. Group Two from will have the routine is imagery with music. The duration of the experimental routine is 45 seconds. The number of times repeating this exercise depends on the training program of the week.

**Data Analysis**

Data collected from the experiment is the scores evaluated by how well the technical elements are performed in the experimental ball routine. Each experimental group is evaluated every two weeks, before and after the practice of week 2, 4, and 6, and the data is recorded as Pre-Test and Post-Test One, Two, and Three. Analysis of the data is done by using Statistical Package for the Social Science (SPSS) which is a program specialized in data analysis. Statistical approaches associated with the experiment are as follows:

a. To calculate the mean and the standard deviation calculated from the data of the ability to perform the technical elements at Pre-Test, Post-Test One, Two, and Three of each experimental group.
b. To compare the difference in the mean and the standard deviation values of the ability to perform the technical elements of each group by using the Paired t-test approach between the data at Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three.

c. To compare the difference in the mean and the standard deviation values of the ability to perform the technical elements between experimental group One and experimental group Two, ordered by Pre-Test, Post-Test One, Two, and Three. The t-value is then tested using the Statistical Independent t-test approach.

d. To conduct the experiment with a Statistical Significance level of .05

4 Results

Tables 1. Mean and Standard Deviation of the evaluation on the ability to perform the technical elements in rhythmic gymnastics (ball apparatus) of both of the experimental groups at Pre-Test, Post-Test One (after practice in week 2), Post-Test Two (after practice in week 4), and Post-Test Three (after practice in week 6).

Demonstrates the ability to perform the technical elements in rhythmic gymnastics (ball event) of each group. The values of Group One (who did imagery without music) reflected that there is an improvement as shown in the gradual increase of the values in each test, Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three, respectively. For Group Two (who did imagery with music), there is also an improvement as shown in the gradual increase of the values in each test, Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three, respectively. Comparing the mean values, it is shown that Group Two (who did imagery with music) had a greater development in the ability to perform the technical elements in rhythmic gymnastics than Group One (who did imagery without music).

<table>
<thead>
<tr>
<th></th>
<th>Group One</th>
<th>Group Two</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Imagery without music</td>
<td>Imagery with music</td>
</tr>
<tr>
<td><strong>Pre-Test</strong></td>
<td>26.66</td>
<td>26.68</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>6.24</td>
<td>5.49</td>
</tr>
<tr>
<td><strong>Post-Test One (after practice in week 2)</strong></td>
<td>28.36</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>5.45</td>
<td>4.08</td>
</tr>
<tr>
<td><strong>Post-Test Two (after practice in week 4)</strong></td>
<td>33.36</td>
<td>36.17</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>4.00</td>
<td>4.23</td>
</tr>
<tr>
<td><strong>Post-Test Three (after practice in week 6)</strong></td>
<td>42.70</td>
<td>44.30</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>4.44</td>
<td>3.11</td>
</tr>
</tbody>
</table>

Tables 2. A comparison of the ability to perform the technical elements in rhythmic gymnastics (ball apparatus) within each experimental group at Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three.

Displays the comparison within each group, comparing at the Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three, Group One (imagery training without music) and Group Two (imagery with music). Results from this comparison is that there is a difference in the ability to perform the technical elements in rhythmic gymnastics at a .05 statistical significance for both Group One and Group Two. In addition, the levels of rhythmic gymnastics ability at Post-Test One is different from the levels at Post-Test Two and Post-Test Three. Respectively, the level at Post-Test Two is different from Post-Test Three.
The evaluation on the ability to perform the technical elements in rhythmic gymnastics (ball apparatus)

<table>
<thead>
<tr>
<th></th>
<th>Group One Imagery without music</th>
<th>Group Two Imagery with music</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>p</td>
</tr>
<tr>
<td>Pre-Test and Post-Test One (before vs after week 2)</td>
<td>-3.91</td>
<td>.04*</td>
</tr>
<tr>
<td>Pre-Test and Post-Test Two (before vs after week 4)</td>
<td>-9.21</td>
<td>.00*</td>
</tr>
<tr>
<td>Pre-Test and Post-Test Three (before vs after week 6)</td>
<td>-20.40</td>
<td>.00*</td>
</tr>
<tr>
<td>Post-Test One and Post-Test Two (after week 2 vs after week 4)</td>
<td>-9.54</td>
<td>.00*</td>
</tr>
<tr>
<td>Post-Test One and Post-Test Three (after week 2 vs after week 6)</td>
<td>-24.15</td>
<td>.00*</td>
</tr>
<tr>
<td>Post-Test Two and Post-Test Three (after week 4 vs after week 6)</td>
<td>-24.19</td>
<td>.00*</td>
</tr>
</tbody>
</table>

* significance level of .05

Tables 3. The comparison of the ability to perform the technical elements in rhythmic gymnastics (ball apparatus) between Group One and Group 2 at Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three.

Displays the differences of both groups, at Pre-Test, Post-Test One, Post-Test Two, and Post-Test Three, Group One (imagery training without music) and Group Two (imagery with music). Results from this comparison is that there is a not difference or difference between Group One and Group Two but it does not go under the .05 statistical significance.

The comparison in the effects of imagery versus imagery with music

<table>
<thead>
<tr>
<th></th>
<th>The ability to perform the technical elements in rhythmic gymnastics (ball apparatus)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
</tr>
<tr>
<td>Pre-Test</td>
<td>-.01</td>
</tr>
<tr>
<td>Post-Test One (after practice in week 2)</td>
<td>-.80</td>
</tr>
<tr>
<td>Post-Test Two (after practice in week 4)</td>
<td>-1.52</td>
</tr>
<tr>
<td>Post-Test Three (after practice in week 6)</td>
<td>-.93</td>
</tr>
</tbody>
</table>

5 Discussion

This research reveals the comparison of the ability to perform the technical elements in rhythmic gymnastics (ball apparatus) within each group, before and after Group One's imagery training and Group Two's imagery with music training. The result was there is a Statistical Significance level of .05 within both groups and within the paired tests. The reason was both imagery and imagery with music were sports psychology approaches that could help improve the skills in doing technical elements in Rhythmic Gymnastics, leading the gymnasts to execute the technical elements better. When done regularly and continuously, imagery training can help improve levels of learning, perceiving, and effective movement development, both mental and physical skills. As [8] said, using imagery to
experience certain events in the mind is a great method of learning as it improves the concentration which leads to better execution. When imagery combines with music, music can also help build the imagination and thinking process. Moreover, the research stated that music can be helpful for the improvement of motor skills of athletes, aids in the creation of any particular atmosphere or event, and can be helpful for the improvement of the athlete's efficiency. Studies of [9] stated that imagery is the origin of the human's emotions. When a human is triggered by an external stimuli, first it creates an image which can be stored in the memory, then it can be expressed through feelings throughout the mind and body. For instance, to picture the arrangement of any movements with rhythm or music can create the same set of emotions as if the act was done physically. Even just thinking of the word 'happiness' or 'victory' can unconsciously put a smile on someone's face.

Further in this research, how much is the difference in the comparison of the ability to perform the technical elements in rhythmic gymnastics (ball apparatus) of each group, before and after Group One's imagery training and Group Two's imagery with music training, was studied. It turns out that the difference was not under the .05 Statistical Significance level but there was a greater improvement in the technical skills of Group Two. How Group Two had developed the skills better than Group One is approximate to the hypothesis. Although the difference was not under the .05 Statistical Significance level, the skills development of the two groups went into the same direction. Because both of the groups were given the same training programs, the only difference is music. Group Two did have their imagery training with music but Group One didn't. This represented the process of using imagery with/without music to learn the process of how to do the technical elements of rhythmic gymnastics and how to advance them correctly. The stated process must be done regularly and continuously to improve the ability to perceive and picture the movements in order to achieve better execution [10]. According to, imagery is a skill that needed regular and continuous training. The principles to imagery training include relaxation, realization, regularity, and using of tools to enhance the effects of imagery. However, good and effective imagery also depends on the capabilities of the athlete. From the study [11], imagery in Olympic athletes is stated. Although the athletes didn't receive imagery training in the first place, the experiment came out great because they had been receiving regular and systematic training. This shows that the effectiveness in bodily movements influences the ability to receive imagery training. In addition, the use of music (e.g. music for rhythmic gymnastics routines) to integrate with imagery training can help the athletes feel more relaxed and train effectively with better concentration. The reason why imagery with music can aid in movement and improve the functioning of the musculoskeletal nervous system is because when the picture inside a person's imagination is clear and vivid, the nervous system sends a nervous signal as a command to the muscles, as if the action was actually executed. Moreover, imagery can also stimulate the central nervous system. Imagery is a process of creating a print in the mind and is remembered as a picture of success or as a perfect execution of that certain skill. [7] matches the findings of [5] in using imagery with music to increase the accuracy of basketball players in doing free throws. It is found that the players who did imagery with music had better accuracy in their free throws than those who only did imagery.

From this experiment to study the effect of imagery with music, the ability to execute technical elements in rhythmic gymnasts is being tested in two experimental groups: imagery training with and without music. Results found that the skills of the gymnasts in both experimental groups have been improved significantly. Although the comparison between Group One and Group Two did not go under the .05 statistical significance, there is a difference displaying the fact that imagery with music can help improve the ability to execute the technical elements better than imagery alone.

References


[2] Journal article: Kriengkrai Nakhthewan. The effects of imagery training shooting soccer goals, the rate of Pulse and relaxation rate of the heart. 2007.
The Effect Of Imagery And Modeling On Anxiety In Netball Athletes

Suttirak Nasome¹, Phichayavee Panurusithanont²

{snasome@gmail.com¹, nantana@g.swu.ac.th²}

Srinakarinwirot University Bangkok Thailand¹, Srinakarinwirot University Bangkok Thailand²

Abstract. This study examined and compared the effects of imagery training combined with modeling on anxiety in netball athletes. 30 netball athletes, were chosen by using purposive sampling technique. Divide the population into 2 groups of 15 athletes each. The experimental group practiced netball training with imagery combined modeling training, the control group only practiced netball. The duration of the training three times a week for eight weeks. Using Revised Competitive State Anxiety Inventory -2R Test (CSAI-2R) measured anxiety and self-confident. And Polar H10 measured to the degree of heart rate variability for accuracy. All player and Variable data was measured by mean standard deviation t-test independent and One-way ANOVA with repeated measures. The results found that, the comparison of the experimental group and the control group were significant difference, at the .05 level in SD1 HF and LF/HF ratio in 8 weeks. The anxiety and self-confident in experimental group were significantly difference, at the .05 level between pre-test, 4 week and 8 weeks. There is significantly difference between pre-test and 8 weeks of self-confident in control group. The results showed that the experimental group who received imagery combined modeling training had decreased anxiety and increased self-confident more than the control group.

Keywords: imagery, modeling, heart rate variability, anxiety, self-confident, netball

1 Introduction

This Word document can be used as a template for papers to be published in EAI Core Proceedings. Follow the text for further instructions on text formatting, tables, figures, citations and references.

Netball is a sport known all around the world and is very popular. It is a sport that can be played by both men and women. But the most popular will be more female athletes than male athletes. It is a sport that can improve physical performance and improve overall personality to human relationships in socializing. Netball is a sport that requires skills and techniques to play such as shooting goals, receiving - passing the ball, defending, running to change direction, and intercept the ball. In the performance of various skills in netball, there is one factor that affects the performance of athletes in training and competition is anxiety.
Anxiety is a human emotional state that can always be experienced in daily life. It is a complex emotion in which a person responds to stimuli or threats according to their perception and interprets the results according to their own views. Causing physical or mental discomfort, both physical and mental changes. However, the changes will occur depend on the severity of the anxiety caused by the participating athletes. Therefore, the participants will be overwhelmed with anxiety both from the athletes themselves and the competitive environment. Anxiety may affect athletes both positively and negatively depending on their mental state, anxiety level of the athlete. If the athlete has no anxiety at all or has a moderate level of anxiety, it will help the athlete to fully demonstrate his or her athletic ability. But if an athlete is over-anxious, it may reduce the athlete's performance unlike before in practice.

A popular method of measuring physical anxiety currently is Heart Rate Variability (HRV), It is an assessment of the function of the autonomic nervous system that controls the heart. It can be estimated from the variance of heart rate, which is the variation in the duration of each heartbeat. It is known that physical symptoms caused by anxiety include increased heart rate, increased blood pressure, deep breathing and frequency, muscle tension, muscle twitching, etc. and mental symptoms such as confusion, disorientation, lack of concentration, and hesitation.[1]

In highly capable or successful athletes, there are three main components: physical, skill, and mental. The psychological development of sports psychology is because the athlete's mind is delicate. It can change according to the athlete's situation and emotional state. If an athlete is trained in sports psychology skills, it allows athletes to control their minds and emotions in various situations properly.

In addition to imaginary training, imitation is another method that results in behavioral change, according to Professor Bandura[2] said that most of our learning comes from modeling. This is different from experience learning that requires trial and error because in addition to wasting time It can still be dangerous in some behaviors to learn through that example A single subject is able to convey both thoughts and expressions simultaneously. This is a behavior modification based on observation or imitation to modify both behavioral and cognitive skills to develop better.

From the foregoing, it was found that imagery and imitation had an effect on behavior modification in terms of skill building and anxiety reduction. The researcher therefore had an idea to study the effect of imagery and modeling on anxiety in netball athletes and how imagery and modeling affects anxiety in netball athletes. As a guideline for further improvement and development of visualization and imitation skills of netball.

2 The Purpose of Research

To compare the effect of imagery and modeling on anxiety in netball athletes.

3 Method

Participants
30 netball athletes, were chosen by using purposive sampling technique. Divide the population into 2 groups of 15 athletes each group, The experimental group practiced netball training with imagery combined modeling training, the control group only practiced netball.

Instruments

a. Imagery skills training program

The relaxation imagery training program is a relaxation sequence. The experiment with recording the imaginary sound to MP3, remember to training in a quiet room, clear air, and the temperature was controlled at 25 degrees for a period of 8 weeks, 3 days a week, i.e. Monday, Wednesday and Friday. each day for 10 minutes.

b. Modeling training program

The relaxation video program is used to experiment with the experimental group for 8 weeks, 3 days per week, on Monday, Wednesday and Friday. It takes 10 minutes to watch the video.

c. Netball training program

The netball training program both the experimental group and the control group performed regular netball training.

Procedure

Before starting research, all participants signed a letter of consent to participate in the research project after they were explained the purpose of the research, the benefits of being able to conduct research, the risks that may arise at the time of participation, and the withdrawal or termination of participation. The samples were netball athletes ages between 20-30 years, 30 people, divided into 2 groups of 15 people each, which will consist of: The experimental group is to training imagery programs along with modeling and netball training program, and the control group netball training program normally does not received imagery program along with modeling. Each group trained 3 times a week for 8 weeks. A total of 3 anxiety measurements were performed before, after the 4th week, and after the 8th week. Revised Competitive State Anxiety Inventory – 2: CSAI – 2R had participants do 10–15 stretches and warm-up 10 minutes. The researcher and two research assistants were attached to the heart rate variability (HRV) monitor and the Polar H10 Heart Rate Sensor–Black to measure the pulse level for accuracy. Then practice according to the netball training program.

Data Analysis

The results of the heart rate variability test of netball athletes before training after the 4th and 8th week of training of the control group and the experimental group were analyzed with the packaged program. Calculate the mean and standard deviation of your heart rate variability. In the experimental and control groups, Pre-test, after the 4th week of training and after the 8th week of training, the mean difference and the standard deviation of the heart rate variability were compared heart within the experimental and control groups, t-tests were independent, and anxiety and self-confidence were compared by a repeat-measure one-way analysis of variance. (Repeated-Measure One way analysis of variance: ANOVA)
4 Results

Table 1. Compare the mean, standard deviation, and t-test independent of the heart rate variability of both groups of athletes. It was found that Mean of heart rate variability in both groups. After 8 weeks of training, the variance 1 (SD1), high frequency (HF) and low frequency / high frequency ratio (LF/HF ratio) were statistically significant at .05, indicating that the training an imagery and modeling at week 8 had an effect on heart rate variability.

<table>
<thead>
<tr>
<th>Heart rate variance</th>
<th>Experimental G.</th>
<th>Control G.</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>S.D.</td>
<td>X</td>
<td>S.D.</td>
</tr>
<tr>
<td>Heart Rate (HR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>61.14</td>
<td>5.49</td>
<td>59.79</td>
<td>5.98</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>60.43</td>
<td>5.52</td>
<td>60.29</td>
<td>6.46</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>60.29</td>
<td>5.94</td>
<td>60.43</td>
<td>5.95</td>
</tr>
<tr>
<td>Variance 1 (SD1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>23.11</td>
<td>5.58</td>
<td>23.40</td>
<td>5.35</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>24.05</td>
<td>6.42</td>
<td>24.72</td>
<td>4.02</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>28.79</td>
<td>7.20</td>
<td>23.82</td>
<td>5.39</td>
</tr>
<tr>
<td>Variance 2 (SD2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>54.90</td>
<td>5.03</td>
<td>55.14</td>
<td>4.31</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>52.51</td>
<td>3.84</td>
<td>54.64</td>
<td>3.65</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>51.71</td>
<td>4.39</td>
<td>53.03</td>
<td>3.94</td>
</tr>
<tr>
<td>Low frequency (LF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>415.79</td>
<td>122.77</td>
<td>401.56</td>
<td>82.41</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>419.14</td>
<td>126.07</td>
<td>384.66</td>
<td>78.98</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>359.42</td>
<td>134.66</td>
<td>377.71</td>
<td>71.97</td>
</tr>
<tr>
<td>High frequency (HF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>261.74</td>
<td>84.72</td>
<td>277.63</td>
<td>138.11</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>301.35</td>
<td>96.10</td>
<td>271.77</td>
<td>125.76</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>387.95</td>
<td>93.76</td>
<td>275.67</td>
<td>121.39</td>
</tr>
<tr>
<td>LF/HF ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>165.36</td>
<td>38.32</td>
<td>160.39</td>
<td>38.55</td>
</tr>
<tr>
<td>Weeks 4</td>
<td>143.33</td>
<td>22.82</td>
<td>156.66</td>
<td>44.66</td>
</tr>
<tr>
<td>Weeks 8</td>
<td>93.52</td>
<td>26.64</td>
<td>150.64</td>
<td>39.82</td>
</tr>
</tbody>
</table>

*p <.05

Table 2 Compare the mean somatic anxiety, cognitive anxiety and self-confidence Pre-test, Weeks 4 and Weeks 8 of the experimental group by analyzing the one-way variance of the repeat measurement type. It was found that the experimental group had somatic anxiety, cognitive anxiety, and self-confidence pre-test, weeks 4, and weeks 8, it was statistically significantly different at .05, so it tested the difference in pairs using Bonferoni's method.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variance</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>f</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Period/Time</td>
<td></td>
<td>558.978</td>
<td>2</td>
<td>279.489</td>
<td>330.353*</td>
<td>.000</td>
</tr>
<tr>
<td>Discrepancy</td>
<td></td>
<td>23.689</td>
<td>28</td>
<td>.846</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Period/Time</td>
<td></td>
<td>501.511</td>
<td>2</td>
<td>250.756</td>
<td>130.451*</td>
<td>.000</td>
</tr>
<tr>
<td>Discrepancy</td>
<td></td>
<td>53.822</td>
<td>28</td>
<td>1.922</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p <.05
Table 3 Test results for individual differences in somatic anxiety, cognitive anxiety and self-confidence of the experimental group. It was found that the experimental group had somatic anxiety, cognitive anxiety and self-confidence. Pre-test, Weeks 4 and Weeks 8, the statistically significant difference of .05 showed that training an imagery and modeling as a result, the experimental group had decreased somatic anxiety, cognitive anxiety and self-confidence increased.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Period/Time</th>
<th>Pre-test</th>
<th>Post 4</th>
<th>Post 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic anxiety</td>
<td></td>
<td>28.27</td>
<td>3.133*</td>
<td>8.533*</td>
</tr>
<tr>
<td></td>
<td>Pre-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weeks 4</td>
<td>25.13</td>
<td>-</td>
<td>5.400*</td>
</tr>
<tr>
<td></td>
<td>Weeks 8</td>
<td>19.73</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cognitive anxiety</td>
<td></td>
<td>30.27</td>
<td>4.800*</td>
<td>8.133*</td>
</tr>
<tr>
<td></td>
<td>Pre-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weeks 4</td>
<td>25.47</td>
<td>-</td>
<td>3.333*</td>
</tr>
<tr>
<td></td>
<td>Weeks 8</td>
<td>22.13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Self-confidence</td>
<td></td>
<td>20.47</td>
<td>4.867*</td>
<td>9.600*</td>
</tr>
<tr>
<td></td>
<td>Pre-test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weeks 4</td>
<td>25.33</td>
<td>-</td>
<td>4.733*</td>
</tr>
<tr>
<td></td>
<td>Weeks 8</td>
<td>30.07</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*p <.05

Table 4 Compare the mean somatic anxiety, cognitive anxiety and self-confidence pre-test, weeks 4 and weeks 8 in the control group by analyzing the one-way variance of the repeat measurement type. It was found that the control group had somatic anxiety and cognitive anxiety was pre-test, weeks 4 and weeks 8, there was no difference. In self-confidence was statistically significantly different at .05, The differences were tested individually by the Bonferroni method.

*p <.05

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variance</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>f</th>
<th>p</th>
</tr>
</thead>
</table>
Table 5  The results of the individual differences test for self-confidence of the control group. It was found that the control group had a statistically significant difference in self-confidence on pre-test and post 8 at .05 only one pair.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Period/Time</th>
<th>Pre-test</th>
<th>Post 4</th>
<th>Post 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatic anxiety</td>
<td></td>
<td>7.644</td>
<td>3.822</td>
<td>3.961</td>
</tr>
<tr>
<td></td>
<td></td>
<td>27.022</td>
<td>.965</td>
<td></td>
</tr>
<tr>
<td>Cognitive anxiety</td>
<td></td>
<td>5.733</td>
<td>2.867</td>
<td>4.239</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18.933</td>
<td>.676</td>
<td></td>
</tr>
<tr>
<td>Self-confidence</td>
<td></td>
<td>8.711</td>
<td>4.356</td>
<td>6.792*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.956</td>
<td>.641</td>
<td></td>
</tr>
</tbody>
</table>

4 Discussion

Comparison between the experimental group and the control group with t-test of the heart rate variability A statistically significant difference was found at the .05 level in variance 1 (SD1), high-frequency (HF) and low-frequency / high-frequency ratios (LF/HF ratio) after 8 weeks of training. The difference between the experimental group and the control group between the group receiving the image training program along with the simulation and the group without the training. Demonstrates the benefits and necessity of practicing sports psychology skills with athletes in terms of relaxation, reducing anxiety[3] was said that the group of athletes who received sports psychology skills benefited more than those who did not.

The experimental group had somatic anxiety, cognitive anxiety and self-confidence pre-test, weeks 4 and weeks 8, it was statistically significantly different at .05 level. When comparing the mean, it was found that the experimental group had somatic anxiety, cognitive anxiety and self-confidence pre-test, weeks 4 and weeks 8 were significantly different at the .05 level. As a result, the experimental group had somatic anxiety, cognitive anxiety and self-confidence increased as[4] said each method of mental training affects the ability to practice skills as well as including imagery training. If trained with physical skills training, it may be more effective than physical skills training alone. It can be said that imagery training is a training in sports psychology that improves skills in netball, as well as reducing anxiety and building self-esteem for athletes. As[5] said imagery is the creation of images or flashbacks to create experiences in the mind. It improves athletic ability. It can help to an understanding of various events helps to regulate emotions reduce anxiety, anger or pain helps to concentrate build self-confidence and help in analyzing and reviewing various sports skills.
According to this study, the heart rate variability of experimental athletes who received imagery training along with modeling and Netball training with control athletes who received only training in Netball was different after the 8th week. It may be concluded that imagery training with modeling has a beneficial effect on athletes in reducing stress, reduce anxiety and increase concentration and confidence in athletes. It also has the effect of helping athletes recover their physical condition (Recovery) from training and competition. [8] This study wanted to demonstrate the importance and usefulness of applying sports psychology skills to athletes. It is necessary to create a training program in accordance with the need individual athlete preferences. If athletes have different preferences, they should also create different imagery training programs should also be created in accordance with [9] said that coaches need to know the mental differences of individual athletes. It has to be applied appropriately for the best benefit to athletes.

References

The Effect of Recreation Model for Enhancing Leadership of Recreation Leaders

Tanet Tanyawong¹, Patuma Choeichaiyapoom²

{ tanet@g.swu.ac.th¹, patuma.c@kvis.ac.th²}

Srinakharinwirot University, 114 Sukhumvit 23 Bangkok 10110 Thailand¹, Kamnoetvidya Science Academy, 999 M.1 Payupnai Wangchan Rayong 21210 Thailand²

Abstract. Apart from knowledge and basic skills, leadership is an essential element to advancing professional recreation leaders in conducting recreational activities. Therefore, this experimental study aimed to examine the effect of recreation model for enhancing leadership of recreation leaders. Using one-group pretest-posttest design and purposive sampling, the data were collected from 50 participants. The dependent t-test, frequency, percentage, mean, and standard deviation were applied to investigate the differences between the mean scores from the pre- and post-recreation leadership self-assessment test. The results revealed that the recreation model enhanced 1) relationship for unity and self-awareness, 2) self-discipline and emotion management, 3) team building, 4) problem solving, 5) experience and counseling, and 6) professional ethics. There was a significant difference between the mean scores from the pre- (2.99) and post- (4.77) test at the significant level of .05. Consequently, recreation leaders improved their leadership after the implementation of the recreation model.

Keywords: Recreation Model, Leadership, Recreation Leader

1 Introduction

In Thailand’s strategic plan for 2018 – 2037, the potential development of human resources has been focused with the emphasis on enhancing and upgrading citizens of all ages in all dimensions to be quality humans for effective national development. The plan covers current human resources problems, life-long development, learning development for 21st century changes, and standard of living for personal development. Sports and recreation are tools to enhance citizens’ standard of living for personal development. Personal development for human resources in sports and recreation is among the strategic plans to accommodate sport and recreation industry growth. Hence, the development starts from staff’s knowledge and skills to innovation advancement in sport and recreation industry. [1]

Recreation leaders are crucial human resources in recreation. Not only they possess skills in recreation and management but also ability to suggest recreation activities to individuals or groups based on their interests and for their satisfaction. Furthermore, recreation leaders perform
as project managers organizing activities and training the facilitators in recreation. Therefore, recreation leaders are required to learn and be trained for the skills particular for recreation leaders for the ultimate benefit of the recreation activity participants. [2] This is well aligned with the recreation operational plan policy phase 3 (2020 – 2022) which states recreation professional network with well-trained recreation leaders and new generation of professional recreation leaders. Also, it can expand to student development in institution in various levels. [3]

In the fast-changing era, the way of living has currently shifted is information and digital based society. The recreation activities in new forms are necessary for recreation leaders to select techniques and methods as well as to have leadership skills to conduct or facilitate the activities. Thus, leadership plays a vital role in recreation management to develop and enhance interpersonal relationship, strategic planning [4], decision making, planning, problem solving, and evaluation. These are desirable characteristics of visionary and creative recreation leaders. [5] Correspondingly, leadership requires skills, experience and personal development to achieve the goal of each organization and to create new knowledge. [6] Plus, recreation leaders need to have the ability or skills to motivate, encourage, guide, and support individuals or groups to follow the activity instructions and achieve the goal. [7]

Since training program is learning procedure with clear steps and methods that serve program objectives, Yuki proposed a leadership development model using training program with the following procedures: [8]

1. Clear learning objectives
2. Clear meaningful content
3. Appropriate sequencing of content
4. Appropriate mix of training methods
5. Opportunity for active practice
6. Relevant timely feedback
7. Enhancement of trainee self-confidence
8. Appropriate follow-up activities [9]

Based on Dubrin, the leadership development procedure was categorized into five methods including 1) self-awareness, 2) self-discipline, 3) learning, 4) experience, and 5) counseling. This procedure is the guidelines for leadership development from hands-on experience during training programs which can build up skills and enhance potential for desirable recreation leaders. [10]

Consequently, to be consistent with the national strategic plan for 2018 – 2037 and the recreation operational plan policy phase 3 (2020 – 2022), the researcher was interested in investigating and developing the recreation model for enhancing leadership of recreation leaders. With the aim to develop human resources in recreation field, leadership training is essential for recreation leaders in their roles and potential especially in various recreation activities.
Objective: To examine the effect of recreation model for enhancing leadership of recreation leaders.

2 Methodology

2.1 Sampling Method

Using the purposive sampling, 50 participants were selected for this experimental study to examine the effect of recreation model for enhancing leadership of recreation leaders including government officers, heads of departments related to recreation, and recreation leaders countrywide.

The procedures in the recreation model were designed as follows:

1. The recreation leadership self-assessment test was verified by five experts using Item Objective Congruence (IOC) analysis with the IOC between 0.60 – 1.00 representing that this instrument was well qualified.

2. The activities were conducted following the recreation model for enhancing recreation leaders during a three-day-two-night model.

3. For the pretest, the participants were asked to take the recreation leadership self-assessment test before they participated in the model.

4. The participants participated in the activities following the recreation model for enhancing recreation leaders.

5. After the activities following the recreation model for enhancing recreation leaders, the participants were to take the recreation leadership self-assessment test as the posttest.

6. The data were collected and analyzed.

2.2 Data Analysis

To analyze the effect of recreation model for enhancing leadership for recreation leaders, the dependent t-test, frequency, percentage, mean, and standard deviation were applied to investigate the differences between the mean scores from the pre- and post- recreation leadership self-assessment test.

3 Results

The recreation model for enhancing leadership for recreation leaders were conducted with 50 participants including government officers, heads of departments related to recreation, and recreation leaders countrywide. The results were found that: The background demographics of the participants is shown in Table 1.

Table 1 Genders of the participants in recreation model for enhancing leadership
<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>19</td>
<td>38.00</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>62.00</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 1 shows the genders of the participants including 31 females (62%) and 19 males (38%).

**Table 2** Age ranges of the participants in recreation model for enhancing leadership

<table>
<thead>
<tr>
<th>Age range</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 – 40 years</td>
<td>32</td>
<td>64.00</td>
</tr>
<tr>
<td>41 – 50 years</td>
<td>14</td>
<td>28.00</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>4</td>
<td>8.00</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 2 indicates the age ranges of the participants. 32 of them (64%) were 25 – 40 years old, 14 of them (28%) were 41 – 50 years old, and only 4 of them (8%) were above 50 years old.

**Table 3** Work experiences in recreation of the participants in recreation model for enhancing leadership

<table>
<thead>
<tr>
<th>Work experience</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 3 years</td>
<td>22</td>
<td>44.00</td>
</tr>
<tr>
<td>3 – 5 years</td>
<td>13</td>
<td>26.00</td>
</tr>
<tr>
<td>6 – 10 years</td>
<td>6</td>
<td>12.00</td>
</tr>
<tr>
<td>Above 10 years</td>
<td>7</td>
<td>14.00</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 3 demonstrates the work experiences of the participants. Most of the participants, 22 (44%) had work experience below three years. 13 participants (26%) had work experience of three to five years and 6 of them had work experience of six to ten years. Only 7 participants (14%) had experienced work in recreation for above 10 years.

2. The recreation leadership self-assessment pretest and posttest

**Table 4** Pretest and posttest of leadership self-assessment of the participants in recreation model for enhancing leadership

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest (n = 50)</th>
<th>Posttest (n = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>S.D.</td>
</tr>
<tr>
<td>1. Self-awareness</td>
<td>2.86</td>
<td>0.63</td>
</tr>
<tr>
<td>2. Self-discipline</td>
<td>2.98</td>
<td>0.74</td>
</tr>
<tr>
<td>3. Emotional</td>
<td>2.68</td>
<td>0.74</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4 depicts the leadership self-assessment overall pretest scores were average ($\bar{X} = 2.99$), while the overall posttest scores were at strongly agree ($\bar{X} = 4.77$). On one hand, considering each item, before participating in the recreation model for enhancing leadership, the participants had the self-assessment at average level. Among the ten items, the top three items for pretest were professional ethics ($\bar{X} = 3.48$), strategic planning ($\bar{X} = 3.04$), and experience ($\bar{X} = 3.02$). While the lowest score for pretest went to emotional management. On the other hand, after participating in the recreation model, the participants received the scores for self-assessment at strongly agree level. The top three items for posttest were teamwork ($\bar{X} = 4.94$), professional ethics ($\bar{X} = 4.92$), and experience ($\bar{X} = 4.88$). Only strategic planning obtained the mean score at agree level.

Table 5 Mean difference of pretest and posttest of leadership self-assessment of the participants in recreation model for enhancing leadership

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest ($n = 50$)</th>
<th>Posttest ($n = 50$)</th>
<th>M.D.</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Self-awareness</td>
<td>2.86</td>
<td>4.68</td>
<td>1.82</td>
<td>Very high</td>
</tr>
<tr>
<td>2. Self-discipline</td>
<td>2.98</td>
<td>4.72</td>
<td>1.74</td>
<td>High</td>
</tr>
<tr>
<td>3. Emotional</td>
<td>2.68</td>
<td>4.78</td>
<td>2.10</td>
<td>Very high</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Experience</td>
<td>3.02</td>
<td>4.88</td>
<td>1.86</td>
<td>Very high</td>
</tr>
<tr>
<td>5. Counseling</td>
<td>2.92</td>
<td>4.64</td>
<td>1.72</td>
<td>High</td>
</tr>
<tr>
<td>6. Problem Solving</td>
<td>2.94</td>
<td>4.68</td>
<td>1.74</td>
<td>High</td>
</tr>
<tr>
<td>7. Time Management</td>
<td>3.02</td>
<td>4.70</td>
<td>1.68</td>
<td>High</td>
</tr>
<tr>
<td>8. Strategic Planning</td>
<td>3.04</td>
<td>4.48</td>
<td>1.44</td>
<td>Moderate</td>
</tr>
<tr>
<td>9. Teamwork</td>
<td>2.96</td>
<td>4.94</td>
<td>1.98</td>
<td>Very high</td>
</tr>
<tr>
<td>10. Professional Ethics</td>
<td>3.48</td>
<td>4.92</td>
<td>1.44</td>
<td>Moderate</td>
</tr>
<tr>
<td>Total</td>
<td>2.99</td>
<td>4.77</td>
<td>1.78</td>
<td>Very high</td>
</tr>
</tbody>
</table>

In addition, Table 5 represents the mean scores compared between pretest and posttest and revealed that the top items reflecting massive improvement on self-assessment were emotional management (M.D. = 2.10), teamwork (M.D. = 1.98), and experience (M.D. = 1.86),
respectively. In contrast, the mean difference for professional ethics was moderate. However, the overall mean difference between the pretest and posttest was very high (M.D. = 1.78).

**Table 6** The comparison of the recreation leadership self-assessment pretest and posttest

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>X</th>
<th>S.D.</th>
<th>M.D.</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>50</td>
<td>2.99</td>
<td>0.68</td>
<td>1.78</td>
<td>48</td>
<td>25.35</td>
<td>.00</td>
</tr>
<tr>
<td>Posttest</td>
<td>50</td>
<td>4.77</td>
<td>0.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results from Table 6 illustrates that the posttest mean score (\(\bar{X} = 4.77\)) of the recreation leadership self-assessment was higher than the pretest mean score (\(\bar{X} = 2.99\)). The mean difference of the test was 1.78 and the t-value was 25.35. It is apparent that there was a significant difference between the pretest and posttest mean scores of the recreation leadership self-assessment test at a significant level at the .05 level.

**4 Discussion**

According to the results from the paired sample t-test, participants’ leadership significantly improved (p < .05), and the posttest mean score (\(\bar{X} = 4.77\)) of the recreation leadership self-assessment which was higher than the pretest mean score (\(\bar{X} = 2.99\)). It indicated that the recreation model for enhancing recreation leaders could enhance the leadership of the participants after they participated in the model proving from the recreation leadership self-assessment pretest and posttest. The findings were congruent with Dubrin’s leadership development with the five methods including 1) self-awareness, 2) self-discipline, 3) learning, 4) experience, and 5) counseling. [10] Moreover, they were in line with leadership development model using training program proposed by Yukl. The model comprised clear learning objectives and meaningful content with appropriate sequencing. It also consisted of appropriate mix of training methods and opportunity for active practice. Plus, relevant timely feedback, enhancement of trainee self-confidence, and appropriate follow-up activities were involved in the procedure. [9] Furthermore, Pairin supported that among a variety of training methods, it depended on the organizer or facilitator, given the right procedure can help achieve the goal of the training. [11]

The results also coincided with Mekkayai’s development leadership training program for Kasetsart University activity leaders which found that, after the training and during the follow-up, the participants gained more knowledge on service leadership and posed positive attitude towards service leadership. [12] Additionally, the findings were similar to Thongkeaw which studied the effect of the outdoor recreation program for enhancing leadership of tourism youth volunteers and resulted that after 8-week program, the experimental group significantly augmented leadership in all aspects at the .05 level. [13]

Interestingly, the recreation leadership from self-assessment pre and post test of the participants increased at various aspects. Due to the comparison between the pretest and posttest, it emphasized that this recreation model could enhance the leadership of recreation leaders. While
the overall mean difference of the test was 1.78, the major improvement was illustrated in the aspects of emotional management (M.D. = 2.10), teamwork (M.D. = 1.98), and experience (M.D. = 1.86). In contrast, the mean difference for professional ethics was moderate showing mediocre improvement in this dimension when compared to the others. The reasons why the participants gained leadership in different aspects might come from various factors especially their background experiences.

The implication from the results is illustrated from the background demographics of the participants which could be elaborated in the following points. The participants of different genders and ages possess different personality and characteristics. They responded toward the activities in the model differently. There might also be other factors affecting the results based on different backgrounds. It matched with the explanation by Bootprasert that individuals would advance their potential differently based on their work or training experience as lifelong learning depending on each individual’s interests. [14]

This study focused mainly on the result of recreation leadership, yet the results shown along were quite attractive to study further in each aspect of leadership. Although the study attained some significant success in raising recreation leaders’ leadership, there are also evitable limitations. The study had been conducted with a small number of subjects (50 participants) and for three days, the results from this study would be supported better if it were repeated with more participants. Also, it would be better if the researcher could expand the study in depth for each aspect of recreation leadership.

5 Conclusion

The recreation model is obviously beneficial because it can enhance leadership of recreation leaders. Each model may be various in terms of the implementation and skills focused, but the crucial part of the recreation model is activities for developing the participants’ ultimate potential in becoming efficient recreation leaders. The guidelines in the model could serve the purpose of enhancing leadership and be applied to enhance leadership of recreation leaders. The recreation leaders training should be emphasized as they are keypersons in developing human resources which is the foundation for the society.

References


Abstract. Systems thinking skills are important for physical education in research and practice-based learning. However, these are less commonly integrated into social dance instruction and evaluation. This article proposes the indicators for evaluating systems thinking skills and applying in social dance instruction. Describe the process drawing model of systems thinking skills by literature review and offer a set of these indicators for evaluating by synthesis in the context of social dance instruction. We found five indicators consist of: 1) get the system, 2) listen to the systems, 3) find responsibility in the system, 4) use group dynamics and adjust the systems, and 5) go for good of the system. These indicators can be applied to the learning management process in social dance instruction covered preparing the learner to learn, practicing the dance skill, and concluding what has been learned.

Keywords: Indicators, Systems thinking skills, Social Dance Instruction

1 Introduction

Systems thinking skills are important for physical education in research and practice-based learning. However, these are less commonly integrated into social dance instruction and evaluation. This article proposes the indicators for evaluating systems thinking skills and applying in social dance instruction. Describe the process drawing model of systems thinking skills by literature review and offer a set of these indicators for evaluating by synthesis in the context of social dance instruction.

1.1 The context

Years studies document. This article was reviewed literature into the theoretical and practical to enhance systems thinking skills for undergraduate students. The reader has responsibility for: reading all the conceptual and theory, in the order presented and deciding document to synthesis indicators of relevance and utility consist of; Yonisomanasikara, Blooms Taxonomy, 1956, 2001,

Figure 1. Reviewed literature into the theoretical and practical to enhance systems thinking skills

Yonisomanasikara stands for a form of "attention" that is "thorough" and "penetrative", and therefore also "wise". Example: explore the conditioned nature of phenomena, description of the process of mental development, understanding of dependent arising of each of the links, and performed the same role in relation to the awakening. To explore the connotations of yonisomanasikara, the present article will begin by examining the terms yoniso (The sense of going down to its origins and at the times can also convey the sense of proper or appropriate) and manasikara (To do or to make something in the mind) individually, followed by surveying passages that are of relevance to the implications of the expression yonisomanasikara, and to its importance in the thought world of the Pali canon. In all these cases, it was instrumental in arousing the wisdom that led to realization. Awaken on their own without being taught the way to liberation by other.

Harper and Stave, 2008 Understanding system structure requires an understanding of relationships and feedback. Although not significantly, this component. A crucial systems thinking talent is the capacity to separate these stocks, flows, and other factors and determine their function. Models, this component is unique. This component is the capacity to conceptually model various system components and approach the system from various angles. Through the use of numerous techniques including reduction, transformation, abstraction, and homogenization16, the performance of this function extends beyond stated system models and into the world of intuitive. Perceptual units can decrease the conscious accessibility of components, according to research (Poljac, De-Wit, & Wagemans, 2012). As a result, there should be greater room for interpretation because the mind has fewer specifics on each thing. This skill can also be thought of as the capacity to view a system from an alternative perspective, which gets rid of duplication and lessens complexity. Finally, a methodical test of the suggested definition is required. Because it has a clearly stated, understood, and disproportionate aim, it passes Part 1 of the criteria. It also moves through Section 2, where each of its components is thoroughly explained. This also occurs as a result of the system diagram's descriptions of element relationships and depth trends.

Systems Thinking Skills. The creation of the Education Superhighway (ESH) is used as an example to describe "systems thinking" and to highlight its significance in a recent article by
Vanessa Kirsch, Jim Bildner, and Jeff Walker in the Harvard Business Review titled "Why Social Enterprises Need Systems Thinking." The authors describe how ESH creator Evan Marwell increased the percentage of US school districts with access to 100 kbps to 30% by using systems thinking, research and analysis, communication, legislation, and five other strategies. 77% since 2013. It is difficult to find a concise definition of systems thinking. Barry Richmond first used the term "systems thinking" in 14 and based it on Ludwig Von Bertalanffy's general systems theory and cybernetics. Arnold and Wade (2015) primarily discuss elements (systems thinking traits), linkages (how actions relate to one another and/or feedback), and activity or objective. To "increase the ability to detect and comprehend systems, forecast their behavior, and make changes in them to accomplish desired results" is the common aim of systems thinking (Arnold and Wade, 2017). Permutations in favor of "systems thinking" are provided by Bosch et al. (2019): A way of seeing and talking about reality that helps us better understand and work with systems to influence our quality of life, a system for thinking about systems, a way of looking at, learning from, and understanding complex situations, and a new way of thinking about understanding and managing complex problems.

Consider the two different categories of researchers when considering systems thinking: traders and salespeople. Splitters are individuals who break a large object into small chunks for study. Lumpers are integrators who enjoy assembling components (Cabrera and Colosi, 2012). Being "oppressive" and accepting this dualism are not the goals of systems thinking (Schwandt and Ryan, 2018).

Social Dance Instruction.

Framework of Systems Thinking Skills and Social Dance Instruction.

![Diagram](image-url)

Figure 2 Apply for teaching method, Learning Environment, and Evaluation.

2 The purpose of applying

2.1 Framework play role, skill level, border, identifying learning domain.

2.2 Systems Thinking approach

In order to help social dance students enhance their systematic thinking abilities, this proposal takes a similar approach to using systematic thinking in instruction. Expected Outcomes A new remedy or set of remedies to an urgent societal concern must first be presented by a person or organization. We recommend that organizational transformation theories, business strategies,
and other basic resources mirror systems thinking, even though this may seem obvious. The capability to integrate the solution into the larger target system is the most crucial instrument in the arsenal of new system administrators.

Qualification

Example Since "decisions themselves do not affect decisions," linear thinking is often referred to as "open loop" thinking. According to the linear thinking, the problem must be remedied, thus once the fix is implemented, the issue is resolved. Cause and effect are thought to be "close in time and space" according to linear thinking. According to Senge, a "impact" is a symptom or issue brought on by a deeper, unnoticed issue. Examples include diminishing attendance, ineffective discipleship, nonexistent missions, or decreased contributions.

Example Due to the fact that "decisions themselves do not effect decisions," linear thinking is also known as "open loop" thinking. According to the linear thinking, the problem must be corrected; thus, apply the remedy, and the problem is solved. Cause and effect must be "close in time and place," according to the linear thinking model. Senge clarifies that a "impact" is a symptom or issue brought on by a deeper, unrecognized issue, such as dwindling attendance, inadequate discipleship, nonexistent missions, or diminishing giving.

Table 1. Compares linear thinkers to system thinkers

<table>
<thead>
<tr>
<th>Linear Thinking</th>
<th>Systems Thinkers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Break things into component pieces</td>
<td>Are concerned with the whole</td>
</tr>
<tr>
<td>Are concerned with content</td>
<td>Are concerned with the process</td>
</tr>
<tr>
<td>Try to fix symptoms</td>
<td>Are concerned with the underlying dynamics</td>
</tr>
<tr>
<td>Try to control chaos to create order</td>
<td>Are concerned with assigning blame</td>
</tr>
<tr>
<td>Care only about the content of communication</td>
<td>Try to identify patterns</td>
</tr>
<tr>
<td>Believe organizations are predictable and orderly</td>
<td>Try to find patterns amid chaos</td>
</tr>
<tr>
<td></td>
<td>Care about content but are more attentive to</td>
</tr>
<tr>
<td></td>
<td>interactions and patterns of communication</td>
</tr>
<tr>
<td></td>
<td>Believe organizations are unpredictable in a</td>
</tr>
<tr>
<td></td>
<td>chaotic environment</td>
</tr>
</tbody>
</table>

Table 1. Compares linear thinkers to system thinkers


2.3 The Subject of Systems Thinking

The phrase systems thinking implies thinking about the world outside us and doing so my mean of the concept system (Systems Thinking and Practice (Checklar) 1981). In Donella Meadows book, Thinking in Systems (2008), the subject of systems thinking is defined as follows:

A system is a method of viewing the world, according to Weinberg (1975:51), and fever aims to change people's perspectives. He wants us to realize that everyone has a unique view on the world based on their experiences. Weinberg (1975:57) goes on to say that a system's reason for existing is what gives it that right. It's important to note that Weinberg authored seven books on the topic of computer programming before the book in question, including references in various
computer languages. The systemic method sees the system as a whole, made up of interconnected parts (Kramer and De Smit, 1977:10). The unique configuration of the system's components is noteworthy. It is impossible to ignore the environment or how the system interacts with it. A system is defined as "a collection of two items that are related to each other in some way," according to Ackoff (1974:13). Examples include concepts (such as in a number system), things (such as a telephone system or the human body), or persons (such as in a number system). A social structure. The elements of a set and the set of elements have the following three features, according to Ackoff (1974:13), which means that the system is not indivisible and must be viewed as a whole.

1. The general characteristics or behavior of the set. For instance, an animal's overall performance benefits from all of its organs.

2. Each element's characteristics and behavior, as well as how they affect the total, are influenced by at least one other set of characteristics and behaviors. Therefore, no component affects the entire independently, and each component is impacted by at least one other component, according to University of Pretoria etd - Goede, R (2005)74. For instance, the lungs influence the behavior of the heart and how it affects the body.

3. The first two characteristics are shared by all conceivable subgroups of items in a set; each has a separate impact on the total. As a result, the whole cannot be split into separate components. The system cannot be broken down into separate, autonomous systems. For instance, the neurological, respiratory, digestive, and motor subsystems of an animal's body interact with one another and the rest of the body to function as a whole.

The concept of systematic survival is added by Checkland and Scholes (1999:19). They assert that the system must be able to endure environmental changes. Only a system with communication and control mechanisms that can adjust to environmental changes will be able to survive. The process by which the desired synergy is established amongst the components of the enterprise is called "connection and synthesis," which refers to the dynamic relationships between the many pieces of the total. This incorporates the notion of circularity, which highlights the necessity of thinking that is circular as opposed to linear. Similar to this, the idea of expression is connected to the synergistic outcomes that might happen when a system's components work together non-linearly. This frequently occurs at work as a result of organizational politics and conflicting goals. Systems-minded organizational leaders see this as a chance to enhance innovation and collaboration.

2.4 Applying

Systems by Classes There are several categories of systems, according to Checkland (1981:110), including natural systems, systems involving human activity, created physical systems, designed abstract systems, and transcendental systems. Designing the educational process Natural systems are those that arise from the cosmos and take on their current form as a result of the forces and processes that operate there (Checkland 1981:110). A physical system that is formed is one that is made to serve a specific purpose, like a hammer. Because a system of human activity has identified a need for them, designed physical systems are there (Checkland, 1981:119). Poetry, philosophy, and other designed abstract systems are examples of the structured conscious work of the human mind. These abstract systems frequently result in physically constructed systems, like books and films. Human behavior is described by human
operating systems. Despite being less solid than the suggested systems, they are nevertheless readily apparent. Transcendent systems are unknowable systems. Training of teachers and instructional practices. The educational system operates in interconnected systems with ongoing interactions. Teachers, educators, and leaders can progress toward adaptive techniques by mapping such complex systems. The main advantage is that educators will be able to react to ecosystem changes and be prepared to modify and adapt various aspects of their institution as needed. With this understanding, systems thinking offers teachers in their profession apparent benefits. It aids pupils in explaining complicated issues that are sometimes mistaken as simple ones because of linear thinking. The alternative developmental paths are displayed in accordance with the student's internal and external connections. This offers a substantial benefit by improving the teacher's capacity for change and helping them to accomplish the sustainability objective. Systems thinking can be successfully implemented and used to enhance teaching, albeit requiring certain abilities and a deeper comprehension of complexity and ambiguity.

2.5 Evaluation

Identify The Indicators And The Criteria five indicators consist of; 1) get the system, 2) listen to the systems, 3) find responsibility in the system, 4) use group dynamics and adjust the systems, and 5) go for good of the system.

Get the Beat of the System. Students learn to watch the system on how it behaves. If it a piece of music, dance or even everyday concerns like food prices and supply, learn it's beat. If the system is social (i.e., people), watching how it works. Getting the beat first before acting on changing the system. 2) Listen to the System Intelligence. The system is naturally intelligent. This skill allows student to encourage the forces and the structures to help the system run by itself. 3). Find the Responsibility in Systems. Students learn how systems create their own behaviour. In social dance, this is how the pair creates their own dynamics. Intrinsic responsibility is needed so pressure is not put on a part of system to maintain the system. 4). Use Dynamic, Self-adjusting Feedback. Students learn to utilise feedback being as one of the primary concepts in systems thinking. They learn how to handle uncertainties by relying on feedback rather than control of situations. 5). Go for Good of the Whole. Students learn to make decisions that is best for the the whole system. In social dance, the members of the system or the pair makes decision for the good of the pair. In life, make decisions that because of the few but for the whole.

Figure 3 summative and formative assessment throughout the learning process.

![Chart Title](chart.png)

5. Go for Good of the Whole: Students learn to watch the system...
4. Use Dynamic, Self-adjusting Feedback: Students learn...
3. Locate the Responsibility in Systems: Students learn...
2. Listen to the System Intelligence: The system's stability...
1. Get the Beat of the System: Students learn to watch the system...

Figure 4 Learning about Social Dance
3 Conclusion

We found five indicators consist of; 1) get the system, 2) listen to the systems, 3) find responsibility in the system, 4) use group dynamics and adjust the systems, and 5) go for good of the system. These indicators can be applied to the learning management process in social dance instruction covered preparing the learner to learn, practicing the dance skill, and concluding what has been learned.

References


Aqua Zumba® Versus Aqua Jog as The Treatment of Obesity among Collegiate Students

Maisarah Shari1, Sarina Md. Yusof2, Raja Nurul Jannat Raja Hussain3, Teh Lay Kek4, Suhana Aiman5, Norizzati Mohd Idris6
{maisarahshari87@gmail.com1, sarin864@salam.uitm.edu.my2, nuruljannat@uitm.edu.my3}

Faculty of Sports Science, Universiti Teknologi MARA, Shah Alam, Malaysia1, Faculty of Sports Science, Universiti Teknologi MARA, Cawangan Negeri Sembilan, Kampus Seremban, Malaysia2, Faculty of Sports Science, Universiti Teknologi MARA, Cawangan Negeri Sembilan, Kampus Seremban, Malaysia3, Department Physical and Health, Faculty of Education, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, Malaysia4, Faculty of Sports Science, Universiti Teknologi MARA, Shah Alam, Malaysia5, Faculty of Sports Science, Universiti Teknologi MARA, Shah Alam, Malaysia6

Abstract. Introduction: In a world where obesity is on the rise, water sports have become a safer and more suitable alternative to exercise for obese people, who are at higher risk of many diseases and more likely to die. The purpose: The aim of this study was to compare the effects of Aqua Zumba® Fitness and Aqua Jogging on selected health parameters in obese students. Method: Sixty obese female students with a sedentary lifestyle were enrolled in Aqua Zumba® fitness (N=20, age 26.75 ± 5.34 years, height 160.88 ± 4.40 cm, weight 83.67 ± 8.40 kg), aqua jogging (N=20, age 27.30 ± 8.40 kg), and controls (N = 20, age 26.80 ± 5.23 years, height 159.86 ± 5.40 cm, weight 82.83 ± 7.40 kg). The exercise group received an aquatic exercise program at an intensity of 50-75% of maximum heart rate three times a week for 60 minutes per session for 12 weeks. Fat mass, muscle mass, waist circumference, blood glucose levels, and blood pressure (BP) were measured at baseline (week 0) and after exercise intervention (week 13). Result: Both aqua groups showed significant changes (p<0.05) in most parameters except fat mass and diastolic blood pressure. Aqua Zumba® produced significantly better changes in reducing AC stress compared to aqua jogging. Conclusion: A moderate-intensity aqua jogging or aqua Zumba® session is an alternative exercise program for overweight college students looking to combat the trend toward obesity.

Keywords: Aqua Zumba, aqua jog, health parameters, obese females.

1 Introduction

According to a recent report, Malaysia has the highest rate of obesity and overweight among Asian countries, especially among women at 54.7% [1]. A number of studies [1-2] show that obese people have a shorter life expectancy, higher lifetime health care costs, and a higher risk
of non-communicable diseases than those of normal weight. The main factors contributing to overweight and obesity are decreased physical activity (PA), increased sedentary behavior and unhealthy eating habits as a result of rapid urbanization [3]. These factors cause energy intake to exceed energy expenditure and cause the obesity phenomenon. Maintaining a caloric deficit by increasing physical activity is one way to combat the health problems associated with obesity [4-6]. According to WHO guidelines (2020), adults aged 18-64 should do at least 150 minutes of moderate-intensity aerobic PA per week. The ACSM (ACSM) and American Heart Association (AHA) clearly show that prolonged low- and moderate-intensity aerobic exercise promotes fat loss and ideal weight. However, weight-bearing exercise (exercise in which a force acts against gravity), such as resistance exercise or aerobic exercise, may not be suitable for overweight people, and overuse injuries can lead to cessation of exercise. [7]. Experts advise obese people to engage in physical activity and exercise without putting on weight. With this in mind, water sports have been shown to be safer and more effective for overweight people compared to land-based exercise. The high density, hydrostatic pressure, elasticity and low temperature of water increases energy expenditure, improves muscle activation, improves venous return to the heart and maximizes range of motion (ROM) while simultaneously reducing joint stress and pain are reduced. It minimizes strain on joints and muscles, reducing the risk of injury [8-9]. Among the various forms of aquatic exercise, aquajogging has been the most extensively studied in publications to date. A new water exercise program that has recently gained popularity is Aqua Zumba® Fitness, introduced by Zumba® LLC.

2 Methods

2.1 Participants

A total of sixty (N=60) female university volunteers between the ages of 20 and 39 participated in this study. All were randomly selected with the following inclusion criteria: 1) obesity, defined as BMI (30-40 kg/m²) and body fat percentage (35-45%); 2) sedentary, defined as not participating in any structured physical activity in the past six months; and 3) be in good health, defined as being free of disease or physical disability. Participants with heart disease, hypertension, hypotension, diabetes mellitus, endocrine disorders, menstrual irregularities, musculoskeletal injuries, or those treated with any medication or consuming any supplements of any kind are excluded. The physical characteristics of the participants are shown in Table 1. Participants were asked to complete an informed consent form before they participated. This study was approved by the review board of the University of Teknologi MARA, 600RMI (5/1/6).

2.2 Aqua exercise regimens

Participants were randomly assigned to aqua Zumba (n=20), water jogging (n=20), and control (n=20) for 12 weeks. Aqua Zumba® Fitness Group participants perform his four core rhythms (salsa, cumbia, reggaeton only) of the Aqua Zumba Fitness Program, which includes various combinations of full-body exercises, 3 days a week for 60 minutes per session (10 warm minutes Did. - up, 45 minute conditioning, 5 minute cool down) led by a qualified Aqua Zumba Instructor. Training frequency gradually increased from 60-80 bpm (first 4 weeks), 70-100 bpm (weeks 5-8) and 90-110 bpm (last 4 weeks). Participants were assigned a target heart rate of 50-75% of their age-predicted maximum heart rate. Participants in the water jogging group were
asked to perform flat jogging (both feet in contact with the bottom of the tank) with similar frequency and duration of exercise, 3 days per week for 60 minutes per session. (10 min warm-up, 45 min conditioning, 5 min cool-down) maintained the same heart rate as the other intervention groups.

2.3 Outcome measures

Before other assessments, height was measured using an anthropometric apparatus (SECA, Germany) with an accuracy of 0.1 cm. Body weight, body mass index (BMI), FM, and LM were measured using a bioelectrical impedance analyzer (BIA), InBody 720 (Biospace, Korea). The alternating current was measured horizontally to within 0.1 cm at the narrowest point of the gap between the nose and navel of the sword. The participant's resting systolic and diastolic blood pressure was measured in mmHg using a digital sphygmomanometer (OMRON, HEM-7130) while the participant was seated comfortably in a chair with a backrest and ring. It was done. The bit is placed firmly on the competitor's left arm. Place your arms on the table, parallel to your heart. Measurements were taken after participants rested in a sitting position for 10 minutes. Blood sugar levels are measured using a fasting blood sample.

3 Results

Table 1 shows the physical characteristics of the participants between the groups. Initially, we confirmed that the three groups had similar physical characteristics with Levene's test for homogeneity of variance with p>0.05. In addition, one-way ANOVA between groups

The analysis showed that there was no statistically significant difference in the mean scores of all variables between the three groups with p>0.05. Therefore, we can conclude that all groups are equally distributed.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Aqua Zumba</th>
<th>Aqua jog</th>
<th>Control</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>26.75±5.34</td>
<td>27.30±5.01</td>
<td>26.80±5.23</td>
<td>0.14*</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>160.88±4.40</td>
<td>159.86±5.40</td>
<td>157.75±5.83</td>
<td>0.08*</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>83.67±8.40</td>
<td>82.83±7.40</td>
<td>81.37±8.47</td>
<td>0.17*</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>32.58±4.10</td>
<td>32.67±4.82</td>
<td>33.19±5.2</td>
<td>0.47*</td>
</tr>
<tr>
<td>BF% (%)</td>
<td>45.29±5.21</td>
<td>46.22±5.81</td>
<td>46.21±4.87</td>
<td>0.38*</td>
</tr>
</tbody>
</table>

*p>0.05 in Levene’s test for homogeneity

In Table 2, significant changes were observed within and between groups for lean mass, abdominal circumference, glucose, and resting systolic blood pressure across 12-weeks interventions with partial eta squared ranged from .72 to .451 (moderate to high effect size). Both aqua interventions produced significant improvement compared to the control group on most of the parameters. However, Tukey Post Hoc indicated Aqua Zumba® demonstrated significant greater changes compared to aqua jog (p<.05) on abdominal circumference (AZ = -12.8%, AJ = -4.45%) parameter. Hence, it can be concluded that the Aqua Zumba® Fitness
program elicited better changes in improving health aspect compared to aqua jog exercise in obese collegiate females.

### Table 2  Changes on health parameters across groups following 12-weeks intervention.

<table>
<thead>
<tr>
<th>Variables/pre-post scores</th>
<th>Aqua Zumba group</th>
<th>Aqua jog group</th>
<th>Control group</th>
<th>Time effect, P-value</th>
<th>Group effect, P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat mass (kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>39.20 ± 8.28</td>
<td>39.26 ± 6.99</td>
<td>39.60 ± 4.57</td>
<td>0.00</td>
<td>0.12</td>
</tr>
<tr>
<td>Post</td>
<td>32.77 ± 6.28</td>
<td>34.61 ± 6.23</td>
<td>40.39 ± 4.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lean mass (kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>24.68 ± 2.60</td>
<td>26.04 ± 3.20</td>
<td>23.58 ± 1.63</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Post</td>
<td>25.89 ± 2.57</td>
<td>26.60 ± 3.22</td>
<td>22.57 ± 2.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal circumference (cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>104.42 ± 6.59</td>
<td>105.74 ± 9.1</td>
<td>105.15 ± 7.6</td>
<td>0.00</td>
<td>0.03</td>
</tr>
<tr>
<td>Post</td>
<td>90.96 ± 7.58</td>
<td>101.03 ± 7.9</td>
<td>107.42 ± 8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose (mmol/L)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>5.93 ± 4.0</td>
<td>5.84 ± 0.36</td>
<td>5.91 ± 0.41</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Post</td>
<td>4.81 ± 1.7</td>
<td>4.89 ± 3.1</td>
<td>5.94 ± 0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic blood pressure (mm Hg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>126.70 ± 2.11</td>
<td>127.55 ± 6.13</td>
<td>126.45 ± 1.64</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Post</td>
<td>115.30 ± 5.45</td>
<td>118.35 ± 4.48</td>
<td>128.15 ± 5.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diastolic blood pressure (mm Hg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>86.95 ± 9.10</td>
<td>86.60 ± 7.39</td>
<td>86.45 ± 4.07</td>
<td>0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>Post</td>
<td>78.35 ± 7.01</td>
<td>80.70 ± 6.19</td>
<td>88.45 ± 5.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a = sig. different to aqua zumba  
b = sig. different to aqua jog  
c = sig. different to control

### 4 Discussion

The main finding of this study was that after 12 weeks of Aqua Zumba® fitness and aqua jogging, all variables except fat mass and resting blood pressure showed significant positive changes. Interestingly, any form of upright exercise in shallow water has a positive effect on eliminating obesity-related health problems in overweight schoolgirls.

Overall, both aqua programs were equally effective in improving muscle mass, reducing waist circumference, blood glucose levels, resting systolic blood pressure, and improving overall fitness. Although the improvement in fat mass did not reach statistically significant levels, it is interesting that both aqua groups showed a reduction in body fat mass after the intervention (Aqua Zumba® = -6.43 kg, Aqua jog = -4.65 kg). It was not observed in the control group (+0.79 kg). Similar to previous studies [10–12], this study also showed that consistent aquatic exercise positively affected body composition in different populations. By activating the
oxidative energy system, the continuous rhythmic movement of large muscle groups during aerobic exercise promotes the burning of fat (mainly subcutaneous fat) as the primary source of energy [13]. Loss of fat mass alters body shape, especially with a gradual decrease in hip and waist circumference [14]. However, the Aqua Zumba® program in this study led to a significant reduction in waist circumference. The fact that Zumba® includes salsa and reggaeton dance routines that target core muscles may be the mechanism behind this discovery following the Aqua Zumba® program [15]. Your arms, ribcage, abs, hips, glutes, quads, hamstrings, and gastrocnemius muscles all need to work in a salsa or reggaeton routine [15]. The current study corroborates previous studies that also found significant changes in waist circumference after the Zumba® program [16].

The above results indicate that both water exercise groups showed significant improvements in blood glucose levels. This finding is supported by previous studies by several researchers [11, 20–21]. Reduced insulin resistance to muscle-mediated glucose uptake during and after exercise may be associated with lower fasting blood glucose [21]. Regular aerobic exercise increases the number of insulin receptors in muscle, which also increases insulin binding to monocyte sites. This allows your muscles to use glucose efficiently, especially during exercise, resulting in lower glucose levels [22].

5 Conclusion
This study shows that a 12 weeks regime of Aqua Zumba® Fitness and aqua jog programs effectively improved health parameters in obese collegiate females. Additionally, Aqua Zumba® can induce a greater reduction in abdominal fat, making it a potential exercise method for combating obesity. However, it is suggested that longer aqua exercise intervention durations that can result in significant fat loss in this population be investigated in subsequent studies.

6 Acknowledgement
We thank the study participants, the staff of the Department of Sports Science, the Institute of Integrative Pharmacogenetics Genetics (iPROMISE) of the MARA University of Technology, and the staff of the University of Tenaga Nasional (UNITEN). The authors report no conflicts of interest in this work. We are also grateful for the grant received from the Research Management Institute (RMI): 600-RMI/MyRA 5/3/LESTARI (22/2016).

References


Relationship between Self-Efficacy and Push-Up Performance among Male Gymnasium Members

Ummu Nadiah Zukipli 1, Mohad Anizu Mohd Nor 2, Johansyah Lubis 3, Jamatul Shahidah Shaari 4

{mumunadiah93@gmail.com 1, mohadanizu@uitm.edu.my 2, johansyah.sport@unj.ac.id 3}

Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia 1, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia 2, Faculty of Sports Science, Universitas Negeri Jakarta, Indonesia 3, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia 4

Abstract. The main objective of this study is to identify the relationship between self-efficacy and push-up performance among male gymnasium members. This study is a quantitative study, and this proposed study adopted a non-experimental study, survey correlational design. The respondents were male gymnasium members of World Fitness Gym, Bukit Rahman Putra, Sungai Buloh (n=14) first completed questionnaires assessing their medical health status, determining their physical activity daily living, and identifying their self-efficacy to perform push-up test. After completing the questionnaires, participants performed 1-minute push-up test to determine their fitness performance. The data were analysed using the Pearson-correlation coefficient to find the relationship between variables. Results showed that there is a very low positive association and no significant relationship between self-efficacy and push-up performance among male gymnasium members (r = .18, n = 14, p > .05). In future, this study recommended to investigate the relationship between self-efficacy and push-up performance among female gymnasium members and compare between male and female. Besides, future study should involve other types of exercise such as muscular strength, flexibility, and cardiorespiratory endurance to compare the performance between exercises.

Keywords: Self-Efficacy, Physical Activity, Push-Up Performance, Gymnasium.

1 Introduction

Push-up is one of the basic and the most common exercise used to measure muscular endurance of the upper body (Hassan, 2018 [10]; Thomas et al., 2018) [11]. The benefits are its simplicity with no equipment or cost needed. Besides, this exercise trains neuromuscular coordination (Chuckpaiwong & Harmnoongroj, 2009) [12], enhances upper body strength and endurance (Van Den Tillaar, 2019) [13], and it is an upper body and multi-joint exercise designed to increase upper extremity, shoulder, and core stability (Johnson, Meador, Bodamer, Langford, & Snarr, 2019) [14]. Push-up position may be varied among researchers. The common position as stated
by Azeem and Mohammed (2019) [15] is a prone position by extending and lowering the arms repetitively. While, according to Baumgartner, Oh, Chung, and Hales (2002) [16], they stated about a 90° angle at the elbow during downward movement of push-up. It is important to maintain a proper body positioning throughout push-up activity to build strength and stamina, as well as to limit the potential injury (Hewit, Jaffe, & Bedard, 2018) [17].

Self-efficacy was a theory developed by Bandura within the framework of social cognitive theory (Feltz, Short, & Sullivan, 2008) [18]. Self-efficacy is also defined as the belief in an individual’s capabilities to act as required to achieve the goals (Bandura, Freeman, & Company, 1997) [19]. According to Ede, Sullivan, and Feltz (2017) [20], self-efficacy theory is the stronger one’s self-efficacy belief the more challenging are the tasks, the greater the effort, and the more motivation to achieve the goals. Thus, self-efficacy can be related to effort, persistence, and performance. In terms of exercise, self-efficacy can be one of the most important major trainers to improve skills and performance (Ismail, 2018) [8]. Besides, self-efficacy can encourage people to involve in physical activity to improve their quality of life (Medrano-Ureña, Ortega-Ruiz, & Benítez-Sillero, 2020) [22].

With the association between self-efficacy and push-up performance, some people have higher self-efficacy to do exercise, and some are not. This can cause by many factors. According to Miller et al. (2019) [23], 15% of older adults had been affected by depression, and this health condition affects exercise performance because they lack self-efficacy and self-confidence. A study by Olugbade, Bianchi-Berthouze, Marquardt, and Williams (2018) [24] mentioned that one’s lack of self-efficacy to do exercise was due to afraid repeated and continuous pain even though that person had undergone rehabilitation. Other studies conclude that muscular endurance can improve self-efficacy and thus the potential for being physically active among the congenital heart disease population (Bay, Sandberg, Thilén, Wadell, & Johansson, 2018) [25]. Lastly, participation in exercise and sports is beneficial for psychosocial health among children and adolescence with a disability (Te Velde et al., 2018) [26].

This study was conducted due to some issues found in previous articles. Self-efficacy is one of the variables to measure in this study. Previous study used different versions of self-efficacy scale. A study by Reverdito et al. (2017) [27] used the Self-Efficacy General Scale (GSES-12) to measure perceived self-efficacy on physical activity among adolescents. Other study by Anstiss, Meijen, Madigan, and Marcara (2018) [28], they used Endurance Sport Self-Efficacy Scale (ESSES) to measure endurance sport performance. While according to Ismail (2018) [29], he developed a new push-up self-efficacy scale which the scale arranged to represent increasing levels of complexity with the task. Thus, there still have no specific self-efficacy scale to measure self-efficacy to regulate exercise.

While there has been a few research on unhealthy population such as mental health problem, obese people, and chronic disease problem, only few researchers have taken healthy populations into consideration especially gymnasium members. This includes a study by Annesi, Smith, Walsh, Mareno, and Smith (2016) [29], stated that there is a significant relationship between exercise self-efficacy and push-up performance among obese people. A psychosocial failure such as patient knowledge and understanding of self-care requirements, social supports, and mental health are predictors of exercise behavior that lead to a lack of self-efficacy to do exercise (Ha, Hare, Cameron, & Toukhatsi, 2018) [30]. Another study by Smith, Diallo, Bennie, Tomkinson, and Lubans (2020) [31] stated that there is a significant effect of resistance training
self-efficacy on push-up performance. According to Gao and Xiang (2007) [32], self-efficacy is a mediating effect to achieve a good push-up performance.

1-minute push-up test is one of the measurements for muscular endurance which were the important health-related elements for physical activity. A push-up test is acceptable fitness test used by trainers, coaches, and athletes to test for upper body strength and endurance (McManis, Baumgartner, & Wuest, 2000) [33]. In this study, the researcher used normal push-up procedure adopted by Beck et al. (2015) [34]. However, the proper position is still questioned among researchers. According to McManis et al. (2000) [33], the down position should be a 90° angle at elbow. While a study by Hassan (2018) [35], he was generally mentioned the push-up up position which the hands should be placed on either side of the chest, the back should be kept straight, and the chest should be lowered towards the floor, always to the same level each time.

Thus, researchers are still failure to correctly assume the down position or up position, or keep the body straight, results in a push-up not being counted (Baumgartner et al., 2002) [36]. In response to the identified problems, therefore the purposes of this study are to determine the self-efficacy among male gym members, to observe the push-up performance among male gym members, and to identify the relationship between self-efficacy and push-up performance among male gym members. The self-efficacy scale suitable in this study is the original by Bandura (2006) [37] and the push-up procedures used in this study adopted by Ismail (2018) [8]. At the end of this research, the researcher would like to find out either there has a significant relationship or no relationship between both variables.

2 Methods

This study is a quantitative study because the objective is to find the relationship between two variables. This proposed study adopted a non-experimental study, survey correlational design. The participants answered three types of questionnaires. There is no training provided. However, the participants performed a push-up test for exercise performance. The advantage of conducting a survey study is because it is very helpful in correlational research. In addition, the results of correlational research are easy to classify because of the term coefficient correlation. It showed the strength of the relationship between the two variables. Thus, it figures the potential outcomes. However, a survey study will lead to the dishonesty of the sample. Thus, to avoid this situation, the samples were asked to answer it honestly.

This study used probability sampling technique which is a simple random sampling technique involving fourteen male gym members of World Fitness Gym, Bukit Rahman Putra, Sungai Buloh, Selangor. Their average age were 25-35 years old. The races of the participants were Malay males. The year of gym membership from 1-3 years. The exclusion criteria included anyone who had a previous musculoskeletal injury issue such as fracture to avoid any recurrent complication. The instrumentations used were three questionnaires followed by one exercise test which is push-up test. These questionnaires need to be completed before performing the exercise test. After that, participants performed 1-min push-up test. This test included warming up session and cooling down session. The three questionnaires are Physical Activity Readiness Questionnaire (PAR-Q) to provide initial health and medical assessments, Physical Activity Scale (PAS) to measure the physical activity of the participants, and lastly is Self-Efficacy Scale (SES) to determine the self-efficacy of the participants. Followed by 1-minute push-up test
adopted by Motimath, Koyande, and Chivate (2019) [38] including warm-up and cooling down sessions.

This study identified the relationship between self-efficacy and push-up performance among male gym members. All data were measured using SPSS version 25.0. Kolmogorov-Smirnova test suggested that self-efficacy scale among male gymnasium members were normally distributed, df (14), \( p = 0.20 \). Kolmogorov-Smirnova test suggested that self-efficacy scale among male gymnasium members were normally distributed, df (14), \( p = 0.10 \). The relationship between both variables were measured using Pearson-correlation coefficient in the SPSS. The result showed in the table below that there was a very low positive association and there was no significant relationship between self-efficacy and 1-minute push-up, \( r = .083 \), \( n = 14 \), \( p > .05 \).

<table>
<thead>
<tr>
<th>Self-Efficacy Scale</th>
<th>Pearson Correlation</th>
<th>1-minute Push-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (2-tailed)</td>
<td>.083</td>
<td>1</td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

3 Results

The purpose of this study was to determine the relationship between self-efficacy and push-up performance among male gymnasium members. The hypothesis there was no significant relationship between self-efficacy and 1-minute push-up among male gymnasium members. Results revealed that the relationship between variables was a very low positive relationship, \( r = .083 \), and no significant relationship between self-efficacy and 1-minute push-up, \( p > .05 \).

The Level of Self-Efficacy among Male Gymnasium Members to Regulate Push-Up Exercise

As mentioned above, the theories of self-efficacy were varied among researchers. However, they are all referred to Bandura’s theory to conduct their studies. Ismail (2018) [8] mentioned that self-efficacy can be one of the most important major trainers to improve skills and performance. Thus, this study adopted the Self-Efficacy Scale (SES) by Bandura (2006) [37] to measure the self-efficacy of the participants to regulate exercise. In Malaysia, a study about the level of self-efficacy of male gym members after push-up exercise is lack conducted. The researcher only found one study by Ismail (2018) [8] who has conducted research that related to this topic.

The level of self-efficacy scale used to measure the participants’ belief in their capabilities to perform the highest repetitions of exercise. In this study, the subjects asked to perform 1-minute push-up test. Thus, the researcher wanted to determine the confident level of male gym members to do a push-up test with optimal performance in one minute. This study found that the level of self-efficacy among male gymnasium members was significant, \( p > .05 \). By supporting the self-efficacy theory by Ede et al. (2017) [41], the researcher had agreed that the stronger one’s self-efficacy belief more challenging are the tasks, the greater the effort, and the more motivation to
achieve the goals. So, self-efficacy can be related to the effort, persistence, and performance. This study is non-experimental study which is no training program provided for the participants. Self-efficacy somehow can encourage people to improve the sports performance. According to DeNysschen, Cardina, Sobol, Zimmerman, and Gavronsky (2018) [42], the new members or untrained persons are likely to have low self-efficacy compared to expert members. Besides, a few weeks of training program also can encourage people to increase their self-efficacy to do better in exercise performance because they are trained every week with the proper techniques. The enhancement of the self-efficacy can be influenced by the environment and facilities of the gym (Gjestvang, Stensrud, Paulsen, & Haakstad, 2021) [43]. This study supported by Riseth, Nøst, Nilsen, and Steinsbekk (2019) [44] with statement that the gym or fitness centres should be mainly described as a comfortable place and easily accessible for physical activity so that the gym members can make commitments and give supports to the gym.

4 Discussion

The Push-up Performance among Male Gymnasium Members

The position of push-up exercise is varied among researchers. However, this study performed a standard push-up position, and the test procedure is adopted by Ismail (2018) [8]. The subject performed with the thumbs at shoulder width. The lifter needed to keep his body straight from head to feet. One previous study used 90° push-up to measure the reliability of muscular endurance as an essential component of physical fitness (McManis et al., 2000) [33]. They reported the reliability coefficients is between .22 and .87. Another study had used a 90° push-up test to examine the muscular strength and endurance for the upper part of body (Hashim, 2012) [47] and found that male students compared to female students, recorded higher validity values by performing the test. The push-up performance of male gymnasium members was measured after the participants completed the questionnaires. As this study was running through virtual assessment, the researcher used standard push-up procedure without using any proper tools. This is because of the availability of facilities, equipment, surrounding of the participants’ places. This study found that the score of a 1-minute push-up test among male gymnasium members was significant, p > .05.

Based on the Physical Activity Scale (PAS) answered by all participants, the more active during daily lifestyle, the better the result of the participants. PAS provides details information about the duration of physical activity in various domains (Andersen et al., 2010) [48]. A purpose of study by Aadahl and Jørgensen (2003) [49] was to do a validation of physical activity scale for measuring physical activity in 24 hours of sports, work, and leisure time on an average weekday. The result showed that the correlation between the activity scale and the diary was high. Means that the physical activity scale appears to be a valid alternative to measure physical activity by diary in adult sedentary and moderately active. One of the reasons of using PAS because the researcher cannot control the activity daily living of the participants. As this study have no training provided, the significant associations among the variables as noted from the results were probably influenced by an uncontrollable factor such as the daily activities of the participants (Ismail, 2018) [8].

An exercise routine can be one of the factors to have high self-efficacy and get a better results of push-up performance. However, this study was not experimental research which involve
participants to do a training program. The participants were asked to answer the questionnaires and the researcher just observe the participants’ push-up performance through virtual assessment as well as record the scores. Thus, there results only showed the scores of push-ups after they completing all questionnaires. A study by Wills, Saxby, Glassbrook, and Doyle (2019) [50] to identify the effect of 8-weeks training programs to physical performances including push-up. It showed that, involve in training program can significantly increase the scores of physical performances.

The Relationship between Self-Efficacy and Push-Up Performance among Male Gymnasium Members

The relationship between self-efficacy and push-up performance among male gymnasium members was analyzed using Pearson’s correlation coefficient in SPSS. The results showed that there is no significant relationship between self-efficacy and push-up performance among male gymnasium members. This study supposedly showed that there is a significant relationship between both variables. However, in terms of the instrument, it affects the result of the study. Thus, the hypothesis which is there is no significant relationship between self-efficacy and push-up performance among male gymnasium members fail to reject. Moritz, Feltz, Fahrbach, and Mack (2000) [51] in previous findings showed that the increase push-up performance followed the enhancement of a person’s levels of self-efficacy. A previous study by Kane, Marks, Zaccaro, and Blair (1996) [52] stated that self-efficacy is a stronger predictor and can be a factor to the positive performance. The year of membership also can influence the participants’ exercise performance. The new members may have low self-efficacy compared to others. However, the gym trainers can encourage the new members to follow a beneficial and comfortable regime (Ismail, 2018) [8]. This is somehow can enhance the level of self-efficacy to get a better exercise performance.

All in all, this study completed the research on determining the relationship between self-efficacy and push-up performance among male gymnasium members. Previously, studies of finding the relationship between self-efficacy and push-up performance has been proved by most researchers specifically when involving chronic patient diseases. This study determined the relationship between variables among male gymnasium members. From the result and discussion of this study, there are several recommendations for future research to investigate. The researcher should investigate the relationship between variables among female gymnasium members. Besides, the type of exercise also needs to be change and not only focus on push-up performance. To get a better result, the instruments to monitor a push-up performance or other types of exercise techniques should be standardized such as by using a sponge to monitor the downward position during push-up or a rope to monitor the upward position during sit-up. The last but not least, virtual meeting is not a suitable way to assess exercise performance because the techniques cannot be standardized. It can be monitored better when doing face to face meeting. Thus, it is better to do face to face assessment so that the researcher can get a better result, can control the movement of the study, and can clearly coach the participants about the techniques to be used in this study.

5 Conclusion

Studies of finding the relationship between self-efficacy and push-up performance has been proved by most researchers specifically when involving chronic patient diseases. This study
determined the relationship between variables among male gymnasium members. From the result and discussion of this study, there are several recommendations for future research to investigate. The researcher should investigate the relationship between variables among female gymnasium members. Besides, the type of exercise also needs to be changed and not only focus on push-up performance. To get a better result, the instruments to monitor a push-up performance or other types of exercise techniques should be standardized such as by using a sponge to monitor the downward position during push-up or a rope to monitor the upward position during sit-up. Last but not least, virtual meeting is not a suitable way to assess exercise performance because the techniques cannot be standardized. It can be monitored better when doing face to face meeting. Thus, it is better to do assessment face to face so that the researcher can get a better result, can control the movement of the study, and can clearly coach the participants about the techniques to be used in this study.

5 References


The Relationship Between Body Mass Index (BMI) and Lifestyle of Students in the Faculty of Education at UiTM Puncak Alam Campus

Nik Ahmad Syaqir Zahari¹, Nadia Ainuddin Dahlan²

{nikahmadsyaqir6119@gmail.com¹, nadi0300@uitm.edu.my²}

Faculty of Education, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor Darul Ehsan, MALAYSIA¹, Faculty of Education, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor Darul Ehsan, MALAYSIA²

Abstract. Malaysia occupies the highest chart in Southeast Asia in terms of obese population among adults. This means that Malaysians' awareness of their own Body Mass Index (BMI) is still at a low level and needs to be investigated further. Thus, this study aims to identify, 1) the BMI classification of students in a public university in Malaysia, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, 2) to determine the lifestyle of the students and lastly, 3) determine whether there is any significant relationship between students' BMI classification and their lifestyle. Survey method will be employed using a set of questionnaires. A total of 70 respondents will be chosen as the sample from UiTM's Faculty of Education. The results are expected to show a significant relationship between students’ BMI classification and their lifestyle.

Keywords: Body Mass Index, lifestyle, obesity, overweight, physical activity, adults, university students.

1 Introduction

Malaysia now occupies the highest rank in Southeast Asia as it has the highest percentage (15.6%) of obese population [1]. We need to take this issue seriously as the number of Malaysians suffering from obesity is increasing year by year which could lead to potential long term health issues. The method to determine if a person is overweight or obese is to run a Body Mass Index test. Approximately 50.1% of Malaysia’s adult population were reported to be above the normal weight, specifically, 30.4% are overweight and 19.7% are obese [2]. This data means that 1 in 2 adults in the country suffers from obesity. Obesity raises the risk of type 2 diabetes sevenfold in males and twelvefold in women when compared to people of normal weight. It can be curbed if prevented from the beginning by providing early awareness to adults about the importance of diet and physical activity. Obesity and overweight have also become more common among university students in Malaysia, according to previous studies [3].
For the past two decades, Malaysia's fast socioeconomic growth has resulted in substantial changes in Malaysians' lives, including food trends. More families are eating out, meals are skipped when people are busy, and the young skip breakfast and rely largely on fast food. Eating habits may be defined in terms of what and how individuals eat, the foods they choose, and how they obtain food [4]. Maintaining a healthy weight can be as simple as eating a variety of foods that are high in fruits, vegetables, and fibre and low in saturated fat, sugar, and salt. Lower body weight has been linked to a dietary pattern that includes frequent breakfast intake [5].

Enrolling in university sometimes necessitates a considerable lifestyle shift in order to meet academic requirements. These changes, along with the stressors of university life, might put university students at danger of developing unhealthy eating habits and becoming overweight or obese, which can have serious consequences for their health and quality of life. As students go through their studies, they may confront more problems, larger expectations and greater responsibilities which can lead to feelings of insecurity, poor sleep, worry, and sadness, all of which can contribute to aberrant eating patterns. Due to the tendency of adolescent poor eating and exercise behaviours to remain throughout adulthood, obesity and overweight appear to have the capacity to progress from adolescence to adulthood. As a result, colleges and universities are likely to be major targets for promoting healthy physical activities and lowering the prevalence of obesity among adults [6].

Students in Malaysia are among the top ten most physically inactive nations in the area [7]. With 61.4% of Malaysians aged 15 and up classified as physically inactive. Lack of physical activities also leads to overweight or obesity. Over 60% of the world's population does not reach the recommended daily minimum of physical exercise. Because overweight and obesity problems can develop early in life and have a long-term impact on morbidity, early identification of risk factors is critical to preventing and reducing obesity [8].

Obese children and adolescents have low levels of physical activity and do not get enough exercise on a daily basis, according to studies. Physically sedentary people have a higher body weight and body fat levels than active people [9]. Physical inactivity was found to be 39% among Malaysian students [10]. Another study found that 56.5% of Malaysian university students sampled in their study aged 22-25 years were physically inactive. Fifty six percent of male students had a high physical activity level compared to only 24% of female students [11].

The importance of this research is to ensure that university students always lead a healthy lifestyle so that they are balanced in terms of physical and mental health. This is because many previous studies have found that the BMI of university students is at an alarming level. According to a result from previous study in a Malaysian university in 2020, the results revealed that among 350 university students, 43.4% (152) are facing malnutrition which are underweight, overweight and obese. That means almost half of the respondents among university students are facing malnutrition problems [12]. According to WHO, malnutrition may refer to imbalance or not getting a good balance of nutrients in the body. Unhealthy eating habits can lead to malnutrition problems which will result in a person becoming underweight, overweight and even obese. Students frequently express anxiety about their body image, particularly when they are overweight or obese.

A study found that university students in Malaysia more likely didn't get enough of sleep and didn’t get maximum quality of sleep which means sleep deprivation. Sleep deprivation is defined as a period of time when you don't get enough sleep or when you get less sleep than you
should which is for adults are 7 to 8 hours a day. [13]. Sleep deprivation is caused by a variety of variables including modern lifestyle and employment. A persistent reduction in sleep length or fragmentation of sleep, resulting in a disturbance of the sleep cycle, may have cognitive, attention, and operant memory repercussions equal to those of severe acute sleep deprivation. [14], Among the total of 313 public university students completed the survey, resulting in a 95.1% response rate, with 221 students reporting poor sleep quality. In undergraduate students, 70.6% had poor sleep quality. The majority of people with poor sleep quality (35.5%) were above the age of 21, and 55.3% were female.

The main expected benefit is notably to enhance the quality of lifestyle among the parties and institution involved which are Malaysian university students in general and in particular, students of Faculty of Education at UiTM Puncak Alam. The research finding could also be used as a reference to draft and improve the activity in university to make sure students are balanced in both mental and also physical development which will provide benefits to the country in the future. In order to find the solutions, the following research questions were posed:

1. What is the BMI classification of UiTM Puncak Alam students?
2. What are the lifestyle habits of students in UiTM Puncak Alam?
3. Is there any significant relationship between the BMI classification of UiTM Puncak Alam students and their lifestyle.

2 Literature Review

2.1 BMI classification of university students

According to a local study [15], they found that more than half of the medical students sampled do not have a normal BMI class, which is only 49.3% who have a normal BMI class. This means that only 1 out of 2 respondents have an ideal weight. The normal BMI class for women is higher (51.6%) than men (46.6%). The results also found that more men have a BMI class of 23.0 (overweight) and above compared to women.

Based on research [3], A total of 1773 respondents from 5 universities in Malaysia participated in the study, which resulted in more than half of the respondents having a normal BMI class (23.0-24.9). The highest percentage was from PhD students who obtained results of 60.1% who have an ideal weight. The number of respondents with overweight and obese BMI classes is higher than underweight.

Confirmed in study [16], By using BMI from the Asian classification, the final result found that less than half of the respondents had a normal BMI class which was only 263 out of 622. All respondents were university students aged between 18 and 24 years old. The results also found that the age group of 24 years and above had the highest average weight compared to other age groups with an average weight of 81.79 kilograms. The difference in BMI class between genders also shows that male students are more likely to have a higher BMI class.

2.2 Eating habits among university students

Developed on the basis [17], International University & Colleges (INTI). Obesity: An emerging health crisis among Malaysian teenagers. 2022 Mar 14. The majority of the causes of obesity
among Malaysia's youth are bad eating habits and lifestyle. Fast food, sweet snacks, and oversized amounts of food tend to poison the diets of young people. "A survey by the Institute of Public Health and the Ministry of Health Malaysia found that the average daily intake of sugar among Malaysian youths increased from seven teaspoons in 2012 to ten teaspoons in 2017, which is more than the advised limit for adults," explained the Associate Professor from INTI International University's Faculty of Business and Communications. "Malaysians generally consume an average of three kilogrammes of sugar per year in the form of sweets. According to survey findings, 36% of Malaysia's youngsters use carbonated beverages daily or more frequently".[5]. As mentioned previously, healthy weight is related to healthy eating habits. Thus, we can maintain healthy weight by making small adjustments to our daily diet.

Found in a study [18], regarding eating behaviour, 57.8% of the 300 Malaysian university students sampled believed that they were eating more than most other individuals would under similar circumstances and that their eating was out of their control. The final results of this study show that the respondents who have a normal BMI class are 62.0%. This is one of the highest compared to previous studies. The results of this study also found that the problem of underweight (22%) is more than the problem of overweight and obesity which are 12.7% and 3.3% respectively because the results of the survey found that to regulate their weight, 13.0% (39) and 13.3% (40) of the students used laxatives, diet pills, or diuretics at least once in the previous 6 months.

2.3 Physical activity among university students

Based on the research [8], the suggested daily minimum of physical activity is not met by more than 60% of the world's population. Malaysia is among the top ten least physically active countries in the region, with 61.4 percent of Malaysians aged 15 and over falling into this category.[7]. The results of the study found that among the reasons given by students about why they are not active in doing physical activity is due to time constraints. This is because the commitment in studying at the university is seen as a tighter schedule. Almost half of the 480 respondents gave the reason of fatigue and tiredness as one of the reasons for not being able to be active in physical activity. More than half of the respondents also agreed that they have lack of motivation to carry out physical activity. Undoubtedly, as a student it is very busy to pursue the commitment of chasing a good grade in addition to chasing the due date to complete the assignment.

Confined by a previous study [19], adults who engage in moderate to vigorous activity for at least 150 minutes per week can live longer than inactive adults or engaging in physical activity for at least 20 minutes three days per week also helps increase mental health and reduce stress. So, as one of the efforts of the university to encourage its students to do physical activity is to hold co-curricular activities. The results found that university students were more interested in sports-based co-curricular activities than art and uniform units.

2.4 Sleeping hours among university students

According to a local study [20], smoking, drinking, food choices, internet/smartphone usage, physical activity, and sedentary behaviour are among the determinants of sleep deprivation among university students in Malaysia. Sleep deprivation was defined as fewer than 7 hours of sleep each day. According to the findings of the survey, the average sleep duration was 6.39
hours, with 6 hours being the most common response (34.7%). The prevalence of sleep deprivation among 1,017 undergraduate students in Malaysia more than half (58.1%). Among the causes obtained is due to caffeine consumption and this shows how important food intake habits are to help a person to achieve quality sleep.

Results in a study [14], showed that 221 out of 313 students experienced sleep deprivation, which is a large number. This study also shows that students under the age of 21 are more likely to experience the problem of not enough sleeping hours and what is more affected is the gender of women compared to men, which shows a large gap of 55.3% compared to 15.3%.

People who are physically fit sleep better and feel energetic during the day and reduce insomnia. A study [21], mentioned that, the less time teenagers sleep, the less quality sleep they get and the more endocrine hormone function is disrupted. Most teenagers need about 7-9 hours of sleep each day. As a result, teenagers are more likely to make poor dietary choices, such as eating foods that are low in nutrients or eating too many calories without boosting their energy expenditure. Adolescents who make these decisions are more likely to become fat throughout their lives.

3 Research methodology

This will be a quantitative study utilising survey design. A 23-item questionnaire consisting of 4 sections will be distributed to answer the research questions of the study. The questionnaire was adapted from 3 instruments which are [22], Pittsburgh Sleep Quality Index (PSQI) of the studied group compared by BMI status, [23], Response to question related to dietary habits and [24], Variable definitions, means, and percentages of the sample by physical activity status. The 4 sections are Section A – Demographic details, Section B – Body Mass Index and personal health information, Section C – Respondents’ awareness of BMI and understanding of healthy lifestyle and Section D – Respondents’ personal lifestyle habits such as eating habits, sleeping habits etc. The population for the study will be students from the Faculty of Education, UiTM. According to Krejcie and Morgan (1970), the number of respondents required for the population is 175. The questionnaire will be distributed through online platform, namely Google Forms. Data will be analysed using descriptive and inferential statistics as follows:

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Instrument</th>
<th>Respondents/Participants</th>
<th>Type of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To identify the BMI classification of UiTM Puncak Alam students.</td>
<td>Questionnaire</td>
<td>Students of the faculty of education at UiTM Puncak Alam</td>
<td>Descriptive Analysis</td>
</tr>
<tr>
<td>2. To ascertain the lifestyle habits of UiTM Puncak Alam students.</td>
<td>Questionnaire</td>
<td>Students of the faculty of education at UiTM Puncak Alam</td>
<td>Descriptive Analysis</td>
</tr>
<tr>
<td>3. To determine the relationship between BMI classification of</td>
<td>Questionnaire</td>
<td>Students of the faculty of education at UiTM Puncak Alam</td>
<td>Correlational Analysis</td>
</tr>
</tbody>
</table>
4 Expected Results

The study expects to get a total of 175 respondents from students of the Faculty of Education at UiTM Puncak Alam campus. Based on previous research conducted on Malaysian university students [25], 13.0% of the students were obese or overweight. The study [26], noted that underweight prevalence was higher than that of overweight and obese. This is consistent with a study [27], which found that the prevalence of underweight was higher than that of overweight and obesity at 18.3%. Therefore, it is expected that the results of this study would be similar to those of other studies, which found that the prevalence of underweight will be higher than that of overweight and obesity.

Based on previous [24], gained a result that The chance of being overweight was much lower in physically active smokers than in inactive smokers; therefore, combining PA with smoking is not a healthy way to lose weight. So, this study expect that someone who consumes substances such as tobacco is more likely to experience underweight problems as stated by previous studies. However, a study [28] proved that the increase of alcohol consumption leads to weight gain among the male students. However, a study [29] obtained a different result that the number of alcohol students consumed on a weekly basis and on special occasions were unrelated to changes in their weight and waist measurements over the course of the academic year. As a result, alcohol use did not account for changes in waist circumference and weight that were noted in the research.

This study expect to get the result that healthy eating habits can help a person to get a normal BMI class. This is because a study [30], found that 52.8% of the 422 respondents were overweight and obese due to excessive calorie intake and reduced healthy food intake such as vegetables and fruit. The Malaysian Dietary Guideline recommends two servings of fruits and three servings of vegetables per day. Based on an analysis of the study participants' dietary intake [31], it was determined that they consumed much less fruit and vegetable consumption than that recommendation. Other studies [32] also revealed low levels of fruit and vegetable intake among the native Malaysian populations.

According to a research [33], shows that the value of BMI lowers when physical activity rises. This is comparable to a research [34], that discovered that increasing physical exercise lowers the likelihood of being overweight. Based on the findings, it can be concluded that physical exercise affects the participants' BMIs. The study said [33] individual must engage in greater physical exercise to keep their BMI within the usual range. Increased physical exercise can reduce body fat mass as well. Physical activity may be seen as a helpful activity to reduce the amount of undesirable fat. Based on the previous findings, this study predicts that physical activity would affect the participants' BMI.

According to a study [22], women were more likely to have poor sleep habits (56%) than men (42.8%) and university students (50.9%), respectively. A study [35], recommends a minimum of six hours of sleep each night, and 69% of people who sleep less than that are overweight or
obese. This is a considerable reduction in sleep time compared to those of normal weight. According to this study [22], a higher risk of being overweight or obese is associated with lower sleep quality. This study predicts that those who don't get enough sleep are more likely to be overweight or obese.

References


[33] You HW, Tan PL, Mat Ludin AF. The Relationship between Physical Activity, Body Mass Index and Body Composition among Students at a Pre-University Centre in Malaysia. IIUM Medical Journal

The Influence of Physical Activity on Academic Performance Among Students-Athletes: A Case in a Secondary Public School

Najihah binti Mohd Amin¹, Mawarni Binti Mohamed², Ani Mazlina Dewi Mohamed³

{najihahamin98@gmail.com¹, mawarnim@uitm.edu.my², anima107@uitm.edu.my³}

Fakulti Pendidikan, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor Darul Ehsan, MALAYSIA¹, Fakulti Pendidikan, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor Darul Ehsan, MALAYSIA², Fakulti Pendidikan, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor Darul Ehsan, MALAYSIA³

Abstract. It is a common expectation that bookworm students can perform well and contribute more towards enhancement in academic performance instead of physically active student or best known as sport students. Thus, this study seeks to measure the level of physical activity and explore academic achievement, as well as to examine if there is a relationship between physically active students and academic achievement among student-athletes in a public secondary school in Kedah. Survey method was employed using a set of questionnaires. Purposive sampling method was used to gather information from 22 selected students-athletes involving 8 classes from various sports backgrounds. Results indicated that the associations of physical activity and fitness with cognitive function are relatively few but generally showed a positive association between physical activity and cognitive function of students.

Keywords: Physical activity, academic performance, students-athletes, secondary school

1 Introduction

This Word document can be used as a template for papers to be published in EAI Core Proceedings. Follow the text for further instructions on text formatting, tables, figures, citations and references.

Physical activity (PA) and exercise are often used interchangeably. Physical activity is characterized as any actual growth produced by the compression of skeletal muscle and can occur in short bursts of low to high intensity or long stretches of high intensity, lower, depending on the type of operation. Exercise, on the other hand, is a specific structured and repeated form of physical activity, with the goal of improving or maintaining fitness, function or health (Dishman, R. K., et al, 2006). Physical activity has many benefits both physically and mentally. The World Health Organization (2020) highlights important health benefits for the heart, body
and mind, with exercise improving thinking skills, learning and judgment. Physical inactivity is associated with many health risks, including heart disease, cancer, diabetes, hypertension, as well as anxiety and depression (Kohl & Cook, 2013). People who are sedentary have a 20-30% higher risk of death than those who are fully active (WHO 2020).

Various studies have measured academic performance and physical activity. The association between physical activity and physical activity with cognitive function was relatively small, but overall showed a positive association between physical activity and cognitive functioning of students. Regular exercise and better aerobic fitness are associated with greater brain volume, better neurophysiological responses to stimuli measured by an electroencephalogram (electroencephalogram), and how well of growth factors promote brain tissue growth, neurogenesis, and angiogenesis (Zoeller R.F. 2010). Building on their findings, another study also suggested that students’ fitness levels were strongly and significantly associated with academic achievement, regardless of other socioeconomic and status variables. , and seems to be too high from the end of middle school to the beginning of high school. (Trost 2009) and (Rauner, et all 2013) also concluded that, based on their study, aerobic capacity was an important predictor of academic performance. Therefore, this study aimed to examine the relationship between physical activity and academic performance among student-athletes from a school in Malaysia.

1.1 Background of study

Examining the link between physical activity participation and academic performance is important for several reasons. For example, understanding the relationship between sports participation, academic achievement, and cognitive development is important for teachers, school psychologists, and other stakeholders. If student participation in sports is tied to academic achievement and cognitive development, then student-athletes should be encouraged and supported to continue participating in sports rather than being perceived as a distraction. from their participation.

According to Pica R. (2004) and Grissom J.B. (2005), studies have suggested that students who participate in 5 hours of active physical activity per week do better in math, English, and science than students who participate in only 2 hours of physical activity. Physical movement. work. operate every week. Research has shown that physical activity and physical activity help children learn more effectively. According to research on the brain of (Jenson, E. 2001), the early learning process of children is based on motor development. He discovered that there is a connection between the cerebellum (the motor part of the brain) and cognitive functions such as memory, spatial orientation, attention, language, and decision-making. Furthermore, Jenson further confirmed that the majority of the brain is activated during physical activity and that sitting for more than ten minutes at a time leads to a decrease in concentration.

(Cocke, A. 2002) reported that regular student participation in various sports activities showed improved attributes such as increased brain function and nutrition, and higher energy/concentration levels, changes in body composition affect self-esteem, increased self-esteem and better behavior. can all support cognitive function. (Hillman et, all, 2009) also reported that continued physical activity resulted in increased cerebral blood flow, altered hormone levels, increased nutrient intake, and greater stimulation of brain activity. Theo (Jenson, E. 2001) a brain study found a positive and significant correlation between physical activity levels and cognitive (brain) development. Other studies by (Chaddock, L. et all 2011)
and (Pontifex, M.B. et all 2011) found that physically healthy children performed better on memory-related tasks and noticed that healthy children exhibit faster cognitive processing, which suggests that these children have a larger attention span and faster processing of the presented stimulus.

For this study, researchers conducted the study at a Malaysian public high school on a northern peninsula. SMK Mergong School is also known as sport school and is located in the capital Kedah, in Alor Setar district. The researchers focused only on student-athletes. Sample 4 out of 5 classes consisted of only 22 student-athletes. Indeed, not all students of this school are athletes, even though the school is known as a sports school. This study was carried out after the Malaysian government declared the epidemic endemic and reopened schools as normal. Outing restrictions due to the pandemic made this study impossible because the student-athletes did not participate in any physical activity and were focused solely on academics, which were conducted directly line.

1.2 Statement of problem

Academic performance is a key factor to be considered to secure a place in the higher learning and to get good jobs for future. This has been the focus amongst many including Malaysian parents and students. Thus, generally speaking, only bookworm students are seen to be able to perform well and contribute more toward enhancement in academic performance instead of physically active student or best known as sport students. Furthermore, some of parents think that students’ involvement in sports is just a waste of time and energy. This is because some of sports teams require a huge amount of time for practices, games, fundraising and pre-season training on the part of the student athlete, it could be contended that if students are engaged in challenging subjects, they may not have time to maintain excellent grades. These critics claim that students who participate in sports give up all their energy for training and participate in sports activities and have little time and energy to devote to their academic work. This assumption continues to grow and dominate the thinking of today’s society.

However, research have found that actively involved in sports is also able to contribute to academic performance. This is proven when (Hillman et all 2009) indicated that consistent physical activity led to increased cerebral blood flow, changes in hormone levels, enhanced nutrient intake and greater arousal in brain functioning. Additionally, (Chaddock, L. et all 2011) found that specific regions of the basal ganglia of the brain, which support cognitive control, are enlarged in physically fit children.

Another studies by (Chaddock, L. et all 2011) and (Pontifex, M.B. et all 2011) revealed that physically fit children performed better on associational memory tasks and found that physically fit children displayed faster cognitive processing speed that indicated that these children had greater attentional ability and faster processing of the stimulus being presented. While another study has demonstrated that children who were physically active showed improvement on fluid intelligence tests (Reed, et all 2010). The following are the research objectives for this study:

a)To measure the level of physical activity among students-athletes of SMK Mergong.

b)To explore the academic achievements of students-athletes of SMK Mergong.

c)To examine if there is a relationship between physically active students and academic achievements among students-athletes of SMK Mergong.
2 Literature Review

2.1 Physical activity and related concept

PAs can be classified in a variety of ways, including type, intensity, and purpose. In terms of "goal" classification, physical activity is often classified according to the context in which it is practiced. Commonly used physical activity classifications include occupational, recreational or recreational, household, personal care, and transportation physical activities (Physical Activity Guidelines Advisory Committee 2008). Another term encountered in the literature is leisure time physical activity (Physical Activity Guidelines Advisory Committee 2008) and (Cavill, N., et al 2006) defined as activities performed by a person that is not as essential as daily essential activities. The term lifestyle activity describes activities a person does in daily life that can contribute to energy expenditure, such as taking the stairs instead of using the elevator, walking instead of driving, park farther than usual to walk to a location (Physical Performance Advisory Committee 2008) and (Riddoch C. 2005). The terms exercise and physical activity are often used interchangeably.

2.2 The association between physical activity and academic achievement

According to Pica R. (2004) and Grissom J.B. (2005), studies have suggested that students who participate in 5 hours of active physical activity per week do better in math, English, and science than students who participate in only 2 hours of physical activity every week. Research has shown that physical activity and physical activity help children learn more effectively. Furthermore, Jenson further confirmed that the majority of the brain is activated during physical activity and that sitting for more than ten minutes at a time leads to a decrease in concentration. In addition, Tomporowski, Davis, Miller and Naglieri (2008) determined that sports participation has a positive effect on student academic performance.

Students spend hours in their classrooms and typical lessons are taught in classrooms where students sit and listen to their teachers. Students cannot sit still for long periods of time before blood and oxygen flow to the brain slows down dramatically, hindering the learning process (Gilbert, A.G 2002). This means that active learning and physical activity help students to be more focused and productive. For example, one study found a positive association between physical activity and academic achievement (Chomitz, V.R., et al 2009). Overall, various studies have shown that there is a link between fitness and academic performance, with better performance being associated with higher fitness levels. These studies have also found that physically healthy children do better in class, attend school more consistently, and have fewer discipline problems.

Regular exercise and better aerobic fitness are associated with greater brain volume, better neurophysiological responses to stimuli measured by an electroencephalogram (electroencephalogram), and how well of growth factors promote brain tissue growth, neurogenesis, and angiogenesis (Zoeller R.F. 2010). They recommend that policymakers consider a physical education subject in middle and high schools and increase the time spent on physical education with a focus on promoting cardiovascular health. Van Dusen et al 2011). According to Jenson E. (2001), brain research shows a positive and significant correlation...
between levels of physical activity and cognitive (brain) development. Cocke, A (2002) reported that regular participation of students in various sports activities showed improved attributes such as increased brain function and nutrition, higher energy/concentration levels, changes in body composition affect self-esteem, increased self-esteem and better behavior can all support cognitive function.

Another study (Jenson, E. 2001) suggested that early learning is based on motor development. There is a connection between the cerebellum (the motor part of the brain) and cognitive functions such as memory, spatial orientation, attention, language, and decision making. Jensen (2010) has determined that exercise is strongly correlated with neurogenesis, the production of brain cells that are associated with improved learning and memory.

Another study (Shepherd, R.J., 1997; Hillman, C.H., 2009) also showed that continued physical activity leads to increased cerebral blood flow, changes in hormone levels, increased nutrient intake, and brain function. more excited. In addition, Chaddock, L. (2010) found that specific regions of the brain's basal ganglia, which support cognitive control, are enlarged in physically fit children. In addition, physically healthy children demonstrate superior performance in behavioral activities that require complex skill and control. Other studies show that physically healthy children perform better on associative memory tasks, and physically healthy children show faster cognitive processing speeds (Chaddock L., 2010; Pontifex M.B., 2011).

3 Material and Methodology

3.1 Method

Purposive sampling technique was used to gather the data from the respondents. There were 22 selected students-athletes from various backgrounds and sports specializations. Form 4 students-athletes were selected because they have experiences in sports participation and trainings when they were in Form 2 before the pandemic. Students who are also school athletes were given 7 questions to answer with regards to their level of physical activity involvements from the scales of Never, Sometimes, and Frequent. Then in the next Section they were asked to give their perceptions on academic performance and physical activity involvement. There were 9 questions, and the response was either Disagree or Agree. Finally, to validate their opinion, their actual Tests results were also analysed. Their academic performances were recorded through their results in two different tests in the early academic calendar and mid school year. Chi-square was employed to compare observed results with the expected results of their tests. The purpose of this test is to determine if there was a difference between the first test and the second test in several subjects taken by the students. As athletes, their activities in various sports specializations were still carried out in between the two tests throughout the year.

4 Results and Discussion

4.1 Demographic data

In the first section A: Demographic information consisted of 4 questions which are (1) gender, (2) form or class, (3) sport, and (4) achievement or level.
Table 1 showed the demographic data in this study. Table shows that 15 male students-athletes and 7 female students-athletes were involved. The percentage for gender is 68.2 percent for male and 31.8 percent represent for female. This indicates that the number of male students-athletes who engage in sport much higher compared to female students-athletes.

The table displays students-athletes' respective classes. There is a student-athlete representative from class 4 Amal 4 whose percentage shows a reading of 4.5 percent. In addition, as many as 91.7 percent which is a total of 2 students-athlete representatives from class 4 Amal 1. Meanwhile, the total participation of student-athletes for both classes 4 Kreatif and 4 Amal 2 is the same, which is a total of 6 people, and the percentage is 27.3 percent. While Class 4 Inovatif showed the highest percentage of 31.8 percent with a total of 7 student athletes involved from that class.

In addition, the table also shows that there are 5 types of sports that student-athletes engaged in. Football showed a higher participation percentage with 68.2 percent with a total of 15 athletes. While the three sports of hockey, netball, and track and field all have the same number of participants which is two for each sport and are each represented by 9.1 percent. Lastly, tenpin bowling, which has just one student-athlete, has the lowest proportion 4.5 percent in overall.
In the achievement column, the table shows there are 4 levels of achievement that student-athletes successfully qualified in the field of sports. As stated in the table above, the district level (MSSK) recorded half of the total number or the highest number with the achievement of 11 people or as much as 50.0 percent. Meanwhile, the second highest level is the national level with a percentage of 27.3 percent which is the involvement of 6 people. Next, the school level (MSSD) also recorded a reading of 18.2 percent, or a total of 4 student-athletes. Lastly, the lowest qualifying percentage reading of 4.5 percent was at the state level (MSSM), where only one athlete competed.

4.2 The level of student-athletes participation in physical activity.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. During the last 7 days, did you walk for at least 10 minutes at a time?</td>
<td>Frequent</td>
<td>100.0</td>
</tr>
<tr>
<td>2. Are you active in a sport at school?</td>
<td>Frequent</td>
<td>100.0</td>
</tr>
<tr>
<td>3. Have you been chosen to represent the school at events?</td>
<td>Sometimes</td>
<td>4.5</td>
</tr>
<tr>
<td>4. Do you attend the school’s organised sports training?</td>
<td>Frequent</td>
<td>100.0</td>
</tr>
<tr>
<td>5. Do you do additional training outside of the school?</td>
<td>Sometimes</td>
<td>22.7</td>
</tr>
<tr>
<td>6. During the last 7 days, did you do vigorous physical activity like heavy lifting, digging, aerobics or fast bicycling?</td>
<td>Sometimes</td>
<td>36.4</td>
</tr>
<tr>
<td>7. Have you ever donated a medal to a school or team during your participation in sports?</td>
<td>Sometimes</td>
<td>31.8</td>
</tr>
</tbody>
</table>

In terms of level of involvement, students-athletes were asked to state how often they walked for 10 minutes at least in the past 7 days and the questions were structured and scaled (never, sometimes, and often). Table 4.2.1 revealed that 100 percent of the students-athletes are frequently walked in their past 7 days ago. This means that most of the students-athletes are actively walking whether they are walking to school, doing training sessions or moving anywhere.

Further analysis was conducted to verify how active students-athletes get themselves involved in sport at school. According to the table above, a total of 22 which means 100 percent student-athletes claimed that they are regularly active in sports at school.

A study topic was posed to determine the frequency of student athletes' selection to ensure their degree of participation in a sporting event. Results showed that majority (95.5%) stated that they were frequently chosen to represent the school in athletic competitions and only 1 person or 4.5 percent student-athletes claimed sometimes.

Based on question no 4, it is revealed that all 100 percent (22) student-athletes who responded to the survey said they frequently participated in school athletic training. The data above inferred
that student athletes commit a significant amount of time to their sports practises. To have more comprehensive information on the extent to which student-athletes do extra training outside of school apart from attending sports training organized by the school, the fifth question displays the results of the survey.

A study topic was posed to know how often student-athletes get extra training other than doing training at school. Table above indicates that 22.7 percent of the 5 student-athletes occasionally participate in outdoor training. While 77.3 percent (17 student athletes) choose to do training outside of school as their additional training. This means all student athletes choose to participate in school training sessions over additional training sessions outside of the institution.

According to the survey that has been done, not all student-athletes do vigorous activities. This is revealed through the table above where 14 students-athletes or 63.3 percent admit that they ‘frequently’ do vigorous activities as asked in the question. While only 8 people or 36.4 percent claimed that they only ‘sometimes’ engaged in vigorous activities such as weightlifting, digging, aerobics or fast cycling. This is because each students-athlete has a different sports background which shaped the type of training sessions, which vary for each sport. The training capacity also depends on the type of sport and position that the student-athletes engaged in.

For the last question, a total of 15 students-athletes claimed to ‘frequently’ donate medals to the school. While the remaining 7 student-athletes responded "sometimes" to answer questions about donating medals to schools or teams during their involvement in sports. In general, student-athletes were significantly active in school and after school due to their roles as sport representatives.

4.3 The students-athletes academic performance and physical activity.

Table 3 Students-athletes’ opinions on academic performance and physical activity.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you agree that involvement in sports affect your academic time</td>
<td>Disagree</td>
<td>20</td>
</tr>
<tr>
<td>management?</td>
<td>Agree</td>
<td>2</td>
</tr>
<tr>
<td>2. Do you agree that your involvement in sports affect your academic</td>
<td>Disagree</td>
<td>15</td>
</tr>
<tr>
<td>performance?</td>
<td>Agree</td>
<td>7</td>
</tr>
<tr>
<td>3. Self-involvements in sport makes students sleepy and tired in class</td>
<td>Disagree</td>
<td>21</td>
</tr>
<tr>
<td>due to intensive training programs.</td>
<td>Agree</td>
<td>1</td>
</tr>
<tr>
<td>4. Involvement in sports makes students easily lose focus while</td>
<td>Disagree</td>
<td>21</td>
</tr>
<tr>
<td>studying.</td>
<td>Agree</td>
<td>1</td>
</tr>
<tr>
<td>5. My involvement in sports made me less discipline in managing my</td>
<td>Disagree</td>
<td>22</td>
</tr>
<tr>
<td>studies and sports.</td>
<td>Agree</td>
<td>2</td>
</tr>
<tr>
<td>6. My involvement in sports made me unable to commit in my studies.</td>
<td>Disagree</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>2</td>
</tr>
<tr>
<td>7. What is your current examination result?</td>
<td>Poor</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>2</td>
</tr>
</tbody>
</table>
In this section, respondents were asked about their perception of academic achievement and physical activity. A total of 9 questions were structured and have fixed answers to be answered according to everyone’s self-perception. The percentage of each question included in the research question is listed in table 4.3.1 above. For the first question, 90.9 percent or 20 student-athletes stated that they did not agree that involvement in sports affected their academic time management compared to 9.1 percent or only 2 people who agreed.

The highest response rate on the second question was 68.2 percent (15 student-athletes), who also said they disagreed with the statement that participation in sports impairs academic achievement. While 31.8 percent or 7 people agreed with the question.

Next, for the third question, almost all of them, 21 student-athletes or 95.5 percent disagreed. Meanwhile, only one person and represented by a percentage of 4.5 percent agreed that self-involvement in sports causes students to become sleepy and fatigue in class due to the intensive training program.

For the next question, the percentage of athletes who agreed was low, only one with a percentage of 4.5 percent. This indicates that a total of 21 student-athletes, or 95.5 percent, ‘disagreed’ with the claim that participating in sports makes students more prone to get distracted while studying. If you look closely, the percentages for both questions 3 and 4 have the same % value, indicating that majority student-athletes ‘disagreed’ that participating in sports made students sleepy, fatigued, and prone to losing focus when studying.

Referring on table above, with regards to disciplinary problems in the management of lessons and sports. 22 athletes, or 100% of the athletes, ‘disagreed’ that participating in sports leads them to be less disciplined in juggling their schoolwork and sports. Furthermore, self-involvement in the world of sports prevents student-athletes from committing to their studies, a statement that received 100% of the respondents "disagree" response choice. As a result, no athlete agrees on the issue. For questions 5 and 6, the percentage of answers for both questions is the same.

Question 7 asks about their exam results. 3 respondents with a percentage of 13.6 choosing ‘less satisfactory/poor’. Regarding their most recent exam results, an average of 17 respondents, or 77.3 percent, selected the ‘moderate/average’ level, while the remaining 2 individuals rated their most current exam results as ‘good’. Obviously, it is evident from the table above that, with a total proportion of 95.5 percent or 21 respondents, nearly all respondents acknowledged that they had failures in the subject. While only one person, 4.5 percent, did not have a failed status in any subjects.

Lastly, 45.5 percent of the 10 respondents agreed that athletics can ensure a better future than education. Meanwhile, 12 respondents, or 54.5 percent, voted not to agree to the statement. This indicates that student-athletes believed their active involvement in sports gave some benefits and recognitions, and bring about a different perceptions with regards to academic achievement alone as a promising future for students.
4.4 Findings

Table 4 Chi-Square Test results

<table>
<thead>
<tr>
<th>Chi-Square Tests</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>145.667</td>
<td>117</td>
<td>.037</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>73.752</td>
<td>117</td>
<td>.999</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>14.934</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 140 cells (100.0%) have expected count less than 5. The minimum expected count is .05.

Results from table 4.4.1 shows that, the value of Chi-Square statistic for Mathematics subject is 145.667. The p-value is .037 (<.05) which mean less than designated alpha level (normally .05). This mean null hypothesis is rejected and alternative hypothesis is accepted. In other words, that there is a significant relationship between physical activity toward academic performance among students-athletes.

Table 5 Chi-Square Test results on subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Significance (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>145.667</td>
<td>117</td>
<td>.037</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>73.752</td>
<td>117</td>
<td>.999</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>14.934</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bahasa Melayu</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>202.650</td>
<td>176</td>
<td>.082</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>90.274</td>
<td>176</td>
<td>.100</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>18.990</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>190.000</td>
<td>192</td>
<td>.527</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>88.661</td>
<td>192</td>
<td>.100</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>17.117</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sejarah</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>114.183</td>
<td>104</td>
<td>.232</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>59.780</td>
<td>104</td>
<td>.100</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>12.892</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pendidikan Islam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>232.750</td>
<td>208</td>
<td>.115</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>94.207</td>
<td>208</td>
<td>.100</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>17.193</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of valid cases</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Chi-Square</td>
<td>196.000</td>
<td>180</td>
<td>.196</td>
</tr>
</tbody>
</table>
Likehood Ratio
Linear-by-Linear Association
N of valid cases

Results from table 4.4.2 show that the value of Chi-Square statistic for Mathematics subject is 145.667. The p-value is .037 (<.05) which mean less than designated alpha level (normally .05). This mean that there is a significant relationship between physical activity toward academic performance among students-athletes on Mathematics subjects though the results of the other subjects shown an increment.

5 Discussion

Student-athletes in the school where the research was carried out are highly active students. Their involvement in physical activities is not only during sports, training, and Physical Education classes but also in their daily lives. Whether their participation is in organized or unorganized activities, they understood the importance of being active for health benefits. Student-athletes understood the roles of PA and sports in maintaining good health. Furthermore, they believed that involvement in sports did not give negative influence towards academic achievements. This is consistent with previous research which shown that physical movement and physical activity assists children, youth and adults in learning and functioning more effectively towards daily routines. Involvement in organized sports activities aid in functional movement skills and strength; and academic, self-regulatory, and general life skills.

Their perceptions towards academic achievement also indicated the benefits they gained from being physically active. PA and sports made them more disciplined, and they understood the importance of academic achievement goes hand in hand with being excellent in sports. Many studies suggested that students participating in vigorous physical activity had stronger academic performances (Pica R., 2004; Grissom J.B., 2005; Tomporowski, Davis, Miller, & Naglieri, 2008) identified that engagement in sports have positive influence on students’ academic performance.

Finally, to further investigate the claim regarding their opinions regarding their academic performance with being physically active, results of this study showed a relationship between physical activity toward academic achievement, in mathematics subject. This is consistent with previous studies by Broh (2002) who identified good results in English and mathematics for students who engaged in sports. From a previous study conducted by Ingegerd (2006) results indicated that, for boys, extended physical activity and additional motor motor training in school had better results in all measured parts of the national mathematics tests. This is relevant with this study as the respondents are 68.2 percent or 15 are male athletes. According to data provided by the school, there was an increase in other subjects as well but not as significant as in Mathematics subject. This is true as sports helps young athletes learn important life skills like goal setting and time management. Statistics have also shown that student-athletes can get better jobs and higher incomes after graduating and also scored higher in tests than those who are not active.
6 Conclusion

The study's interpretation shows that most of the respondents are actively practicing sports at school. While not robust, these findings are consistent with previous studies that have shown a link between physical activity and academic performance. Although students spend a lot of time participating in sports, they still have time to learn. Table 4.4.1 demonstrates that math had a positive effect at the end of the study. According to data from the school, he also noted an increase in the number of successful students. Based on these results, student-athletes should not be discouraged from playing sport in the false belief that it will harm their academic success. Parents, teachers and school administrators should encourage gifted and talented students to play sports. This is in line with Malaysia's national educational goal of producing well-rounded students not only academically but also intellectually, mentally, emotionally and physically.

References


The Implication of Covid-19 Pandemic on Stress Level between Gender in Elite Athletes

Nur Asmidar A Halim¹, Mohad Anizu Mohd Noor², Jamatul Shahidah Shaari³, Vincent Parnabas⁴, Ahmad Fikri Mohd Kassim⁵, Wahidah Tumijan⁶, Sharifah Maimunah Syed Mud Puad⁷, Jefri Ngadirin⁸, Azrul Hisyam Abd Jalil⁹

¹nurasmidar@uitm.edu.my, ²mohadanizu@uitm.edu.my, ³jamatul@uitm.edu.my, ⁴vincent@uitm.edu.my, ⁵ahmadfikri@uitm.edu.my, ⁶wahidah06@uitm.edu.my, ⁷jefri@nsc.gov.my, ⁸azrulhisyam@nsc.gov.my

Faculty of Sport Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor Darul Ehsan, Malaysia¹, Faculty of Sport Science and Recreation, Universiti Teknologi MARA, 02600 Arau, Perlis.Perlis Indera Kayangan,Malaysia², Faculty of Sport Science and Recreation, Universiti Teknologi MARA, 70300 Seremban, Negeri Sembilan Darul Khusus, Malaysia³, National Sport Council, 57000 Kuala Lumpur,Wilayah Persekutuan Kuala Lumpur⁴

Abstract. Malaysia is one of the hardest-hit countries by the COVID-19 crisis, which has had a negative impact on the sports world. Sustained inactivity and lack of face-to-face interaction between teammates and coaches can have adverse effects on athletes. Taking stress-related performance factors into account, this study aimed to investigate the impact of the COVID-19 pandemic on perceived stress levels among elite male and female athletes. 139 male (n=63) and female (n=76) competitive athletes representing Malaysia enrolled in the PODIUM program completed the Perceived Stress Scale 10 (PSS-10) and have answered the questionnaire. (1983) was adopted. An independent t-test showed a significant difference between male and female elite athletes in terms of perceived stress (t(89.53) = -2.16, p = 0.033). Female elite athletes (M=20.13, SD= 5.78) reported feeling higher levels of stress compared to males (M=18.38, SD=3.02). These findings may raise awareness of the impact of COVID-19 on elite athletes, suggesting training programs and healthy behaviors as healthy habits for healthy well-being during the pandemic crisis. It may suggest that it should be adopted. The use of specific health protocols for female athletes should be encouraged.

Keywords: Elite Athletes, Male Athletes, Female Athletes, Perceived Stress

1 Introduction

In December 2019, a new type of coronavirus pneumonia broke out in China. It spread all over the country and around the world. The novel coronavirus disease (COVID-19), named after the World Health Organization (WHO), is spreading rapidly around the world, causing a detrimental impact on human lives due to the pandemic.
Its impact is reflected in morbidity and mortality, economic losses, and drastic changes in lifestyle and other normal daily activities [1]. Undoubtedly, the impact of the pandemic has had many effects on human behavior and institutions, and will likely continue for some time. The elderly, adolescents, health care workers, people with pre-existing mental illness, and athletes are also affected by this crisis [2]. This crisis has also affected the sports sector and the lives, plans and habits of athletes. Athletes reported challenges and problems related to social isolation, career interruptions, uncertainty about eligibility, effective training environments, limited and often denied access to partners and teammates [3]. Many athletes are unable to complete sport-specific training due to travel restrictions and sports facility closures. Some sports already offer at-home training programs for their athletes or host video conferences for his coach-led online training. However, due to logistical limitations and the difficulty of implementing sport-specific training strategies, it is not possible to provide a training solution that is applicable in normal circumstances. It is often difficult. Lockdowns, training, disrupted game schedules, and illness itself all increase anxiety and fear, leading to serious mental and mental health problems.

These psychological effects have been observed in different populations around the world during the COVID-19 pandemic. Like all mental health problems, stress, depression, and anxiety can become chronic and impair functioning in social and occupational areas [1]. Athletes, like the general public, are vulnerable to the negative psychological effects of COVID-19, including stress, anxiety, and depression [4]. Stress occurs when you are under too much pressure and become physically or mentally exhausted. The end result is long-term health hazards. Second, anger, irritation, mood swings, and frustration are examples of emotional cues. In addition, stress can cause physical symptoms such as high blood pressure, weight fluctuations, frequent colds and infections, changes in the menstrual cycle, and libido. Last but not least, inadequate self-care, lack of time for productive activities, and use of drugs and alcohol to cope are all signs of behavior to watch out for [8]. Studies suggest that there may be biological sex differences in the incidence and onset of COVID-19 [1]. A previous study found that post-traumatic stress symptoms were lower in male athletes than in female athletes [5]. However, there are few data on the prevalence of anxiety, depression and stress among different gender identity groups during the current COVID-19 pandemic [1]. Therefore, the aim of this study was to determine its association with COVID-19. Pandemic tensions between elite male and female athletes in Malaysia.

2 Methods

Using a descriptive correlation design, the impact of the COVID-19 pandemic on stress levels between males and females in top athletes was investigated. The cross-sectional survey was conducted about a week after the athletes visited the National Sports Council's "quarantine" camp in Malaysia. Informed consent was obtained from all athletes, data were processed anonymously, and ethical approval was obtained from the university.

2.1 Recruitment and Sample Size
The study was conducted with 139 Malaysian Elite athletes of both genders (male, n=76, female n=63). The majority of the elite athletes who responded to participate in the study were aged 22-25 years old (n=36, 25.90%) followed by aged 18-21 years old (n=31, 22.3%), aged 26-29 years old (n=30, 21.6%), aged 30-33 years old (n=20, 14.4%), aged more than 33 years old (n=12, 8.6%) and lastly less than 18 years old (n=10, 7.2%) and 34.5% have experienced more than 8 years of representing Malaysia in international level (n=48).

2.2 Instruments

The instruments that used in this study were Perceived Stress Scale questionnaire (PSS-10) from [6] measure stress level. In PSS-10, 10 items in questionnaire ask you about your feelings and thoughts during the last month. It is a measure of the degree to which situations in one’s life are appraised as stressful. There are 4 scales that are also included in this questionnaire which are 0) never 1) almost never 2) sometimes 3) fairly often and lastly is 4) very often.

3 Result

Table 1 reported the descriptive results of the demographic profile of the respondents. The majority of the elite athletes who responded to participate in the study were aged 22-25 years old (n=36, 25.90%). In addition, 54.70% are male (n=76), 64.70% are involved in the individual type of sports (n=76), and 34.5% have experienced more than 8 years of representing Malaysia (n=48). Table 2 reported the level of stress among elite athletes. It showed that majority of the athletes have a moderate level of stress (n=116, 83.50%), followed by 11.50% with low-level stress (n=16) and 5.00% have a high level of stress (n=7). Table 3 showed that there is a significant difference in perceived stress between gender in elite athletes. Female (M=20.13, SD=5.78) elite athletes reported having high perceived stress compared to males (M=18.38, SD=3.02), t (89.53) =-2.16, p=0.033.

Table 1 Descriptive results of demographic profile

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;18 years old</td>
<td>10</td>
<td>7.2</td>
</tr>
<tr>
<td>18-21 years old</td>
<td>31</td>
<td>22.3</td>
</tr>
<tr>
<td>22-25 years old</td>
<td>36</td>
<td>25.9</td>
</tr>
<tr>
<td>26-29 years old</td>
<td>30</td>
<td>21.6</td>
</tr>
<tr>
<td>30-33 years old</td>
<td>20</td>
<td>14.4</td>
</tr>
<tr>
<td>&gt;33 years old</td>
<td>12</td>
<td>8.6</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>76</td>
<td>54.7</td>
</tr>
<tr>
<td>Female</td>
<td>63</td>
<td>45.3</td>
</tr>
<tr>
<td>&lt;1 year</td>
<td>7</td>
<td>5.0</td>
</tr>
<tr>
<td>1-2 years</td>
<td>10</td>
<td>7.2</td>
</tr>
<tr>
<td>Years representing Malaysia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4 years</td>
<td>36</td>
<td>25.9</td>
</tr>
<tr>
<td>5-6 years</td>
<td>21</td>
<td>15.1</td>
</tr>
<tr>
<td>7-8 years</td>
<td>17</td>
<td>12.2</td>
</tr>
<tr>
<td>&gt;8 years</td>
<td>48</td>
<td>34.5</td>
</tr>
</tbody>
</table>
Table 2 Descriptive result of perceived stress scale

<table>
<thead>
<tr>
<th>Level of stress</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>16</td>
<td>11.50</td>
</tr>
<tr>
<td>Moderate</td>
<td>116</td>
<td>83.50</td>
</tr>
<tr>
<td>High</td>
<td>7</td>
<td>5.00</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>19.17(4.55)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Comparison of perceived stress scale between gender in elite athletes

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>76</td>
<td>18.38</td>
<td>3.02</td>
<td>-2.16</td>
<td>89.5</td>
<td>.033*</td>
</tr>
<tr>
<td>Female</td>
<td>63</td>
<td>20.13</td>
<td>5.78</td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

4 Discussion

The purpose of this study was to investigate the impact of COVID-19 on stress levels among male and female elite athletes. Regarding the current results of this study, the majority of athletes had moderate stress levels, 83.50% had low stress levels, followed by him with 11.50% and 5.00% with low stress levels. big straight. This finding is supported by the mention of [7] that repeatedly subjecting an athlete to the same training program can lead to adaptations of the stress response system and a reduction in the resulting ratings. negative consciousness. During the pandemic, most athletes have been forced to train alone and unsupervised at home. Some sports already offer at-home training programs for their athletes or host video conferences for his coach-led online training. However, due to logistical limitations and the difficulty of implementing sport-specific training strategies, it is not possible to provide a training his solution that is applicable in normal circumstances. It is often difficult. Withdrawal restrictions, training breaks, match schedules, and illness itself contribute to increased stress levels. A recent comparison of gender-related stress levels among elite athletes during the COVID-19 pandemic showed significant differences in perceptions of gender-related stress among elite athletes. Overall, female athletes performed better than male athletes at self-reported stress levels. This finding is supported by previous studies showing that women experience stress more frequently than men, possibly due to differences in their biological responses to stressors. Candor, self-
concept, or coping style [7]. As confirmed by previous research, male athletes are more likely than female athletes to use avoidable coping strategies, focusing on actively eliminating thoughts and avoiding actions. Situations reminiscent of stressful situations [7,9].

5 Conclusion
The results of this study show differences in gender identity associated with the prevalence of anxiety, depression, and stress during the COVID-19 pandemic. Differences in the psychological impact of the pandemic compared to different gender identity groups underscore the need for careful consideration of possible factors that may explain cisnormativity theories and prejudices. Gender stakeholders in formulating pandemic health policies and interventions to address gender issues. Identity-related inequalities will be more efficient in the future. In summary, long-term psychological effects need to be investigated to determine how starting sport after a period of isolation changes mental health status.

6 Acknowledgements
The author would like to thank National Sports Council, Malaysia for providing the industry grant to complete this study. The authors would also like to express their gratitude to Universiti Teknologi MARA especially Faculty of Sports Science and Recreation as well as the participants for the support and cooperation in completing this study.

References


Effect of Training Status on Exercise Addiction Risk and Health among Athletes

Suhana Aiman¹, Zuhnun Akmal Kamari², Nur Asmidar A. Halim³, Sarina Md Yusof⁴, Jamatul Shahidah Shaari⁵
{suhana083@uitm.edu.my¹, zuhnunakmal08@gmail.com², nurasmidar@uitm.edu.my³}

Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA², Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA³, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, MALAYSIA, Faculty of Sports Science and Recreation, Universiti Teknologi MARA³, Faculty of Sports Science and Recreation, Universiti Teknologi MARA⁵

Abstract. The purpose of this study was to determine the effect of training status on risk of exercise addiction and health among athletes. This study involved 242 athletes, aged between 18 to 21 years old. Their training status (frequency, volume, and experience), exercise addiction risk and health status were examined. Results of this study indicated that there was nothing important effects of training frequency and experience on exercise addiction risk but there was a significant effect of Training amounts to the risk of training addiction. The results of this study also showed no significant effect of training status on the health of the athletes. In conclusion, training status does not affect the exercise addiction risk and health of the athletes.

Keywords: Training status, exercise addiction risk, health status, athletes

1 Introduction

Exercise is a good activity for health. It is undeniable that exercise will affect physical and mental health [1]. Exercise will give many benefits to the participants. Exercise also involves Physical activity that reduces the risk of lifestyle-related diseases, improves physical function and improves quality of life [2]. However, the amount of exercise that exceeds the limit will result in adverse health effects such as B. risk of sports addiction [3].

Addiction is the desire to do something that is difficult to control or stop Exercise addiction can be conceptualized as a behavioral addiction in which a person develops an unhealthy obsession with exercise or physical activity [3]. Physical activity addiction has been described as a pathological pattern of behavior in which the loss of control over regular physical activity manifests as a compulsive urge to exercise or a symptom of addiction that can affect personal and/or social life. have a negative impact on [4]. Sports addiction can be seen with excessive
and compulsive movement patterns which eventually create physical and psychological stress [5,6]. Experienced negative results are the first thing in distinguishing between healthy and unhealthy exercise patterns [4]. There are other terminologies used to describe the same phenomenon such as exercise dependence, obligatory exercise, compulsive exercise and excessive exercise [7].

Exercise addiction usually begins with a desire for physical fitness. Core symptoms of exercise addiction are exaggerated exercise volumes, lack of control, withdrawal symptoms and conflicts with family and friends [8]. There is large variability among studies on the prevalence of risk of exercise addiction [4]. Previous studies indicated that the risk of exercise addiction is greater in athletes than non-athletes, with a prevalence rate of up to >40% [9]. Athletes are a group of people who have the passion to exercise because they have goals in sports. Exercise is very important for them to maintain fitness and to meet the demand during competition. More current study among endurance cyclists showed contradicting finding, where they found that exercise addiction risk was not associated with training [10].

Sport participation provides health related benefits [11]. Previous findings indicated that athletes were reported better health related quality of life than nonathletes [12, 13]. Frequency and volume of the sports practice and level of competition can impact the quality of life of an individual [13]. It is unknown whether greater health benefits will be obtained at higher exercise volumes [14]. Further studies should be conducted to determine the influence of training frequency and volume on health related quality of life. Therefore, this study was conducted to determine the effect of training status on exercise addiction risk and health among athletes.

2 Methodology

2.1 Participants

The total number of participants in this study was 242 athletes. The participants aged between 18 to 21 years old. They were from various type of sports. All participants were state athletes underwent training for national level competition. All participants were informed about the purpose and procedures of this study. This study has been approved by the Research Ethics Committee, Universiti Teknologi MARA.

2.2 Questionnaire

The questionnaire consists of four sections. Section A was demographic data (age, gender and sports). Section B was training status. The training status includes frequency and volume of training, and training experience [10]. Section C was exercise addiction risk and Section D was health status (physical and mental health). The online questionnaire was prepared using the Google Form and distributed to the participants via instant message (WhatsApp application).

The risk of sports addiction was measured using the Exercise Addiction Inventory (EAI) [15]. Responses were rated on a 5-point Likert scale. These are "Strongly Disagree", "Disagree", "Neutral", "Agree" and "Strongly Agree". The method of calculating the total score for risk of exercise addiction was to add all six questions. This total score was very important in
determining whether a person was addicted or not to exercise. An EAI score greater than 24 is considered at risk for exercise addiction. A score of 13-23 should indicate a symptomatic person and a score of 0-12 should indicate an asymptomatic person.

2.3 Statistical Analysis

The statistical analysis used in this study were descriptive and inferential analyses. Descriptive analysis was used to analyse the demographic data, training status, exercise addiction risk and health status. Inferential analysis used in this study was Pearson Correlation Coefficient. It was used to determine on exercise addiction risk and the effect of training status on health. All statistical analyses were conducted using the IBM Statistical Package for the Social Science (SPSS, version 20.0).

3 Results

Two hundred and forty two (n = 242) athletes participated in this study. There were 129 (53.3%) male athletes and 113 (46.7%) female athletes. Mean age of the athletes was 19.07 ± 1.52 years. These athletes were from team sport and individual sport including volleyball (8.7%), football (8.3%), track and field (7.0%), taekwondo (5.8%), cricket (5.4%), basketball (5.0%), futsal (5.0%), badminton (5.0%), judo (5.0%), netball (4.5%), handball (4.1%), cycling (4.1%), rugby (3.7%), sepak takraw (3.7%), tennis (3.3%), squash (2.9%), swimming (2.9%), bowling (2.5%), silat (2.5%), shooting (2.5%), weight lifting (2.1%), wushu (2.2%), petanque (1.7%), diving (1.2%) and boxing (1.2%).

2.1 Training Status, Exercise Addiction Risk and Health Status

Table 1. Training status, exercise addiction risk and health status of athletes.

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency (days/week)</td>
<td>4.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Volume (hours/week)</td>
<td>12.19</td>
<td>2.31</td>
</tr>
<tr>
<td>Experience (years)</td>
<td>7.94</td>
<td>1.30</td>
</tr>
<tr>
<td>Exercise addiction risk</td>
<td>26.13</td>
<td>1.54</td>
</tr>
<tr>
<td>Health status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>51.40</td>
<td>5.12</td>
</tr>
<tr>
<td>MCS</td>
<td>53.48</td>
<td>3.72</td>
</tr>
</tbody>
</table>

Table 1 showed the training status, exercise addiction risk and health status of athletes. Majority of athletes (52.9%) trained five days a week with mean training frequency was 4.50 ± 0.50 days per week. Most of them (40.5%) trained 12 hours per week with mean training volume was 12.19 ± 2.31 hours per week. Most of the athletes (44.2%) have 6 years of experience with mean experience was 7.94 ± 1.30 years. This study also found that 205 (84.7%) athletes were at risk of exercise addiction. Their mean exercise addiction risk was 26.13 ± 1.54. However,
they have good health status where their PSC and MSC scores were above 50. Mean PSC score was $51.40 \pm 5.12$ and mean MSC score was $53.48 \pm 3.72$.

2.2 Effect of Training Status on Exercise Addiction Risk and Health

Table 2. Effect of training status on exercise addiction risk and health of the athletes.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Exercise Addiction Risk</th>
<th>Health Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PSC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MSC</td>
</tr>
<tr>
<td>Training status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency (days/week)</td>
<td>0.110</td>
<td>- 0.035</td>
</tr>
<tr>
<td>Volume (hours/week)</td>
<td>- 0.210*</td>
<td>- 0.058</td>
</tr>
<tr>
<td>Experience (years)</td>
<td>- 0.075</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 0.024</td>
</tr>
</tbody>
</table>

* $p < 0.05$

Table 2 showed the effect of training status on exercise addiction risk and health of the athletes. Result of the study indicated that there was no significant correlation between training frequency and exercise addiction risk ($r = 0.110, p = 0.862$). Meanwhile, a significant negative low correlation was found between training volume and exercise addiction risk ($r = -0.210, p = 0.001$). Result also showed that there was no significant correlation between experience and exercise addiction risk ($r = -0.075, p = 0.244$). Findings of this study indicated that there was no significant correlation between training frequency ($r = -0.107, p = 0.097$), training volume ($r = -0.058, p = 0.367$), and experience ($r = 0.007, p = 0.919$) with PSC. There was also no significant correlation between training frequency ($r = -0.107, p = 0.097$), training volume ($r = -0.024, p = 0.713$), and experience ($r = 0.021, p = 0.743$) with MSC.

4 Discussion

Finding of this study demonstrated that most of the athletes (84.71% was threatened with sports addiction. In a systematic review, the EAI identified those at high risk for exercise addiction among endurance athletes (14.2%), followed by ball games (10.4%), gym-going (8.2%), and strength sports (6.4%). I discovered that whereas in the general population he has a reported frequency of 3.0%. [17]. Previous studies on elite athletes and competitive athletes reported significantly higher prevalence of increased risk for exercise addiction [18, 19, 20].

Study among Australian elite athletes shown that 34% of the athletes were classified as having exercise dependence [20]. Results with Italian athletes also showed a similar result, with 18.3% of competitive athletes were at risk for exercise dependence symptoms [19].

Most of the athletes in this study have high EAI scores probably due to the different interpretation of instrumentation’s items [4, 18]. They would give maximum score (strongly agree) for most of the items because they were in the midst of preparation for the upcoming competition. They spent more time on training to enhance their performance in order to win the
competition. Furthermore, they were away from their family/partner and could not spend more
time with them. These athletes may experience conflict between their training and family/partner. Data obtained using validated instruments need to be followed up with interviews to elaborate and confirm individual negative consequences [4].

This study found that there was no effect of training status on exercise addiction risk. Although there was a significant correlation between training volume and exercise addiction risk, the result showed negative low correlation. The athletes with high volume of training have lower EAI scores. This result aligned with previous study indicated that low link of training volume and EAI scores [23]. Their study suggest that volume of exercise did not emerge as an index of susceptibility to exercise addiction. Study among endurance cyclists shown that risk of exercise addiction was not associated with training status [8]. Exercise excessively does not necessarily relate to exercise addiction [4]. Athletes involved in this study were trained following their training schedule to prepared themselves for competition. The frequency and volume of their training would be higher than nonathletes.

The present study showed that the athletes have good health status. They have good physical and mental health functioning. Previous study indicated that athletes have higher scores on physical function, general health, social functioning, and mental health than nonathletes [11]. However, this study found that there was no effect of training status on health. The training frequency, training volume and experience did not correlate with PSC and MSC scores. There was a trend in our data that showed athletes with higher training frequency and volume have lower PSC and MSC scores. A further investigation was needed to confirm this finding. This result could be influenced by some of the athletes may have injury or have history of injury.

5 Conclusion

The present study demonstrated that majority of the athletes at risk of exercise addiction. On the other hand, the athletes have good health status, both in physical and mental health function. The involvement in sport may have influenced their health status. The current study also revealed that training status does not affect the exercise addiction risk and health of the athletes. Further studies should performed to determine other factors that will affect the exercise addiction risk and health of the athletes.

References


Types of Sport Motivation on Malaysian Athletes

Vincent Parnabas 1, Ochillochandern Gittom Angang 2, Mohad Anizu Mohd Nor 3

{vincent@uitm.edu.my 1, ochillochandern_gittom@yahoo.com 2, mohadanizu@uitm.edu.my 3}

Faculty of Sport Science and Recreation, Universiti Teknologi Mara (UiTM) 1, Faculty of Sport Science and Recreation, Universiti Teknologi Mara (UiTM) 2, Faculty of Sport Science and Recreation, Universiti Teknologi Mara (UiTM) 3

Abstract. Motivation determines many aspects of behavior including motives of taking part in physical activities, in order to maintain physical and mental health. The aim of this study is to differentiate the types of motivation between gender. Sports Motivation Scale (SMS-28), which consist of intrinsic, extrinsic and amotivation, was used in this study. The sample of this study consists of 300 athletes of Malaysia. The result revealed the highest mean of sports motivation is extrinsic (4.86), followed by intrinsic (4.64) and amotivation (4.13). Besides that, there is no significant differences exist between gender on extrinsic, intrinsic and amotivation. This result strongly supported by a few previous study that there isn’t any significant difference in the types of sports motivation between gender when involved in physical activities. Sport psychologist or coaches can use this study to provide adequate and variety of sports programmes to maintain interest among participants based on their motives.

Keywords: Motivation, Intrinsic, Extrinsic, Amotivation.

1 Introduction

Motivation is an internal energy force that determines all aspects of the behavior and it initiates, guides, and maintains goal-oriented behaviors (1). Besides that, motivation also considered as an important field in psychology and physical activities in terms of engagement, performance and health (2). Therefore, sports motivation plays an important role in achieving better performance among athletes.

Based on the view by (3) there are three types of motivation, which are extrinsic, intrinsic and amotivation. Intrinsic motivation is related to enjoys participating in sports to seek pleasure (4). In other words intrinsic motivation oriented person taking part in physical activity or sports for internal benefit such as enjoyment, fun or satisfaction. According to (5), intrinsic motivation play an important role in making decisions, interact and perceive things to engage in an activity for pleasure, fun and excitement that comes from achieving their objectives and goals in their performance. Although, intrinsic motivation is regarded as the greatest source of motivation, it is linked to a number of advantages, including increased enjoyment and...
psychological happiness (6). Furthermore, educators consider intrinsic motivation is better than extrinsic motivation since it comes from the internal factors to participate in sports (7). While extrinsic motivation involves taking part in sport for external factors such as money, medals of excellence, grade, as well as titles given by certain partie, to achieve the goal and objectives (7, 4).

Contradictory, amotivation refers to an athlete that lack of motivation and unwillingness toward their sports involvement, where completely absence of intrinsic and extrinsic motivation (4). According to (8), amotivation behavior occurs when an athlete lacks sense of curiosity about their surroundings. According to the study, athletes are neither intrinsically nor extrinsically driven because they see a lack of contingency between their behavior and outcomes. Amotivation formed in many ways similar to learned helplessness. For example, an individual with no sense of purpose and expecting no reward would automatically change their course of events possibly (8). Aside from that, (8) claimed that this condition of amotivation have a high tendency to develop feelings of frustration by an unpleasant outcomes. Therefore this phrase is used to describe a person who lacks of motivation. Psychologically when a person are unable to recognise his link between the actions and the results of his efforts, he can easily get demotivated. Thus, (9) also have mention that this types of personally will result in lowering self-esteem. At the end, they may blame themselves for the negatives outcomes, feeling guilty and depress.

One of the theory which discussed the importance of motivation on human behaviour is Maslow’s theory of the hierarchy of needs (10) He suggests that human needs are arranged in a series of levels, called as hierarchy of importance. The hierarchy is usually shown as ranging through five main levels, from the lowest level which is physiological needs, through safety needs, love (social) needs and esteem needs, to the highest need for self-actualization (Table 1). The physiological needs are at the bottom of Maslow's hierarchy. These are the basic requirements that individuals require to fulfilled, such as access to air, water, food, rest and health. Maslow's hierarchy of requirements lists safety as the second most important need. Individuals need to feel safe, have a place to live and a feeling of consistency. Maslow's need for love and belongingness, which is based on physiological and safety requirements, applies to social involvement. Self-esteem and emotions of respect, admiration and recognition are the next level in the hierarchy of needs. Self-actualization or realising one's maximum capabilities for achievement, is at the top of Maslow's hierarchical pyramid. Once a lower need has been satisfied, it no longer acts as a strong motivator. The needs of the next higher level in the hierarchy demand satisfaction and become the motivating influence. In other words, only unsatisfied needs motivate a person. Individuals advance up the hierarchy as each lower-level need becomes satisfied. Therefore, to provide motivation for a change in behaviour, the athletes must direct attention to the next higher level of needs that seek satisfaction. Remuneration, food, fringe benefits and working conditions are examples of basic material necessities for welfare (11). (10) believes that deprivation of higher order demands may be used to motivate people. Sports motivation level results when individual needs are already meet and this factor related to the level of motivating or amotivation associated with initiating or persist in goal-directed behaviour (12).
A few studies had been done on the comparison of gender on types of sport motivation. Males placed a higher value on advantages to sport practice such as rewards than female participants (13). Thus, (14) found that female athletes in Norway had higher intrinsic motives for participating in sports than male athletes. Contradictory, a few researchers have shown that male participants were more intrinsically motivated especially on physical exercise than female (15).

However, similar study carried out by (16) and (17) found no significant difference on types of sports motivation among the male and the females when involve sports activities. In addition, (18) also found the same result and conclude that the level of sports motivation among athlete was no significant different between male and female athlete. It is clear that researchers found contradictory result when estimate types of motivation on taking part in sports between gender. Therefore, there is need more research to determine whether there exist differences on types of motivation among male and females.

The purpose of this research is to compare the types of motivation dominated on athletes to take part in sports, which is intrinsic, extrinsic and amotivation. Besides that, this research also compare the types of motivation between gender.

2 Methods

Sample

The State Sports Council in Sabah, Malaysia, has been chosen to be part of the target population. The latest update data on June 5, 2021, by the Sabah State Sports Council, showed that the total number of Sabah athletes actively registered under the Statistics of Capable Athletes by Program was about 1375 for the SUKMA XX Johor 2020 game as recorded in the year 2020. Stratified simple random sampling was used in this study to select the sample. The sample size was selected according to the (19) sample model table, which was 300 athletes.
The sample size of 300 athletes was drawn from the population of the 1375 Sabah athletes. The sample for gender include in this study for male athlete were (165 athletes out of 756) and female (135 athletes out of 619), which can be referred to in Table 1 below.

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of Athlete</th>
<th>Sample</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>165</td>
<td>756</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>135</td>
<td>619</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>1375</td>
<td></td>
</tr>
</tbody>
</table>

Instrumentation

The sports motivation scales (SMS-28) by (20), which consist of 28 items measuring intrinsic, extrinsic and amotivation, was used in this study. Previous research (20) has shown that the coefficients alpha for the subscales ranges from .58 to .84.

3 Results

Reliability Test

The Cronbach's Alpha value ranges between $0.8 > \alpha \geq 0.7$ Intrinsic Motivation, Extrinsic Motivation and Amotivation shown in Table 2.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cronbach's Alpha</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic Motivation</td>
<td>.734</td>
<td>12</td>
</tr>
<tr>
<td>Extrinsic Motivation</td>
<td>.742</td>
<td>12</td>
</tr>
<tr>
<td>Amotivation</td>
<td>.754</td>
<td>4</td>
</tr>
</tbody>
</table>

Types of Sports Motivation

Figure 2 shows there are differences between the mean of all the types of sports motivation among Sabah, Malaysian athletes. From the figure below, the highest mean of the types of sports motivation was extrinsic motivation (4.86), followed by intrinsic motivation (4.64), and the lowest level is the amotivation, which is (4.13).
Intrinsic Motivation between Male and Female

The group variances for intrinsic motivation preferred between males and females treated as equal when F-tests (0.017) are statistically significant at the p-value 0.896 greater than 0.05. Thus, we conclude that there is no significant differences on Intrinsic Motivation among Male and Female of Sabah athletes. The ability to assume and not is evident in both columns’ equal variance of the above figure. We can see the equality in the value of the t-statistic 1.269 in the final column, and the degrees of freedom (df) 286.347 have bit change. Since the last column's p-value is similar to the first column's p-value of 0.206, we assume that although t-statistics have been a few effect reductions on the final column, the p-value is considered statistically significant at the level of greater than 0.05 (Table 3).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Male</td>
<td>.017</td>
<td>.896</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Intrinsic Motivation between Male and Female

Extrinsic Motivation between Male and Female

The group variances for extrinsic motivation preferred between male and female treated as equal when F-tests (3.207) is statistically significant at the p-value 0.074 greater than 0.05. Thus, we conclude that there is no significant differences of Extrinsic Motivation preferred between Male and Female of Sabah athletes. The ability to assume and not is evident in both columns’ equal variance of the above figure. We can see the equality in the value of the t-statistic 1.247 in the final column, and the degrees of freedom (df) 269.036 have bit change. Since the last column's p-value of 0.213 is higher than the first column's p-value of 0.207, we
assume that although have been a few effect changes on the final column, the p-value is considered statistically significant at the level of greater than 0.05 (Table 4).

Table 4. Levene’s Test for Extrinsic Motivation between Male and Female

<table>
<thead>
<tr>
<th>Extrinsic Motivation</th>
<th>Gender</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td></td>
<td>3.207</td>
<td>.074</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amotivation between Male and Female

The group variances for Amotivation preferred between male and female treated as equal when F-tests (0.146) is statistically significant at the p-value 0.703 greater than 0.05. Thus, we conclude that there is no significant differences of Amotivation preferred between Male and Female of Sabah athletes. The ability to assume and not is evident in both columns’ equal variance of the above figure. We can see the equality in the value of the t-statistic -0.598 in the final column, and the degrees of freedom (df) 283.627 have bit change. Since the last column's p-value of 0.550 is higher than the first column's p-value of 0.549, we assume that although have been a few effect changes on the final column, the p-value is considered statistically significant at the level of greater than 0.05 (Table 5).

Table 5. Levene’s Test for Amotivation between Male and Female

<table>
<thead>
<tr>
<th>Amotivation</th>
<th>Gender</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td></td>
<td>.146</td>
<td>.703</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 Discussion

Types of Sports Motivation

In this current study, the highest mean score on types of sports motivation among Sabah, Malaysian athletes is extrinsic motivation. Next is intrinsic motivation and the lowest mean score is amotivation among Sabah, Malaysian athletes.

The highest sport motivation of extrinsic could be due to the athlete's age. The Sabah, Malaysian athletes chosen for this study range in age from 18 to 28 years old. In various sports, an athlete's age group may be the reason he or she is extrinsic. The older athletes have a higher motivation to play sports for the sake of popularity, prizes and money. According to (21), the population's intrinsic motivation fluctuates with age. Middle-aged folks were shown to be more extrinsic than younger adults who enjoy sports. The second highest mean score among Sabah, Malaysian athletes is intrinsic motivation.
The lowest mean score of the types of sports motivation among Sabah, Malaysia athletes is amotivation. This shows that some of the athletes' lack of motivation might be because they are not interested in the type of sports they are involved in, which makes the athlete lose confidence in their sport participation, especially during competition. The previous study stated that the amotivation behaviour shows that the athlete is not interested in their sports participation and does not have confidence in what they have participated in (22).

Types of Sports Motivation between Male and Female

The result of the study shows that there is no significant difference in the types of sports motivation (intrinsic, extrinsic and amotivation) among male and female Sabah, Malaysian athletes. This current result is strongly supported by past studies. The past study by (16) found no significant difference in the types of sports motivation among males and females when involved in sports. In addition, (17) also found there is no significant difference in types of sports motivation between male and female athletes. He reported that motivation is a direction of attitude for people who want to be successful in life, especially when involved in sports activities, whether they are males or females. A similar study conducted by (18) found the same result and concluded that the types of sports motivation among athletes was no different between male and female athletes.

5 Conclusion

The study findings found no significant differences in types of sports motivation preferred by gender. In this current study, the highest mean types of sports motivation among athletes is extrinsic motivation, followed by intrinsic motivation and amotivation. Besides that, the result of the study shows that there is no significant difference in the types of sports motivation (intrinsic, extrinsic and amotivation) among male and female Sabah, Malaysian athletes. Since the result of this research revealed that the main motives for athletes to take part in sport is for extrinsic motivation, Sport psychologist and coaches’ should provide adequate and variety of sports programmes to maintain extrinsic interest among athletes. Sport psychologist and coaches’ should develop athletes’ behavior, competencies, be creative, set goals, grow interests, make plans, develop talents and boosts engagement in sport by using extrinsic motivation. This can help the athletes to improve their level of motivation and enhanced their sport performance. Sport Psychologist and coaches need to understand each of their athletes' needs and desires to improve the athlete's level of sports motivation. The coaches or physical education teachers also can use this study to explain the importance of sports motivation among their athletes.

6 References


An Overview Physical Activity Level of The Universitas Negeri Surabaya Academic Community in Supporting Healthy Campus

1st Abdul Rahman Syam Tuasikal1, 2nd Mochamad Purnomo2, 3rd Kunjung Ashadi3, 4th Nurhasan4
{rachmantuasikal@unesa.ac.id1, mochamadpurnomo@unesa.ac.id2, kunjungashadi@unesa.ac.id3, nurhasan@unesa.ac.id4}
Universitas Negeri Surabaya1, Universitas Negeri Surabaya2, Universitas Negeri Surabaya3, Universitas Negeri Surabaya4

Abstract. The purpose of this study was to determine the level of physical activity of the academic community (lecturers and employees) of Surabaya State University in each faculty. A total of 2698 students and 355 lecturers of surabaya state university participated as subjects in this study. The collection of research data was carried out in August 2021 when students filled out the Study Plan Card online. The research instrument used the GPAQ (Global Physical Activity Questionnaire) questionnaire to measure the level of physical activity. The results showed that students of the Faculty of Sports Science had the highest Mets score with a score of 3922.61 minutes / week. The physical activity category of students obtained results of 14% in the high category, 45% in the medium category and 14% in the high category. Meanwhile, the physical activity category of lecturers obtained results of 11% in the high category, 52% in the medium category and 37% in the low category. In conclusion, the majority of the level of physical activity of lecturers and employees of Surabaya State University is in the medium category which leads to the low category.

Keywords: Physical Activity, Student, Lecturer, Universitas Negeri Surabaya.

1 Introduction

A healthy campus is one of the programs on health promotion in the campus environment to realize a comfortable and healthy learning process [1]. The concept of Health Promotion originated from the Charter of Ottawa (1986), which was compiled at the first International Conference organized by the World Health Organization (WHO) [2]. Promoting health is not only the responsibility of the health sector, but also the responsibility of society in general in promoting a healthy lifestyle towards well-being. Health is a process that allows people to be able to control their health conditions to improve their health conditions [3]. Control over health can be done if a person or group of people can create a healthy environment both physically, mentally and socially [4].

Health promotion can be done by providing policy rules that support the creation of a healthy environment. A rule-based approach to policy can be applied in schools, workplaces, markets, residential areas, and others to address priority health issues [5]. Surabaya State
University is one of the campuses in the city of Surabaya that is quite concerned about fitness and physical activity, it is proven that there are 4 study programs that are concerned with the fields of sports and physical activity. Physical activity is different from sports practice. Physical activity is any body movement produced by skeletal muscles and expends energy which includes daily activities such as doing work according to their profession, free time, or active travel [6]. While the practice of sports is part of a planned, structured and repetitive physical activity that has certain goals both to maintain physical fitness and achieve achievements [7][8]. Less physical activity is the cause of 6% of deaths in the world and is the number 4 cause of death in the world [9]. Elmagd (2016) also states that physical activity and exercise can reduce anxiety and stress, increase self-confidence, sharpen brain memory and increase muscle and bone strength [10]. In addition, dosed physical activity will help in the prevention of the risk of heart disease, diabetes, obesity, cardiovascular disease and cancer [11]. In an effort to improve a healthy lifestyle, the world of education in general suggests increasing physical activity and exercise and reducing sedentary behavior [9]. The health benefit obtained from sufficient physical activity is that it can improve academic performance with a healthy cognitive and brain condition [12]. Therefore, knowing the picture of the level of physical activity is important as a basis in determining health programs, especially in the campus area.

2 Method

This research is a cross-sectional study with a quantitative descriptive approach. Students with a total of 2698 and 355 lecturers of Surabaya State University participated as subjects in this study. The collection of research data was carried out in August 2021 when students filled out the Study Plan Card online. The research instrument uses the WHO standard questionnaire GPAQ (Global Physical Activity Questionnaire) to measure the level of physical activity [17]. Respondents filled out the questionnaire by reporting the number of days and duration of activities when studying or working, activities on the way, and recreational activities [18]. The results of filling out the GPAQ questionnaire are stated in MET-minutes/week METs or Metabolic Equivalents as an illustration of the intensity of physical activity. Physical activity is low when the MET value is < 600, while when the MET value is between > 600 - < 3000, high when the MET value is > 3000 [19].

The collected data will be carried out a descriptive analysis to determine the average value of physical activity of the study subjects. The category of physical activity is also presented in percentages to find out the level of its physical activity. The Mann Whitney test was conducted to determine the difference in physical activity levels between lecturers and students.
3 Result

Before being presented with research data, it is necessary to know in advance the characteristics of respondents involved in taking research data so that the research results are in accordance with the conditions of the respondents and can be generalized. Data on the characteristics of respondents are presented in table 1.

Table 1. Characteristics of research respondents.

<table>
<thead>
<tr>
<th>Respondent’s characteristics</th>
<th>Student</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>772</td>
<td>28.61%</td>
</tr>
<tr>
<td>Female</td>
<td>1926</td>
<td>71.39%</td>
</tr>
<tr>
<td>Age (year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-19</td>
<td>1233</td>
<td>45.70%</td>
</tr>
<tr>
<td>20-22</td>
<td>1161</td>
<td>43.03%</td>
</tr>
<tr>
<td>23-25</td>
<td>209</td>
<td>7.75%</td>
</tr>
<tr>
<td>&gt;25</td>
<td>95</td>
<td>3.53%</td>
</tr>
<tr>
<td>20-35</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>36-50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>51-65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>&gt;65</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Body Height (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td>283</td>
<td>10.49%</td>
</tr>
<tr>
<td>151-160</td>
<td>1287</td>
<td>47.70%</td>
</tr>
<tr>
<td>161-170</td>
<td>818</td>
<td>30.32%</td>
</tr>
<tr>
<td>171-180</td>
<td>290</td>
<td>10.75%</td>
</tr>
<tr>
<td>&gt;181</td>
<td>20</td>
<td>0.74%</td>
</tr>
<tr>
<td>Body Weight (kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-50</td>
<td>1058</td>
<td>39.21%</td>
</tr>
<tr>
<td>51-70</td>
<td>1276</td>
<td>47.29%</td>
</tr>
<tr>
<td>71-90</td>
<td>306</td>
<td>11.34%</td>
</tr>
<tr>
<td>90-110</td>
<td>49</td>
<td>1.82%</td>
</tr>
<tr>
<td>&gt;100</td>
<td>9</td>
<td>0.33%</td>
</tr>
</tbody>
</table>

From table 1 above, it states that the number of respondents for students with female gender is more than that of men, but the number of respondents for male lecturers is more than that of female lecturers. Student respondents with an age range of 17-19 years are the most respondents, while the most lecturer respondents are lecturers with an age range of 36-50 years. The most dominant height is height with a range of 151-160 cm in both lecturers and students, while weight is dominated by weight with a range of 51-70 kg in both lecturers and students.

This research is to find out the level of physical activity of lecturers and students of Surabaya State University. The GPAQ instrument was used in this study which consisted of 16 questions related to the number of days and duration of activities when studying or working, activities on the go, and recreational activities. The results of the level of physical activity are presented per faculty at Surabaya State University which consists of Vocational Program, Postgraduate Program, Faculty of Mathematics and Natural Sciences, Faculty of Social Sciences and Law, Faculty of Science Education, Faculty of Sports Science, Faculty of Economics, Faculty of
Languages and Arts, Faculty of Engineering. The following are the results of the level of physical activity of students and lecturers in each Faculty stated in the METs:

**Fig. 1.** The results of the METs scores of lecturers and students of each faculty/program at universitas Negeri Surabaya.

Fig 1 above shows the indigo METs of lecturers and students in each faculty at the state university based on the results of calculations using the GPAQ questionnaire. Students in the Faculty of Sports Sciences have the highest METs scores with a score of 3922.61 minutes/week. Meanwhile, the lowest METs score was obtained by lecturers of the Faculty of Social Sciences and Law with a score of 895.50 minutes/week.

To find out the difference between the METs scores of lecturers and students in each faculty, a different test was carried out using the Whitney Mann test because the data showed that it was not normally distributed. The data is contained in Table 2.

**Table 2.** Differences in METs data between lecturers and students of Universitas Negeri Surabaya

<table>
<thead>
<tr>
<th>Faculty / Program</th>
<th>N</th>
<th>Mean±SD</th>
<th>P (sig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Languages and Arts</td>
<td>Lecture = 50</td>
<td>1172.37±1308.26</td>
<td>0.757</td>
</tr>
<tr>
<td></td>
<td>Student = 289</td>
<td>1302.66±1833.73</td>
<td></td>
</tr>
<tr>
<td>Faculty of Engineering</td>
<td>Lecture = 58</td>
<td>1199.53±1531.37</td>
<td>0.946</td>
</tr>
<tr>
<td></td>
<td>Student = 436</td>
<td>1444.38±2002.68</td>
<td></td>
</tr>
<tr>
<td>Faculty of Science Education</td>
<td>Lecture = 65</td>
<td>1476.14±1640.34</td>
<td>0.011*</td>
</tr>
<tr>
<td></td>
<td>Student = 861</td>
<td>1124.40±1766.14</td>
<td></td>
</tr>
<tr>
<td>Faculty of Economics</td>
<td>Lecture = 43</td>
<td>1322.72±1345.29</td>
<td>0.023*</td>
</tr>
<tr>
<td></td>
<td>Student = 195</td>
<td>973.69±1318.17</td>
<td></td>
</tr>
<tr>
<td>Faculty of Sports Sciences</td>
<td>Lecture = 53</td>
<td>1710.88±1474.63</td>
<td>0.000*</td>
</tr>
<tr>
<td></td>
<td>Student = 292</td>
<td>3922.61±3594.54</td>
<td></td>
</tr>
<tr>
<td>Vocational Program</td>
<td>Lecture = 15</td>
<td>918.48±1234.13</td>
<td>0.082</td>
</tr>
<tr>
<td></td>
<td>Student = 122</td>
<td>1753.20±2197.25</td>
<td></td>
</tr>
</tbody>
</table>
Postgraduate Program

Lecture = 5
Student = 87
936.00±545.97
0.836

Faculty of Social Sciences and Law
Lecture = 24
Student = 227
895.50±721.08
0.714

Faculty of Mathematics and Natural Sciences
Lecture = 42
Student = 189
970.39±969.84
0.977

*significantly different using the Mann Whitney test (p<0.05)

According to the table above calculated using the Mann Whitney test, the results were obtained that there was a significant difference in the METs value of lecturers and students in 3 faculties, namely the Faculty of Economics, Faculty of Sports Science and Faculty of Science Education (p<0.05).

Then the percentage of physical activity level categories is calculated based on the known values of METs. If the MET value < 600 then the physical activity is in the low category, if the MET value is between > 600 - < 3000 then it is included in the medium category, and if the MET value is >3000 then it is included in the high category [19]. The results of the percentage of categories of physical activity levels are presented in the figure:

![Fig. 1. (a) Category percentage of physical activity level of students Universitas Negeri Surabaya; (b) Category percentage of physical activity level of lectures Universitas Negeri Surabaya](image)

From fig. 2 above it can be seen that the majority are in the medium category with a percentage of 45% in students and 52% in lecturers. The second largest percentage is in the Low category of both lecturers and students. Then the smallest percentage is in the High category as well as in lecturers and students. This shows that the physical activity of the academic community of Surabaya state university still tends to be low, judging from the results of the percentage of categories.

4 Discussion

In general, the level of physical activity of the academic community of Surabaya State University is in the medium category. But in the category of low levels of physical activity also
has a high percentage. This means that the level of physical activity of the academic community of Surabaya State University still tends to be low. Low physical activity is a major risk factor for non-communicable diseases, and has a negative effect on quality of life and mental health [20]. Physical activity is one way to overcome non-communicable diseases such as obesity [21]. The prevalence of obesity continues to increase due to a changing lifestyle with technological advances and the increasingly rampant use of machines, thereby reducing a person's physical activity [22]. Therefore, there must be interventions to encourage a person to be willing to do physical activity in order to maintain their health [23]. Because physical activity can maintain an active lifestyle and is related to health promotion and weight loss [24].

Based on the METs scores obtained from 9 faculties or programs at Surabaya State Universities, students of the Faculty of Sports Sciences received the highest average METs scores taken from 292 students. This is because in the lecture process, students are taught to exercise and physical activities. They demonstrated lecture material by doing sports activities so that their physical activity was high enough to have an average METs of 3922.61 minutes per week. In addition, the majority of students of the Faculty of Sports Science are athletes who are still active or former athletes who have joined many sports clubs. So that even outside the campus, they are still actively carrying out sports activities.

Because of the Faculty of Sports Science, the lecture study will not be far from the discussion about the importance of exercising, physical activity and a healthy lifestyle. Therefore, students of the Faculty of Sports Science certainly have good sports literacy and physical activities. With good physical literacy, it will have the results of motor skills, environmental context, and a broader affective social learning process. Physical literacy also plays a role in positive health behaviors [25]. Taggart et al. (2012) also state that health literacy allows people to build their knowledge, skills, and potential to make positive behavioral changes. Improving health literacy is more likely to lead to sustained behavioural change given that lower levels of health literacy are associated with worse health outcomes [23].

Studies show lecturers' METs scores tend to be lower than student METs scores (see fig. 1). This is because lecturers have an older age than students. Sun et al. (2013) stated in his research that older people have a lower level of physical activity than young people [26]. Whereas according to the CDC (2021), parents need to be more physically active to maintain their balance. Exercise and physical activity in the elderly can reduce the risk of death from cardiovascular disease [28]. Physical activity in the elderly can lower the pulse of rest and exercise, lower systolic and diastolic blood pressure and increase stroke volume [29]. For people who are relatively sedentary until middle age, it is never too late because starting to be active in physical activity in old age can significantly improve health [30].

5 Conclusion

The majority of the physical activity levels of lecturers and employees of Surabaya State University in 2021 are categorized as medium. But even though it is categorized as medium, it is also worth noting that the second percentage is the low category. The highest METs score is obtained by Students of the Faculty of Sports Sciences and for lecturers is the Vocational Program. The recommendation of this study is that the value of the Mets can be used as a reference in compiling programs on the promotion of healthy campuses through physical activity.
References


Development Of Quota Determination Model On KONI As A Basis For Forming A Contingent Team

Achmad Widodo1, M.Dzul Fikri2, Testa Adi Nugraha3, Awang Firmansyah4, Syaifathul Jannah5, Panji Bana6

{achmadwidodo@unesa.ac.id1, muhammadfikri@unesa.ac.id2, testanugraha@unesa.ac.id3, awangfirmansyah@unesa.ac.id4, jannah.syaifathul@gmail.com5, panjibana@unesa.ac.id6}

Universitas Negeri Surabaya1, Universitas Negeri Surabaya2, Universitas Negeri Surabaya3, Universitas Negeri Surabaya4, Universitas Negeri Surabaya5, Universitas Negeri Surabaya6

Abstract. The purpose of this research is to develop a model for determining the quota of athletes at KONI as the basis for forming a contingent that will take part in a multi-event championship. In some cases, there are sports that have minimal achievements but the sports management proposes a lot of quotas. On the other hand, there are sports that have a track record of achievement and good athlete development, but the quota of athletes who are dispatched to multi-events is minimal. This study uses a development research type approach with a case study at KONI Pasuruan Regency in participating in the East Java Provincial Sports Week 2022. This is the basis for the preparation of this research, so that KONI and its equivalent can have instructions in determining the quota of athletes who are contingents so that they are right on target. This is the basis for the preparation of this research, so that KONI and its equivalent can have instructions in determining the quota of athletes who are contingents so that they are right on target.

Keywords: Athlete, Koni, Contingen, Multievent.

1 Introduction

Selecting athletes is not easy. Moreover, athletes who will take part in multi-event championships such as the Provincial Sports Week (PORPROV) and the National Sports Week (PON). The main management of sports organizations always hopes to include as many athletes as possible so that they can become athletes who are fostered by the regional KONI through the Training Center. Meanwhile, the regional Indonesian National Sports Committee (KONI) must have a basis when they want to include athletes in the training concentration program. Determination of the recommended number of athletes to enter the training center program, of course, must be "qualified athletes". In the process of characterizing athletes, in some journals, they are known as "trained", "highly trained", and "well-trained" athletes. [1]. At first glance the assessment is done subjectively, but it turns out that it is determined through an integrated approach to the training load that has been carried out, training history, general fitness level, individual physical abilities and performance, the contribution between exercise and genetics related to physical performance, and individual commitment to training [1]. However, it should
be noted that the recruitment process means that when it comes to acquiring resources, the athletes participating in this selection are necessary for the maintenance of the program to win, so those who enter the training camp are a vital resource[2].

In the case study faced by KONI Pasuruan Regency, there were 300 athletes who were proposed to be athletes at the training center. However, the available quota is only 200 athletes. This has become a separate polemic for KONI. So that a strict selection is needed in order to enter the training concentration program which incidentally has several rights and obligations of its own. For example, athletes get monthly money, training facilities and equipment. On the other hand, athletes are also required to practice every day in order to achieve the targets set by the coach. In accordance with Law No. 3 of 2005 concerning the National Sports System, it has been regulated regarding sports personnel complete with obligations that must be carried out and awards obtained as well as other provisions[3]. Selection of athlete quota determination to join the contingent team, those who have potential in the championship, will then be fostered in stages and continuously in accordance with certain sports [3][4].

After following an intensive and long training program, ahead of the championship there was a selection to determine the contingent quota. This is of course more specific and narrow in the filter of athletes who will take part in multi-event championships. Not a few various commotions occurred when determining the quota of athletes to take part in the championship even though there was already a Technical Handbook (THB). The function of THB is as a guide or complete information regarding the multi-event championships to be followed, including regulating athlete quotas or detailed participant requirements [5][6].

In the selection process, athletes are not immediately considered as a contingent team representing the parent organization, unless based on their highest achievement in a sport it can be taken into account [7][8][2]. In this case, experience and flying hours are taken into account, a study also said that, 45 out of 91 studies, the most common way to define a “quality-athlete” was by examining their experience, including competitive experience [9]. Athletes who have previously been involved in the highest achievement development program or championships such as international or national levels are considered to have the highest potential in their sport, however, athletes at the regional level still have the opportunity to compete[9][2].

Furthermore, regarding competitiveness, it also considers the individual abilities of these athletes with the achievements of athletes in other regional sports organizations[10]. A study says that sport comes with a domain in it which consists of various types of decisions such as strategy, tactics and action options that must be chosen [11][12]. Including strategies and tactics in considering an athlete will compete or not based on his ability and competition or the percentage of victory in the number of matches that will be followed. Of course, one of the factors that can be used as a consideration is the quality of the physical abilities of these athletes. In the context of classification and efforts to categorize athletes as “trained”, “highly trained”, and “well trained” athletes, of course, physical abilities are important to know. Regular physical ability checks seem to need to be carried out routinely as a form of pre-participation support to show the athletes' physical abilities. Even in some sports, athlete selection is carried out strictly, namely athletes are required to have a history of physical and psychological test results, training, nutritional status and fitness status as well as complete with previous comprehensive injury status[4][13].
Injury history is an important part that should be considered because after all health is very important for athletes. Fitness at the time of testing or selection is also very important, for example, a current Olympic medal winner has returned from injury, at the time of classification will still be considered a world class athlete based on training volume and previous performance results. However, their performance capabilities when classified may not reflect this. On the other hand, for a regional or national athlete with fit fitness and able to outperform an international athlete, in this qualification, will be classified as “highly trained”. So this complexity is very specific to each individual situation [1].

The availability of funding to meet the selection budget to the achievement coaching program is certainly very necessary. Duties and responsibilities regarding this funding are held entirely by the policy of the government or the institution or parent of the sports organization. Starting from arranging programs and funding for the development and administration of coaching, officials, competitions and training centers even to the cost plan that athletes must prepare (if any) from before, during and after participating in coaching and competitions[14][15][4]. Funding budgets are prepared for selected athletes, so athletes have a full understanding of the anticipated costs that must be prepared by them personally[14][4][7].

The selection of athletes is carried out using a transparent method, starting from determining the quota of athletes who depart in accordance with the THB, a history of achievement or experience or training hours that have been carried out previously, the distribution of the strength or competitiveness of the athlete, the latest physical and psychological conditions carried out in the selection process, previous injury history to the availability of funding budget for the selection process to achievement coaching, also no less important is the absence of dualism in the management of the relevant parent organization[16]. The process of recruiting athletes is carried out by human resources who have top-level management abilities in recruiting, also understand the world of sports and related sports well [2][16].

Therefore, the researcher wants to know and explore the model for determining the athlete's quota as the basis for forming a contingent team that represents the parent of the sports organization. This study aims to make the best formulation so that the regional KONI, the Youth and Sports Office, the main management of regional sports organizations, coaches and athletes have a basis in determining the quota of athletes to become a contingent that can compete in multi-event championships so that they can be optimal in making a good name.

Method

The flow of the implementation of this research uses the ADDIE development model, namely: analysis, design, development, implementation, and evaluation. The implementation flow is as shown in the following figure:

Analysis

The analysis was carried out by means of a literature study and observations of related institutions, including: regional KONI administrators, staff from the Youth and Sports Office (DISPOR), representatives of the main management of sports organizations and sports coaches. The purpose of carrying out the analysis is to determine the need for determining athlete quotas. At this stage, what will be discussed is the need and type of theoretical approach.
with guidance from the following three questions, (1) whether the quota determination model that will be developed is able to overcome the problem of the number of applicants?; (2) does the model for determining the number of athlete quotas to be developed have the support of facilities to be implemented?; (3) can the regional KONI be able to implement this?

Design

This stage will verify the results in accordance with the desired goals and determine the method or strategy to be applied, by making a conceptual protocol for determining the athlete quota model which will be developed in the next stage. At this stage, a conceptually clear design will appear so that in determining the quota of athletes for multi-events, the regional KONI will get recommendations to determine the athlete's quota wisely.

Development

Realization of the design that has been made in the previous stage. In addition, at this stage an instrument will be prepared in determining the athlete's quota, by starting to prepare and collecting all information that can be used to support the method of determining the athlete's quota, starting from verifying the athlete's championship, collecting the technical handbook (THB), conducting physical tests, conducting injury screening and sports injury history.

Implementation

The realization of the design will be implemented at this stage. In addition, the research protocol uses a research and development design. The selection of the research design was based on the research objective to obtain a model for determining the athlete quota. Analysis of the data used will be adjusted to the type of data obtained. Observations to stakeholders were carried out through interviews with several questions that included the basis for determining athlete quotas. There were 4 elements invited to the group discussion, namely the regional KONI management, DISPORA, representatives of the main management of sports organizations and sports coaches totaling 20 people.

Evaluation

Evaluation is carried out on the entire process of implementing product development as the use of the feedback obtained. These results will be used as the basis for product revisions that will be used as the final product developed. Revisions will be made to make the results of the development more operational to make it easier for potential users in the future.

Results

The results of this study, researchers found the development of a model for determining the quota of athletes at KONI which can be used as the basis for forming a contingent that will take part in a multi-event championship.
1. Analysis

The first analysis stage is to conduct an analysis by conducting interviews and observations with stakeholders and collecting data from the regional KONI. The results obtained are that every sports manager and coach has hope, if possible the number of athletes who can enter the achievement coaching program is large to then take part in the coaching and become the contingent team of the Provincial Sports Week (PORPROV). However, this hope cannot be realized because there are several things that limit it, one of which is the limited budget provided by the regional KONI. So that the number of athletes who can be dispatched to become a contingent team should be qualified athletes who were selected through the "selection" process or the process of determining the athlete quota.

2. Design

At this stage, the objective of the decision-making process is to determine the ideal number of athlete quotas. The main goal is to develop a model for determining the quota of athletes at KONI as the basis for forming a contingent that will take part in regional, national and international multievent championships, because of course not all athletes can be dispatched to become a KONI contingent team. In connection with several things, one of the main things is the budget provided by the regional KONI government to meet the needs of the athlete development program and the competition/race to be followed.

3. Development

At this stage, information has been obtained in the form of several things along with the data that can be used as consideration for determining the athlete's quota. Among them are starting to seek information from coaches, sports branch administrators and regional KONI administrators regarding factors including the availability of the budget provided by the regional KONI, the availability of race/match numbers in the Technical Book (THB) which have been analyzed, injury history, dualism in management, the result of the highest achievement before the match, the distribution of the opponent's potential strength and the current physical condition, which determines the number of ideal quotas for a contingent.

4. Implementation

After in the previous stage collecting information sources regarding the factors for determining the athlete quota at KONI, at this stage the implementation strategy began to be applied, namely researchers began to evaluate the factors previously mentioned. So the researchers found the development of a model for determining the quota of athletes at KONI as the basis for forming a contingent team, there were 2 groups of factors, including the main supporting factors and the main factors. Supporting factors include a technical handbook that has been previously analyzed which is then adjusted to the athletes they have, a history of previous injuries so that in the future it does not hinder the process of practicing and competing and there is no dualism in management that can hinder the athlete's coaching process.
The main factors in the decision-making process to determine the ideal number of athlete quotas are the availability of budget funds from KONI in the regions, the highest achievement results ahead of matches such as regional, national and international championships and pre-qualifications, the distribution of potential strength of opponents who will meet in competitions or matches, current physical condition through physical tests.

5. Evaluation

In this step or phase is to evaluate the athlete quota determination model at KONI which is used as the basis for forming a contingent team. So that the factors include the availability of the budget provided by the regional KONI, the availability of competition/match numbers in the Technical Book (THB) that have been analyzed, injury history, dualism in management, the highest achievement results before the match, the distribution of the opponent's potential strength and current physical condition. Which determines the ideal number of quotas for a contingent can be used as a model for determining athlete quotas.

Discussion

The results of the analysis involving stakeholders in determining the athlete quota are divided into seven points, which have been divided into two main points, namely supporting factors and main factors. Supporting factors include initial factors in the process of determining the ideal number of athlete quotas, including the availability of race/match numbers in the Technical Handbook (THB) that have been analyzed, history of injuries that can hinder the process of practicing and competing and there is no dualism in management that can hinder the process. Athlete coaching. The main factors in the decision-making process to determine the ideal number of athlete quotas are the availability of budget funds from KONI in the regions, the highest achievement results ahead of matches such as regional, national and international
championships as well as pre-qualification, distribution of potential strength of opponents who will meet in competitions or matches, current physical condition through physical tests.

Availability of race/match numbers can be found in the technical handbook (THB). Usually THB is distributed three to two months before the event takes place. This can be a reference number or class to be competed. Sports injuries can happen to anyone. Injuries can be classified as acute injuries and chronic injuries. In terms of incidence, injuries can occur during training or competition. Someone who is injured must immediately go to rehabilitation in order to make the condition better. Athletes who experience sports injuries have a special record for immediate rehabilitation in order to return to optimal performance. In the main organizational structure of sports organizations, there are several sports that are experiencing leadership dualism. This will have a direct impact on the development of the organization to the athlete coaching process. Therefore, the parent branch of sports organizations that are experiencing leadership dualism must resolve the problem internally so that it does not interfere with the development of long-term achievements.

Budget availability is an important factor in determining the quota of athletes to become a contingent. If the five conditions above are met but the availability of the budget is still unclear or lacking, it can have a negative impact on the number of athlete quotas. The athlete's highest achievement can be proven through a certificate addressed to the regional KONI with data verification to the match or competition organizer. For example, athletes who take part in national championships and get gold medals have the potential to become athletes in a branch training center (puslatcab) and go to become a contingent team to strengthen their respective districts or cities. The distribution of the opponent's strength, as in the case of THB in a match or race. The opponent's strength map needs to be understood in order to be able to include the best athletes to get a gold medal. If there is still potential in the same class or number with a much different ability difference, then the coach can look for other strategies so that athletes who are included in the match or competition get medals after the event is over. Physical condition also needs to be known through physical tests to monitor the progress of athletes. In the physical test, each branch of the sport has different characteristics. So that in carrying out physical tests, one sport branch with another also has differences in each test item. For example, martial arts sports such as pencak silat, judo, karate have their own characteristics. This biomotor component approach is the basis for determining the athlete's physical condition test.

Acknowledge

Thank you to the State University of Surabaya for funding this research and KONI Kab. Pasuruan who has given the opportunity to conduct an interview.

References

The Awareness of Youth People on ASEAN Paragames XI in 2022

Awang Firmansyah1, Donny Ardy Kusuma2, Afif Rusdiawan3, Dwi Nur Cahya Kusumaningtyas4, Andika Bayu Putro5, Dwi Cahyo Kartiko6

{awangfirmansyah@unesa.ac.id1, donnyardykusuma@unesa.ac.id2, afifrusdiawan@unesa.ac.id3, dwikusumaningtyas@unesa.ac.id4, andikabayuputro@gmail.com5, dwicahyo@unesa.ac.id6}

State University of Surabaya, Indonesia1, State University of Surabaya, Indonesia2, State University of Surabaya, Indonesia3, State University of Surabaya, Indonesia4, Bandung Institute of Technology, Indonesia5, State University of Surabaya, Indonesia6

Abstract. People with disabilities have the opportunity to express themselves in various ways, one of which is sports. The ASEAN Para Games have been held for eleven times. In 2022, Vietnam was originally the home for the event, but due to a lack of preparation five months before the event was held, it was finally cancelled. In the end, Indonesia is ready to host the 2022 ASEAN Para Games. The involvement of the people of Surakarta City is very much needed in organizing activities, including youth. This study aims to determine the awareness of youth regarding the existence of the ASEAN Para Games in Surakarta City. This type of research is descriptive research with a quantitative approach. A total of 419 people is willing to be respondents in this study. Respondents were 170 men and 249 women with an age range of 18-30 years were given an online questionnaire instrument. The results showed that most respondents were still not aware of the existence of the ASEAN Para Games. However, they think that the ASEAN Para Games need to be held for people with disabilities. Then the respondents also thought that the city of Surakarta was very worthy to host the ASEAN Para Games.

Keywords: Awareness, Youth, Disability, ASEAN Para Games

1 Introduction

The ASEAN Para Games (APG) is an international event which is held every two years. This activity was attended by eleven countries in Southeast Asia (Yuanita, 2012). These countries include Indonesia, Malaysia, Singapore, Thailand, Philippines, Myanmar, Laos, Vietnam, Brunei Darussalam, Cambodia, and Timor Leste. There is an association that accommodates these activities, namely the ASEAN Para Sport Federation (APSF). ASPF itself is the highest federation in the ASEAN Para Games which is committed to empowering people with disabilities in the Southeast Asia region to achieve the highest achievements in the field of sports. (APSF, n.d.). The first country to hold this event was Malaysia in 2001. Indeed, the ASEAN Para Games were held after the SEA Games were held in the same country. Previously,
Vietnam was the host of the SEA Games and ASEAN Para Games, but five months before the implementation of the APG, Vietnam decided that it could not carry out the 11th APG in its country. (ASEAN Para Sport Federations, 2022). Indonesia, which in fact once held the event where it once hosted the APG in 2011, tried to help volunteer by hosting the 2022 APG in Central Java Province, to be precise in Surakarta City. The preparations were also very short, but with the hard efforts of all organizers and assistance from various sectors, the event was successfully carried out from 30 July to 6 August 2022.

Based on the article written Raihan Hasya (2022), This time the ASEAN Para Games involved 1,907 people consisting of 659 officials and 1,248 athletes who will give their best performances in the biennial event. In APG 2022, there are 14 sports with 457 numbers being contested. Then on the official website APG 2022 (2022) as mentioned, the sports include Blind Judo, Boccia, CP Football, Goalball, Para Archery, Para Athletic, Para Badminton, Para Chess, Para Powerlifting, Para Swimming, Para Table Tennis, Sitting Volleyball, Wheelchair Tennis and the last is Wheelchair Basketball. Indonesia is the country with the highest number of athletes participating in the 2022 APG event with a total of 324 athletes. Athletics became the largest sport in the red and white contingent by sending 78 athletes followed by 47 athletes from Swimming and 41 Table Tennis athletes. In the second position, Thailand became the largest contingent after Indonesia with 303 athletes followed by the Philippines with 144 athletes in third (Raihan Hasya, 2022).

This is different from the 2017 APG, which at that time had more sports and competition numbers than now, where at that time there were 16 sports and 479 events being competed in Malaysia. Nevertheless, Indonesia has consistently been at the top of the standings as the overall champion to date and even in the 2022 APG this time it has won more medals than the previous APG. The red and white contingent won a total of 426 medals with details of 175 gold medals, 144 silver medals and 107 bronze medals. (Result APG 2022, 2022). The athletics sport was the largest contributor to medals with a total of 129 medals, followed by the swimming sport with 87 medals and 65 medals from the table tennis.

The success of the event, especially Indonesia in organizing and becoming the overall champion in the 2022 APG event deserves attention. Apart from the hard work of the contingent, both athletes and officials, this also cannot be separated from the enthusiasm and extraordinary support from various parties. Especially INASPOC which, although given quite a short time, was able to prepare for the APG event well and smoothly. INASPOC (Indonesian ASEAN Para Games Organizing Committee) itself is a committee formed to prepare and implement APG 2022 (Penyelenggaraan ASEAN Para Games XI Tahun 2022, 2022). In this case, INASPOC is also tasked with collaborating, coordinating, and collaborating with various sectors ranging from ministries, institutions, local governments as well as the wider community for the successful implementation of APG in 2022.

The city of Surakarta is known for its people who are very friendly with foreign tourists, including people with disabilities. How not, the APG event has been held twice and 2022 will be the third year for the city. What distinguishes it from the previous APG is the short preparations made to host this event. So, the process really must be accelerated and of course still prioritize the quality of activities. Community involvement is very important in the implementation of APG, especially youth. Youth has a big role in contributing to development, one of which is through the sports sector. According to (Pradika et al., 2018), various countries
have proven that youth have an important and effective role in various activities. This is in line with what was mentioned by Januarharyono (2019), that the role of youth is very important in the current era of globalization where people's lives continue to be required to run dynamically and develop. This is because in terms of age, youth are included in the productive age group, able to quickly get information and of course physiologically better. Some of these advantages are felt that youth deserve to participate in APG 2022 activities. Starting from helping with activities at the venue, becoming a liaison officer to assisting the data recording process will be much more effective. This participation actually requires a push to happen. According to Nurbaiti & Bambang, (2017), Community participation is influenced by two factors, namely internal and external. Internal factors are influenced by individual characteristics, willingness, and ability. While the external factor itself is how the role of stakeholders in it until the opportunity provided is one of them in the form of effective and comprehensive information.

The ASEAN Para Games really needs to be voiced to raise awareness for all Indonesian people, especially Surakarta City. How is awareness able to share knowledge about something to oneself and others (Hastjarjo, 2005). So, there is a need for an in-depth study related to the level of public awareness, especially youth in this activity. The purpose of this study was to determine the level of youth awareness of the 2022 ASEAN Para Games in Surakarta.

2 Method

This study uses a quantitative descriptive approach. According to Yosani (2006), Analysis using quantitative descriptive is the method used to describe the data that has been collected to make general conclusions. Data retrieval will be done by giving questions in the form of a questionnaire via google form. The use of Google Forms is actually used for survey data collection, because it has been proven to be easy and effective (Purwati & Nugroho, 2018). There are 419 people who are willing to be respondents in this activity with a composition of 170 men and 249 women aged 18-30 years around the venue. Data collection was carried out for two weeks starting from the first day of the activity. Data were then collected and analyzed descriptively starting from sociodemographic such as age, gender, education level, status and occupation as well as understanding of APG consisting of 12 questions. In the questionnaire on ASEAN awareness, the researcher adapted the questionnaire from the ASEAN Youth Development Index (Understanding How Young People See ASEAN, 2021).

3 Result

This study aims to determine the perception and awareness of the people around the city of Surakarta towards the implementation of the 11th ASEAN Para Games in 2022 in the city. This study succeeded in collecting data from 419 respondents with three dimensions, namely understanding of ASEAN, people with disabilities and the ASEAN Para Games.

Diagram 1. Respondents Understanding of ASEAN
Diagram 2. Source To Know ASEAN

Diagram 3. Friends in ASEAN Countries

Diagram 4. Visit ASEAN Countries
From the first indicator table, namely ASEAN, the majority of respondents understand what ASEAN is with a percentage of 52%. Most of the information they got from or when they were in school (71%). However, most of them have no friends or colleagues from ASEAN apart from Indonesia with a percentage of 73%. In addition, almost all of the respondents (91%) have never visited ASEAN countries other than Indonesia. Only 9% have visited other ASEAN countries.

2. People With Disabilities

Diagram 5. Have a Friends/Family With Disability

This table will explain the results of the second indicator, namely Persons with Disabilities. Here the majority of respondents (72%) do not have relatives or friends with disabilities. If any, the type of disability experienced by the respondents’ friends and relatives is the most deaf with a percentage of 26%, followed by the speech impaired 17% and the blind and down syndrome in third place. Almost all of them, namely 97% of respondents, are not members of the disabled community. However, they think that people with disabilities deserve to live side by side with society in general with a percentage of 90%. In addition, they also think that people with disabilities are worthy of achievement (95%) with the most common field according to them is sports (21%) followed by arts and culture (16%). More than half of the respondents, i.e. 57%, have seen people with disabilities demeaned, but only 49% of the total respondents stated that they understand the Disability Law number 8 of 2016.
3. ASEAN Para Games

Diagram 7. Knowledge About APG

In the last indicator related to the ASEAN Para Games, almost half of the total respondents, around 41%, stated that they did not know about the ASEAN Para Games activities. In addition, they were also wrong in answering the number of times the ASEAN Para Games were held with a percentage of 43%. However, their knowledge regarding which countries participate and the number of sports that are competed in the ASEAN Para Games is quite good with many who answered correctly in this question. The majority of them know about the ASEAN Para Games through information distributed on social media with a percentage of 36% with their frequency of getting information that is more than 5 times (33%). Respondents said that the importance of the ASEAN Para Games being held for countries in ASEAN with a percentage of 49%. Then most of them also consider Surakarta City to be very worthy to host the biennial event with a very high percentage of 90%.

4 Conclusion
From the data obtained above, it can be concluded that the youth of Surakarta City and its surroundings understand what ASEAN is about even though most of them have never visited these countries. Then they also said that people with disabilities deserve to live side by side with the public and achieve the highest achievements through certain fields, one of which is through sports. However, there are still few of them who understand the Disability Law No. 8 of 2016 and what is the ASEAN Para Games. It is evident from a total of 419 respondents, almost half of them, namely 41%, stated that they did not know about the event. In addition to external information factors, the researcher also assumes that young people do not know about the ASEAN Para Games because the majority of youth there do not have friends or relatives who have disabilities or join the disability community. Even interestingly, the impact of the lack of information has made some youths think that the ASEAN Para Games needs to be held for people with disabilities.

Although the youth in Surakarta and surrounding areas have a low level of understanding of the ASEAN Para Games, they have a high level of enthusiasm for the biennial event after knowing it. It is evident that many of them want to be directly involved and watch the Southeast Asian sporting event. They also think that the city of Surakarta deserves to be the host of the ASEAN Para Games.

References

Sedentary Lifestyle Of Adolescent In Rural Areas in Jombang-Indonesia

1st Himawan Wismanadi1, 2nd Meirinawati2, 3rd Bachtiar Sjaiful Bachri3, 4th Afif Rusdiawan4

{himawanwismanadi@unesa.ac.id1, meirinawati@unesa.ac.id2, bachtiarbachri@unesa.ac.id3, afifrusdiawan@unesa.ac.id4}

Universitas Negeri Surabaya, Indonesia1, Universitas Negeri Surabaya, Indonesia 2, Universitas Negeri Surabaya, Indonesia 3, Universitas Negeri Surabaya, Indonesia 4

Abstract. Rural areas are areas that are more technologically backward than urban areas, thus allowing work to be carried out manually which still involves physical movement. The purpose of this study was to determine the sedentary lifestyle of adolescents in rural areas. This research is descriptive with cross sectional design. 83 adolescent children living in rural Jombang Indonesia were the respondents of this study. Data collection using the Adolescent Sedentary Activity Questionnaire (ASAQ) instrument which is given online. The result is that the Sedentary Activity level of 40.96% is in the low category on weekdays, while on weekends the Sedentary Activity level of 63.86% is in the high category. The results of the Mann Whitney test also obtained a value of sig p = 0.000, which means that there is a significant difference between Sedentary Activity on weekdays and weekends. In conclusion, the sedentary lifestyle of adolescents in rural areas tends to be low on weekdays, but becomes high on weekends.

Keywords: Rural Areas, Sedentary Lifestyle, Adolescent.

1 Introduction

Physical activity is essential and dramatically affects health both physically and mentally [1]. On the contrary, physical inactivity will cause many health problems [2]. Regular physical activity and consistently maintain health, making it more energetic and independent in old age [3]. Light to moderate physical activity is recommended to reduce sedentary habits resulting in 13% of the cause of death and a 5% of high risk of developing cardiovascular disease (sedentary habits such as viewing tv for more than 2 hours, sitting too long) [4]–[6]. Adequate physical activity and good sedentary behavior regulation are essential for adolescents because they can prevent various diseases such as cardiovascular disease, bowel cancer, osteoporosis, and obesity[7], [8], [9]. Lack of physical activity and excessive Sedentary behavior often occurs in adolescence resulting in the emergence of various health problems as adults. Therefore it is important to fulfill physical activity and limit sedentary behavior during adolescence to prevent the appearance of disease in the future [10]. However, this is often overlooked by developing countries such as Indonesia [11].

Doing physical activity does not mean having to go to the gym or sports club, but only limited to active physical movement, however, and anywhere, such as walking, cycling, running, and others that involve the body actively [3]. In Indonesia, the average population steps...
3513 steps per day which are lower than the global average of 5,000 steps per day [12]. Then there are 22.6% of the Indonesian population who are insufficient to carry out physical activity [13]. This is due to the well-developed economy and the increasing use of motorized vehicles so that work that involves the physical is actively reduced, and sedentary behavior increases [14].

In 2010, WHO recommended that adolescents engage in physical activity with moderate to high intensity (MVPA) for 60 minutes every day [15], as well as limit screen time to a maximum of 2 hours per day [16], [17]. However, in 2020 WHO is improving its recommendations based on a study of 49 developing countries that resulted in the conclusion that less than 30% of adolescents do enough physical activity [18]. Research on sedentary behavior in 66 developing countries concluded that 26.4% of adolescents carried out sedentary behavior for more than 3 hours per day [19].

Indonesia is a developing country with a lower middle income located in the Southeast Asian region and has a population of more than 260 million [10], [20]. Indonesia also has a young population (<20 years old) which accounts for more than 92 million of the total population and is also the fourth largest child population in the world [21]. More than 80% of people who lack physical activity live in developing countries such as Indonesia [22]. Therefore, it is important to conduct research related to physical activity and sedentary behavior in developing countries such as Indonesia [22]. Rural areas are more technologically behind than urban areas, allowing work to be still done manually, which still involves physical moving. This study wants to find out about the sedentary lifestyle of rural communities in Indonesia, especially in Jombang City- East Java.

2 Method

This research is a quantitative study using a cross-sectional design. Eighty-three students who attended high school in rural areas in Jombang city were respondents to this study. Respondents were then asked to fill out the Adolescent Sedentary Activity Questionnaire (ASAQ) questionnaire to determine their level of a sedentary lifestyle. The ASAQ instrument has good reliability and validity values to determine the level of a sedentary lifestyle by respondents at a young age [2]. ASAQ is performed by calculating the total sedentary activity time per day. In this study, ASAQ instruments were divided into 2, namely ASAQ instruments to measure Sedentary lifestyle on weekdays and ASAQ to measure Sedentary lifestyle on weekends. A sedentary lifestyle is said to be low if sedentary activities are carried out < 2 hours per day, it is said to be moderate if sedentary activities are carried out between 2 hours - 4 hours per day, and it is said to be high if sedentary activities are carried out > 4 hours per day [23].

The results of the data obtained are then analyzed descriptively to determine the average Sedentary lifestyle on weekends and weekdays. The calculation of categorization based on the sedentary lifestyle level is also carried out on a percentage basis. Furthermore, to find out the differences in Sedentary lifestyle values both between genders and on weekdays and weekends, the Mann-Whitney Test was carried out.
3 Result

Before explaining the results of this study, it is necessary to know the characteristics of the respondents who participated in filling out this questionnaire. The goal is to find out the diversity of respondents based on gender, age, class, parental education level, and parents' income per month. This is expected to provide a relatively clear picture of the condition of the respondents and their relation to the problems and objectives of this study. The characteristics of the respondents of this study are as follows:

Table 1. Characteristics of research respondents.

<table>
<thead>
<tr>
<th>Demographic factor</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>22 (26.51)</td>
</tr>
<tr>
<td>Girls</td>
<td>61 (73.49)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>7 (8.43)</td>
</tr>
<tr>
<td>16</td>
<td>39 (46.99)</td>
</tr>
<tr>
<td>17</td>
<td>34 (40.96)</td>
</tr>
<tr>
<td>18</td>
<td>3 (3.61)</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9 (10.84)</td>
</tr>
<tr>
<td>11</td>
<td>57 (68.67)</td>
</tr>
<tr>
<td>12</td>
<td>17 (20.48)</td>
</tr>
<tr>
<td><strong>Parents’ education level</strong></td>
<td></td>
</tr>
<tr>
<td>No School</td>
<td>1 (1.20)</td>
</tr>
<tr>
<td>Elementary School</td>
<td>12 (14.46)</td>
</tr>
<tr>
<td>Junior High School</td>
<td>13 (15.66)</td>
</tr>
<tr>
<td>Senior High School</td>
<td>46 (55.42)</td>
</tr>
<tr>
<td>Bachelor</td>
<td>10 (12.05)</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>1 (1.20)</td>
</tr>
<tr>
<td><strong>Parent’s income</strong></td>
<td></td>
</tr>
<tr>
<td>&lt; Rp 1,500,000</td>
<td>38 (45.78)</td>
</tr>
<tr>
<td>Rp 1,500,000 – Rp 2,500,000</td>
<td>17 (20.48)</td>
</tr>
<tr>
<td>Rp 2,500,000 – Rp 3,500,000</td>
<td>13 (15.66)</td>
</tr>
<tr>
<td>Rp 3,500,000 – Rp 4,500,000</td>
<td>9 (10.84)</td>
</tr>
<tr>
<td>&gt;Rp 4,500,000,-</td>
<td>6 (7.23)</td>
</tr>
</tbody>
</table>

The characteristics of the study respondents based on table 1 above showed that the majority of respondents were women with the age of 16 years and in the 11th grade of high school. The level of education of parents is also dominated by high school graduates, with the most percentage of income being below Rp. 1,500,000,-.

Furthermore, descriptive test results will be presented in the form of mean±standard deviation (Mean±SD) of each indicator. Then each indicator is carried out statistical analysis using the Mann-Whitney test to find out the difference. The results are presented in table 2 below.

Table 2. Descriptive Results of Sedentary Lifestyle Indicator and The Difference Between Each Indicator on Weekdays and Weekends

<table>
<thead>
<tr>
<th>Sedentary Lifestyle Indicator</th>
<th>Mean±SD (minutes/day)</th>
<th>P (sig)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekday</td>
<td>Weekend</td>
</tr>
<tr>
<td>Watching times</td>
<td>26.47±28.81</td>
<td>60.54±74.34</td>
</tr>
<tr>
<td>Playing games</td>
<td>31.21±45.80</td>
<td>59.59±106.56</td>
</tr>
<tr>
<td>Reading times</td>
<td>13.23±18.94</td>
<td>30.01±36.50</td>
</tr>
</tbody>
</table>
Study or do homework  32.40±105.39  39.82±34.73  0.000
Additional study or tutoring  12.44±16.12  23.51±26.59  0.044
Use a motorized vehicle  12.14±13.47  42.63±163.47  0.000
Social media time  51.60±216.39  104.85±124.01  0.000
Play or listen to music  19.41±43.28  45.43±99.42  0.000

p<0.05 indicates there is a significant difference using the Mann-Whitney test

The results of table 2 above show that all indicators of the sedentary lifestyle show a significant difference on weekdays and weekends. To find out the Sedentary lifestyle category on weekdays and weekends based on gender, the results are presented in table 3 below.

### Table 3. Sedentary lifestyle level category by gender.

<table>
<thead>
<tr>
<th>Sedentary Lifestyle</th>
<th>Sedentary Lifestyle Level Category</th>
<th>Boys Percentage</th>
<th>Mean±SD</th>
<th>Girls Percentage</th>
<th>Mean±SD</th>
<th>P (Sig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>Low</td>
<td>54.55</td>
<td>149.12±98.69</td>
<td>36.07</td>
<td>230.64±244.68</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>22.73</td>
<td>39.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>22.73</td>
<td>24.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekend</td>
<td>Low</td>
<td>4.55</td>
<td>349.27±237.46</td>
<td>3.28</td>
<td>459.13±494.90</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>50.00</td>
<td>26.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>45.45</td>
<td>70.49</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<0.05 indicates there is a significant difference using the Mann-Whitney test

Table 3 above shows that when weekdays, Adolescents of the male gender tend to do low category sedentary activities with a percentage of 54.55%. As for the female gender, they tend to do sedentary activities in the moderate category, with a percentage of 39.34%. For the weekend, respondents with the dominant male gender carried out sedentary activities in the moderate category with a percentage of 50%, while respondents with dominant female genders carried out sedentary activities in the high category with a percentage of 70.49%. Results from the Mann-Whitney test of Sedentary lifestyle differences in gender boys and girls showed meaningfully different results (p<0.05). From the results, it is known that the female gender has a higher Sedentary lifestyle than the male gender. To find out the differences in Sedentary lifestyle in all genders is presented in table 4 below.

### Table 4. Sedentary lifestyle level category in all genders

<table>
<thead>
<tr>
<th>Sedentary Lifestyle</th>
<th>Sedentary Lifestyle Level Category</th>
<th>All Gender Percentage (%)</th>
<th>Mean±SD</th>
<th>P (Sig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>Low</td>
<td>40.96</td>
<td>230.64±244.68</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>34.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>24.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekend</td>
<td>Low</td>
<td>3.61</td>
<td>430.01±442.75</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>32.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>63.86</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p<0.05 indicates there is a significant difference using the Mann-Whitney test

The results of table 4 showed that when weekdays, respondents predominantly carried out sedentary activities in the low category (40.96%), while when weekdays dominantly carried out sedentary activities in the high category (63.86%). The results of the Whitney Mann test also
showed significant results of a Sedentary lifestyle on weekdays and weekends (p<0.05) with a greater mean Sedentary lifestyle value on weekends.

4 Discussion

This study analyzed the sedentary lifestyle of 83 respondents who came from Adolescent students living in rural environments. The sedentary lifestyle in this study consists of 8 indicators, namely Watching times, Playing games, Reading times, Studying or doing homework, Additional study or tutoring, Using a motorized vehicle, Social media time, play or listening to music. The result is that social media is a sedentary activity that is mainly carried out by respondents who are adolescent students in rural areas. The average social media time of respondents on weekdays was 51.60 minutes per week, and when weekends increased to 104.85 minutes per week. This needs to be controlled because social media beyond 3 hours will interfere with a person's mental health [24]. In addition, excessive sedentary lifestyles, such as social media, will cause a decrease in physical activity which results in obesity [25].

In the world, more than 73% of internet users are active users of social media [26]. Many teenagers now have Internet-connected devices (iPads, smartphones, video game consoles, etc.) that allow them to go online anytime, anywhere. 76% of all teens use social media. 64% of teenagers are on social media every day, as well as 41% have accounts on various sites [27]. Social media has become one of the most important means of communication among teenagers and is now an indispensable part of their lives. Social media refers to any website that allows social interaction and sharing of ideas [27]. The time spent on social media varies. Some data report that most students spend 30-40 minutes on social media per day from 9 p.m. to 12 a.m. [28]. In Europe, people use social media for more than 2 hours [26]. At Turkey's Bingol University, 41.6% of students use social media for more than 4 hours and are moderate addictions [26]. In 2015 in Turkey, the average person spent 4.5 hours per day and social media for 3 hours and spent 2 hours watching television per day [29]. The Pew Research Center's study shows that 92% of internet use by teen age students ages 13-17 is very high, with 24% online continuously. UNICEF Indonesia's research in 2011 - 2012 on 43.5 million adolescents stated that 80% of adolescents use the internet to search for data and information, such as schoolwork or meeting with friends online (70%) through social media [30]. Among Teenagers, Facebook and Instagram sites are the most popular social media, and teenage students who come from underprivileged families tend to use Facebook more with a percentage of 49% when compared to teenagers from wealthy families who are only 37% [29].

Currently, every urban or rural resident uses social media. However, urban residents use more social media time, which is about 67-70%, and rural residents use around 61% [29], [31]. Prolonged use of social media significantly affects higher cardiometabolic risk, one's self-esteem, lower fitness, and obesity in schoolchildren with different values in boys and girls [32], [33], [34], [35], [36], [37]. Gorkemli (2017) also states that women use social media more often than men [29]. For them, the internet becomes important because of the limited facilities of libraries, and many roads are damaged, so they search for information through the internet and social media [38]. This is in accordance with the results of this study that women do more sedentary activities than men, with an average sedentary time on weekdays of 230.64 minutes per week and on weekends of 459.13 minutes per week (Table 3). Sedentary time will increase with age, and the female sex has more sedentary time than men [39]–[41].
Turning from social media factors, sedentary habits or Sedentary behavior cause negative effects on health. Currently, sedentary behavior is an important issue in public health [42]. Table 4 states that students in rural areas have higher sedentary scores on weekends than on weekdays. This result is in accordance with the research of Sigmundová & Sigmund (2021), which states that during weekends children and their parents have more sedentary time so a program is needed to reduce this [43]. During weekends it was also reported that children had low levels of physical activity and poor control of food intake, so many calories entered and lacked nutrients [44]–[46]. As revealed by Ding et al. (2011) in his research that states that the rural population has now experienced a shift from agriculture to business and some degree of economic modernization that led to a decrease in physical activity [47].

5 Conclusion

Female students in rural areas have a higher sedentary lifestyle score than men on both weekdays and weekends (p<0.05). Sedentary activities that are widely carried out are social media time, with an average of 51.60±216.39 minutes per week on weekdays and 104.85±124.01 minutes per week on weekends. A sedentary lifestyle on weekends is also higher than on weekdays, with an average sedentary lifestyle of 230.64±244.68 minutes per week on weekdays and 430.01±442.75 minutes per week on weekends. This result proves that students in rural areas have a high sedentary on weekends. The recommendation of this study is to provide physical activity or exercise on weekends, especially for women.

Acknowledgement

Thanks to the teachers and students of SMA Negeri Ngoro, SMA Negeri Bareng and SMK Negeri Wonosalam for being willing to be respondents in this study. Thanks also to the Universitas Negeri Surabaya for funding this research.

References


10.3390/ijerph18094532.


Management Of Sports Facilities And Infrastructure
Multievent Porprov East Java 2022

1st Lutfhi Abdil Khuddus1, 2nd Himawan Wismanadi2, 3rd Andun Sudijandoko3, 4th Catur Supriyanto4, 5th Afif Rusdiawan5
{lutfhikhuddus@unesa.ac.id1, himawanwismanadi@unesa.ac.id2, andunsudijandoko@unesa.ac.id3, catursupriyanto@unesa.ac.id4, afifrusdiawan@unesa.ac.id5}
Universitas Negeri Surabaya, Indonesia1, Universitas Negeri Surabaya, Indonesia2, Universitas Negeri Surabaya, Indonesia3, Universitas Negeri Surabaya, Indonesia4, Universitas Negeri Surabaya, Indonesia5

Abstract. The purpose of this study is to analyze related to the management of sports facilities and infrastructure in the activities of the Provincial Sports Week (Porprov) VII in 2022. This research is qualitative descriptive research with a naturalistic approach. There were 22 people who were the subject of the study consisting of 11 coaches and 11 athletes who competed in the Jember City. Data collection techniques use interview techniques that are conducted offline and online. The interview instrument consists of 10 questions, both for coaches and athletes. Data analysis techniques use thematic analysis that goes through the stages of data reduction, organizing, and interpreting data. The results showed that the feasibility of a good place to compete and, according to mash standards, has not been evenly distributed in the Porprov VII in 2022. Likewise, facilities such as toilets, spectators, warm-up rooms, and special dressing rooms for athletes are still not well available in some sports venues. The conclusion is that the management of sports facilities and infrastructure in the Porprov VII in 2022 is quite good. However, there are still some facilities that need to be equipped and improved eligibility conditions.

Keywords: Sport management, sports facilities, multievent, Porprov 2022, qualitative analysis.

1 Introduction

Sports are all systematic activities to encourage, foster, and develop physical, spiritual, and social potential [1]. The sport itself is essentially neutral and natural, but it is the society that then shapes and gives meaning to it. It can be concluded that exercise is a physical activity that is positive in nature, can be physically and spiritually healthy, and can encourage, foster, and develop physical, spiritual, and social potential. Sports cannot be separated from infrastructure as a form of providing facilities to carry out sports activities.

Public sports infrastructure is a basic need to carry out sports activities. Without adequate public sports infrastructure, it is not easy to expect public/public participation. Sports infrastructure is a "container" to carry out sports activities, thus to welcome the future of Indonesian sports, it is necessary to prepare a sufficient number of "containers" so that all people can get the same opportunity to exercise that can get fitness and health according to the concept of "sport for all", this is in line with the motto "Socializing Sports and Cultivating Community
Diversity” launched by President Soeharto on The Day of "Sport for all", this is in line with the motto "Socializing Sports and Cultivating Community Communities" launched by President Soeharto on The Day of "Sport for all", this is in line with the motto "Socializing Sports and Cultivating Community Diversity" launched by President Soeharto on The Day of National Sports in 1993 [2].

Sports facilities are things that can be used and utilized in the implementation of sports activities or physical education, which are divided into two groups, namely equipment (apparatus) and equipment (device) [3]. Meanwhile, infrastructure is defined as something that facilitates and facilitates tasks and has a relatively permanent nature [3]. However, adequate sports infrastructure is essential for sports participation, as many sports cannot be performed without having appropriate sports facilities [4].

Talking about sports with facilities gradually over the past two decades has greatly increased globally, but this event has had an impact on the construction of facilities [5]. Although many observers rarely cite that any construction of a sports facility will get the full right of inheritance [6].

From the background above, researchers take the problem, namely how to manage sports facilities and infrastructure in the activities of the East Java Provincial Sports Week in 2022. The purpose of this study is to find out how the management of sports facilities and infrastructure at the location of the East Java Provincial Sports Week activities in 2022. After knowing the purpose of the research, it can later be used as a benchmark to prepare sports facilities and infrastructure for the next activity.

As reported in suarasurabaya.net, the VII Provincial Sports Week in 2022 will be held in the horseshoe area, namely Jember, Lumajang, Bondowoso, and Situbondo. The Chairman of Koni Jatim, Mr. Muhammad Nabil, claimed that the preparations had been almost 100%, such as the preparation of match facilities around 80-90% and the technical preparations that continue to be matured [7]. Porprov Jatim VII is scheduled to compete in 47 sports, with six branches that will undergo porprov prequalification, namely football, volleyball, futsal, basketball, chess, and martial arts.

2 Method

This research is qualitative descriptive research with a naturalistic approach. Naturalistic qualitative research has a meaning in the form of the implementation of this research that occurs naturally, as it is, in normal situations that are not manipulated conditions and circumstances, emphasizing the description naturally [8]. Research conducted with qualitative methods can provide an overview in the form of a process in which problems in research are studied naturally, not in the laboratory and do not need to use number counts in statistics, but through a series of coding interpretation techniques and giving meaning to information obtained [9]. This research was carried out at the Porprov VII 2022 event offline and online. There were 11 people who were the subjects of this study, consisting of 11 athletes and 11 coaches who competed in the Jember Regency. Interviews are conducted offline if the research subjects are willing to be interviewed in person, while online interviews are conducted if the person who is willing to be the subject of the study cannot be met in person. There are ten items of questions asked to coaches and athletes of porprov Jatim 2022, which describe the provision of sports facilities and infrastructure at the multievent event of the East Java VII Provincial Sports Week. Here is a line-up of questions in interviews posed to coaches and athletes:
Table 1. Coach and athlete interview instrument Porprov VII 2022

<table>
<thead>
<tr>
<th>Interviews for coaches</th>
<th>Interviews for athletes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How is the eligibility of the place to compete? Is it standard enough, adequate, or less? If not, please state where the lack is!</td>
<td>1. How is the eligibility of the place to compete? Is it standard enough, adequate, or less? If not, please state where the lack is!</td>
</tr>
<tr>
<td>2. Are there toilets in the competition area? Furthermore, how is it?</td>
<td>2. Are there toilets in the competition area? Furthermore, how is it?</td>
</tr>
<tr>
<td>3. Is there a place of worship around the competition area? Furthermore, how is it?</td>
<td>3. Is there a place of worship around the competition area? Furthermore, how is it?</td>
</tr>
<tr>
<td>4. How do you feel about the safety and comfort in the competition area?</td>
<td>4. How do you feel about the safety and comfort in the competition area?</td>
</tr>
<tr>
<td>5. Does the committee provide a place for complaints regarding inadequate or damaged competition facilities and infrastructure?</td>
<td>5. Does the committee provide a place for complaints regarding inadequate or damaged competition facilities and infrastructure?</td>
</tr>
<tr>
<td>6. How is the condition of East Java Porprov infrastructure this year compared to the previous year? Is it better or worse?</td>
<td>6. How is the condition of East Java Porprov infrastructure this year compared to the previous year? Is it better or worse?</td>
</tr>
<tr>
<td>7. If there is a score range of 1-10, how much value do you give to the provision of facilities and infrastructure for the East Java Province VII/2022 in your sport?</td>
<td>7. If there is a score range of 1-10, how much value do you give to the provision of facilities and infrastructure for the East Java Province VII/2022 in your sport?</td>
</tr>
<tr>
<td>8. Give comments, criticisms, or suggestions regarding the provision of facilities and infrastructure for East Java Province VII/2022 in your sport?</td>
<td>8. Give comments, criticisms, or suggestions regarding the provision of facilities and infrastructure for East Java Province VII/2022 in your sport?</td>
</tr>
<tr>
<td>9. If there is a score range of 1-10, how much value do you give to the provision of facilities and infrastructure for the East Java Province VII/2022 in your sport?</td>
<td>9. If there is a score range of 1-10, how much value do you give to the provision of facilities and infrastructure for the East Java Province VII/2022 in your sport?</td>
</tr>
<tr>
<td>10. Give comments, criticisms, or suggestions about providing facilities and infrastructure for East Java Province VII/2022 in your sport?</td>
<td>10. Give comments, criticisms, or suggestions about the provision of facilities and infrastructure for East Java Province VII/2022 in your sport?</td>
</tr>
</tbody>
</table>

Analysis techniques resulted from interviews conducted at the time of data collection using thematic analysis through the stages of data reduction, organizing, and interpretation [10].

3 Result and Discussion

3.1 Result

This study aims to quantify and analyze the provision of facilities and infrastructure for implementing Porprov VII East Java in 2022 in Jember Regency. This interview was conducted on 11 coaches and 11 athletes who participated in the Porprov VII 2022 event, which was held in Jember Regency. The results of the analysis from the interviews that have been conducted are presented in the table below.
<table>
<thead>
<tr>
<th>No</th>
<th>Themes/Categories</th>
<th>Code/Label</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Place eligibility</td>
<td>1) According to the standards</td>
<td>The eligibility of a place to compete or compete in the Porprov VII 2022 event has different conditions in each sport. There are sports whose venue eligibility is good, up to standard, good, and adequate. However, there are some other cabors whose places are not decent, and inadequate, and the quality is still not good.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Adequate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Quite standard</td>
<td>There are sports whose venue eligibility is good, up to standard, good, and adequate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) Quite decent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) Quite good</td>
<td>However, there are some other cabors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7) Less worthy</td>
<td>whose places are not decent, and inadequate, and the quality is still not good.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8) Inadequate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9) Less quality</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Toilet</td>
<td>1) There</td>
<td>The existence of toilets in places to compete/compete unevenly. The places to compete in some competitions do not all provide facilities in the form of toilets. The condition of the toilets is also different, some are in good condition and clean, but some are dirty, very poor and inadequate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Clean</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Dirty</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) Quite good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7) Inadequate</td>
<td>clean, but some are dirty, very poor and inadequate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8) Very less</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Warm-up room and athletes’ locker room</td>
<td>1) There</td>
<td>Warm-ups and locker rooms are specifically for athletes, and not all sports have these facilities. There are several sports that are not available for spectators and some are not. In sports that already have places for spectators, the conditions are different. Some are decent and good, but some are less than optimal, such as hot conditions and lack of privacy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Decent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) Hot</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) Lack of privacy</td>
<td>provided a warm-up room and an athlete's locker room, the conditions are also different. Some are decent and good, but some are less than optimal, such as hot conditions and lack of privacy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7) Less than maximum</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Spectator area</td>
<td>1) There</td>
<td>The availability of spectator area facilities is not owned by all sports in Porprov VII 2022. There are several sports that are available for spectators and some are not. In sports that already have places for spectators, the conditions are different. However, there are sports where the conditions where the audience is less decent and less large (not big enough).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Good condition</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Enough</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) Adequate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6) Neat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7) Not big enough</td>
<td>There are those whose conditions are sufficient, not bad, neat, and adequate. However, there are sports where the conditions where the audience is less decent and less large (not big enough).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8) Less worthy</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Places of worship</td>
<td>1) There</td>
<td>Places of worship are readily available in every sport. The majority of the conditions have been decent, good, and clean. But there is one sport that is constrained to take ablution water, where the ablution water intake must go to the toilet first.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Decent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Clean</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) The difficulty of ablution water</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Safety and comfort</td>
<td>1) Safe</td>
<td>The safety and comfort conditions in each sport are different. Some are already safe and comfortable. On the other place, there are those whose place of competition is lacking in safety and comfort conditions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Comfortable</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Less safe</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Less comfortable</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1) There</td>
<td></td>
</tr>
</tbody>
</table>
Facilities in the form of complaints related to lacking or damaged infrastructure are not all available in the venues of all sports. However, there are some coaches/athletes who still do not know whether or not these facilities are available during porprov VII 2022.

Comparison between the implementation of Porprov VII 2022 with the previous Porprov, each sport has a different perception. There are several sports that argue that Porprov VII 2022 is better than the previous Porprov. Several sports argue that it is better to hold the previous Porprov than porprov VII 2022. Some state that the implementation of Porprov VII 2022 is as good as the previous Porprov. In addition, there is a statement stating that they do not know, because the party concerned has only participated in the Porprov event this year and has not participated in the previous Porprov event. Of all the research subjects, the value given to the infrastructure provision for Porprov Jatim VII 2022 is at numbers 4, 6, 7, 7.5, 8, 8.5, and 9. However, if you look for the average value of the whole, a value of 7.5 will be obtained.

From the general comments, criticisms, and suggestions given by the research subjects, it is said that the implementation of Porprov VII 2022 is already quite good. However, some suggestions are given as material for evaluating the implementation of porprov, most of which criticisms and suggestions are aimed at improving the organization's management and the facilities and venues for competing in each sport. In addition, it is necessary to pay attention to safety in the place of competition. With these criticisms, it is hoped that the upcoming implementation of Porprov can be better.

Based on the analysis of the interview in the table above, the results were obtained that in the feasibility category of places to compete or compete in each sport porprov Jatim VII 2022 in Jember Regency has different venue feasibility. There are several sports whose venue eligibility is good, up to standard, and adequate. However, there are some sports whose places to compete are not decent or inadequate, and the quality is still not good. In the toilet category,
it shows the results that the existence of toilets in competition/competition is still uneven, because not all sports have toilets in the place of the match. The condition of the toilets in the place of competition is also different. Some are already good and clean, but there are also those whose toilet conditions are dirty, inadequate, and even feel that they are still very lacking. The category of warm-up rooms and athletes’ locker rooms also showed results in the form of not all sports being provided with warm-up room facilities and special dressing rooms for athletes. The sports that have been provided with these facilities, the room conditions are different. Some heating rooms and dressing rooms are already in decent and good condition, but some are not optimal, such to the hot conditions and lack of privacy.

The spectator area category shows the analysis results, namely that not all sports venues have spectator venues. The sports that have been provided with spectators have different conditions. Some sports have conditions that are already quite good, neat, and adequate. However, there are sports where the conditions where the audience is less decent and the capacity is less large. In the category of places of worship, results were obtained stating that places of worship were available in each place to compete in each sport with decent, good, and clean conditions.

However, there are some sports that are constrained to take ablution water, where the ablution water intake must go to the toilet first. Then, the category of safety and comfort shows that the safety and comfort conditions of each sport are different. There are sports that have provided sufficient security and comfort, on the other hand, there are those whose level of security and comfort is still not good.

In the category of complaints related to poor or damaged infrastructure, it was found that most of the research subjects did not know whether or not there were facilities in the form of complaint places related to insufficient or damaged infrastructure. However, there are several research subjects who say that in the place of competing in sports there is already such a facility, and there are some who mention that there is no facility in the form of a place for complaints. Meanwhile, the comparison category between porprov this year and the previous year also showed different results. Several research subjects state that the implementation of Porprov is better this year, several others are mentioning that it is better to organize Porprov the previous year than porprov this year. On the other hand, there are also those who state that between the organizers of this year's Porprov and the previous year's Porprov are equally good. In fact, there are some research subjects who mention that they don't know the comparison between the two, because it's the first time to follow Porprov this year.

The research subjects' value on the provision of Porprov VII East Java infrastructure in 2022 showed various figures. It is starting from the values of 4, 6, 7, 7.5, 8, 8.5, and 9. However, if calculated, the average value of the overall value given by the study subject is 7.5. In the latter category, it is shown that from the overall comments, critiques, or suggestions given by the subject of the study said that the implementation of Porprov VII in 2022 was already quite good. However, there are some suggestions given as material for the evaluation of the implementation of porprov this year, most of which are suggestions and criticisms aimed at improving the management of the organization and improving the facilities and venues for competing in each sport, as well as the need to increase the level of security at the venue. So with this criticism, the subject of the study hopes that the upcoming implementation of Porprov can be better than this year.

3.2 Discussion
Sports facilities and infrastructure have a meaning as all types of buildings and non-buildings that have a function to support the implementation of sports activities, including all sports fields and buildings and all their equipment in the implementation of sports activity programs [11]. However, from the results of the analysis that has been carried out, the condition of infrastructure in the multi-event Porprov VII 2022 in Jember Regency shows that the feasibility of adequate facilities is still uneven. Such as the feasibility conditions of toilets and warm-up rooms and athletes' changing rooms vary from venue to sports venue. Toilets and athletes' locker rooms are one of the most vital supporters in preparing the infrastructure of an event [12]. Similarly, there is a warm-up room for athletes. Since warming up before training and competitive matches is a widely accepted practice in modern sports environments, athletes and coaches believe that warm-up is essential to achieving optimal performance [13]. Athletes must gradually increase their efforts during warm-up so that the functioning of internal organs in the body can compensate for the efforts and movements of players when competing [14], and is expected to prevent from the threat of injury [15]–[17]. With a particular warm-up room, it will maximize the warm-up phase of athletes before competing without any interference from external factors.

Not all sports have spectator spots available. If there is, there are still venues where the audience has a less large capacity. The spectator stand is a facility used by match spectators around the field, where one of the main provisions is the existence of seats according to standards [18]. With adequate spectators, it will provide an opportunity for supporters to come to the venue to support athletes because the presence of parents and supporters will affect a person's level of motivation when competing [19].

Places of worship are already available in all sports venues, but they are still constrained by ablution water. The places of worship available at each venue are natural, especially in Indonesia. Because The Royal Islamic Strategic Studies Centre (RISSC) or MABDA entitled The Muslim 500 of 2022 states that there are 231.06 million Indonesians who converted to Islam, this number is equivalent to 86.7% of the total Indonesian population [20]. In addition, data in 2021 from the Ministry of Religion of the Republic of Indonesia stated that the number of mosques in Indonesia was 741,991 [21].

A good level of safety and comfort, still not felt by the entire sport. Security at the venue or venue of each sport must be considered and consider the emergence of noise so that a way is needed to anticipate events if there is a commotion [12]. Junaidi mentioned that several principles in the planning of sports infrastructure are: (1) infrastructure must meet applicable regulations and standards, (2) must meet standards for spectators, (3) must meet the needs of athletes, (4) must be built with athlete safety in mind, (5) built by considering the health and comfort of athletes, (6) all equipment must comply with standards for safety and convenient to use, etc [22].

Sports infrastructure available in Indonesia today, there are still some that are not optimal in their use and are not maintained even to the point of being damaged [23]. The main problems in Indonesia in the management of sports facilities and infrastructure include: (1) inflexible management, (2) non-optimal utilization, (3) limited access, (4) inadequate supporting facilities, and (5) minimal management budget [24]. In fact, infrastructure or infrastructure in sports is important for athletes, in addition to being able to be used to train and compete safely and comfortably [25]. In addition, the condition of adequate facilities and infrastructure can also increase the motivation for athletes to excel [26].
4 Conclusion

The management of multievent sports facilities and infrastructure porprov East Java to VII in 2022 is quite good, but there are still some infrastructure facilities that need to be equipped and improved feasibility conditions. The next Porprov multievent event is hoped to be better than Porprov VII 2022.

Acknowledgement

Thanks to the coach and athlete of Porprov VII 2022 East Java for being willing to be respondents in this study. Thanks also to the Universitas Negeri Surabaya for funding this research.

References


Abstract. This study aims to determine differences in body mass index, sedentary lifestyle, and physical activity of junior high school students in mountainous and coastal areas. This study used a cross-sectional design with 97 junior high school students as research subjects who were living in coastal areas (CoA) and mountainous areas (MoA). Anthropometric measurements of subjects were performed to determine nutritional status based on BMI. The level of physical activity was measured using the IPAQ short form instrument and the Sedentary Lifestyle using the ASAQ instrument. Data were analyzed by descriptive test, percentage, and Mann Whitney test. The results showed a normal BMI category with a mean MoA (19.35±2.78) and CoA (20.25±4.00). For PA also showed a moderate results with a mean MoA (1970±2633.16) and CoA (1388.12±2290.20). While SL showed low mean results, namely MoA (187.85±217.62) and CoA (121.12±87.85). The results of the Mann Whitney test stated that the P value> 0.05 in BMI, PA, and SL. The conclusion is that there is no significant difference in nutritional status, physical activity, and sedentary lifestyle between students living in mountainous areas and coastal areas.

Keywords: Physical activity, sedentary, body mass index, students, geographic
walking to school to playing football (Handayani et al., 2021). Physical activity refers to a person's fitness level and condition (Yared et al., 2019). Where in physical activity especially for children to adolescents need to be considered in more detail. The measurement of physical activity is fundamental to health-related research, practice, and (Sattler et al., 2021).

If in young people to adults, the recommended physical activity is by exercising, but for small children sports activities need to be adjusted. Exercise itself according to (Wiersma, 2016), is a physical activity that is done in a measured and structured manner to improve and maintain physical condition. Physical activity is any bodily movement produced by skeletal muscles that require energy (Liu et al., 2012)(Bull et al., 2020). Physical activity is divided into three categories, the first in the category of light, medium to heavy category (Widiantini & Tafal, 2014). Light physical activity is a physical activity that is done with little exertion. For example are learning, eating, drinking, and brushing teeth. Then moderate physical activity is a physical activity that the body does by exerting more energy to produce sweat and make the heart rate and breathing frequency become faster, but still able to sing and talk. For example, cycling, jogging to jumping ropes. Then heavy physical activity is an activity that is done with high intensity and frequency so that the body experiences excessive energy drain and heart rate that beats very fast. An example is lifting heavy weights, participating in marathon races to playing football competitively.

Physical activity is a complex behavior; however, opportunities to be active exist in several domains in life: at work, household, or at school, for travel or during leisure time (Strain et al., 2020). It is necessary to know that a physical activity tailored to one's needs and abilities will affect both physical and spiritual conditions and circumstances. This is in line with that researched by (Budiati, 2013) that physical activity is essential for the health and condition of adolescents in carrying out their daily activities. In addition, adolescents who regularly perform physical activity also tend to have better protection against attacks of some diseases than adolescents who lack physical activity. That is, physical activity is very important especially for the growth and as antibodies of adolescents in each activity so that they do not get sick easily. Hopefully, the physical growth of a good child, it can affect how the child behaves for himself as well as the social and community of the surrounding environment.

In the information era as it is now, it is certainly a challenge to create an active and progressive environment. This is because more and more teenagers prefer to spend their time playing gadgets and online games. Physical inactivity became the number four killer in the world. Physical inactivity is a sufficient physical activity level to meet the present physical activity recommendations (Bull et al., 2020).

A lifestyle that is more often spent sitting, lying down, playing games, and watching television is a sedentary lifestyle (Rahma Pramudita et al., 2017). Sedentary lifestyle is very influential in the growth and future of children. This is evidenced by research conducted (Puspitasari, 2016), that sedentary lifestyle is very closely related to the level of physical activity of a person. If a child is used to this lifestyle, then it can be interpreted that the time will run out just to sitting, so that his physical activity becomes decreased. Lack of physical activity can result in the onset of some degenerative diseases. From hypertension, heart attack to obesity (Shin et al., 2014). According to (Puspitasari, 2016) also, children who spend more time playing games and watching television will have an impact on the child's low activity so that only a few calories in his body are wasted and most likely result in obesity. Obesity disease is one of the highest
degenerative diseases and affects many adolescent children. Basic Health Research Data from the Ministry of Health year 2013 mentioned, that obesity in adolescents 13 to 15 years in Indonesia amounted to 10.8% consisting of 8.3% overweight (obese) and 2.5% obesity (very obese).

Environmental conditions can affect a person's level of physical activity and nutritional status (Maddison et al., 2009). This is due to the differences in infrastructure in each different area so it affects their daily activity habits (Henderson et al., 2015). Bauman et al. (2002) also said that the level of education, income, and demographic conditions affect a person's level of physical activity. Starting from urban or urban areas to sub-urban areas both coastal and mountainous. These differences in characteristics and culture ultimately affect a person's lifestyle and physical activity. According to Andi (2020), factors that greatly affect the lifestyle and growth of children are ranging from genetics, socioeconomic conditions, health status, residential environment to sports or physical activity. In addition, the influence of the environment in urban areas will be greater to stimulate the growth of children than sub-urban. According to Passau (S & Andi, 2020) mention, this is because urban areas in facilities and facilities are more advanced than sub-urban areas. Starting from playgrounds, recreation places, science, and reading books that stimulate passion to facilities and health promotions that provide important education for physical activity. Not only that, the role of the environment and family here is also central to the impact on sedentary in children, from how to educate and direct their children to remain active even in today's modern era.

The coastal area or coastal zone is unique because, in the context of the landscape, the coastal area is the meeting place of land and sea (Asyiawati & Akliyah, 2011). Wherrett (2010) said that people living in coastal environments have a positive impact on individual welfare compared to communities outside the coastal environment. Most people describe the beach as a place that provides free space for relaxation, and the ability to explore so that it can affect humans and produce positive psychological effects such as calm and a feeling of peace (Peng & Yamashita, 2016). Hernández-Gallardo et al. (2020) in their research on students living in coastal areas of Ecuador concluded that people living on the coast have lifestyle habits that tend to be less mobile and avoid physical activity. The mountainous area has places conducive to health and wellness tourism as well as activities focused on contemplation and meditation (Schoner, 2010). Mountain areas also have recreational sports facilities such as swimming, diving, skiing, downhill biking, paragliding, snowboarding (Markovic & Petrovic, 2013).

This research will focus on the level of activity and sedentary of grade 7-9 children spread in various regions in East Java Province, of course with the background of each region has different habits and characteristics. By making parents the main factor related to how to provide education and parenting patterns carried out in the daily life of children, especially in their physical activities.

### 2 Materials and methods

#### 2.1 Study participants

This study used a cross-sectional design with 97 junior high school students as research subjects. Research subjects were divided by cluster random sampling technique between groups of junior
high school students living in coastal areas (CoA) and groups of junior high school students living in mountainous areas (MoA). The number of samples in the CoA group was 46 students while the MoA group was 51 students.

2.2 Instruments and procedures

Anthropometric measurements of subjects were performed to determine nutritional status based on BMI (Body Mass Index). Filling out the questionnaire regarding the physical activity carried out was obtained directly from the International Physical Activity Questionnaire (IPAQ) short form and Sedentary lifestyle instruments using the Adolescent Sedentary Activity Questionnaire (ASAQ) instrument. The IPAQ was used to calculate MET as an estimate of the energy expenditure of total weekly physical activity with weighted minutes reported per week in each activity category (Craig et al., 2003). While the ASAQ is done by calculating the average time per day used for a sedentary lifestyle. A sedentary lifestyle is said to be high if 5 hours of doing a sedentary lifestyle every day and said to be low if < 5 hours per day doing a sedentary lifestyle (Guo et al., 2012).

![Fig. 1. Research procedures on measuring nutritional status, level of physical activity, and sedentary lifestyle of students in the CoA and MoA groups](image)

2.3 Statistical analysis
The data collected were analyzed descriptively to determine the average nutritional status, physical activity, and sedentary lifestyle of each group. The percentage is also calculated based on the category of nutritional status, physical activity, and sedentary lifestyle to see the condition of the research subjects. Mann Whitney test was also carried out to determine the differences in variables between groups.

3 Results

A total of 97 junior high school students were used in this study consisting of 46 students in coastal areas and 51 students in mountainous areas. The average value and standard deviation of the characteristics of the research subjects in the two groups are presented in table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mountain Areas (Mean±SD)</th>
<th>Coastal Areas (Mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys (N=26)</td>
<td>Girls (N=25)</td>
</tr>
<tr>
<td>Age (year)</td>
<td>13.12±1.03</td>
<td>13.08±1.12</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>151.58±11.3</td>
<td>150.48±7.8</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>45.73±8.48</td>
<td>42.64±7.12</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>19.87±2.80</td>
<td>18.81±2.71</td>
</tr>
<tr>
<td>PA level</td>
<td>2324.77±1601.60</td>
<td>1601.60±2233.48</td>
</tr>
<tr>
<td>SL level</td>
<td>124.41±253.83</td>
<td>187.85±217.62</td>
</tr>
<tr>
<td></td>
<td>58.49±293.60</td>
<td>217.62</td>
</tr>
</tbody>
</table>

Note: PA level = level of physical activity as measured by IPAQ; SL level = Level of Sedentary lifestyle as measured by ASAQ

This study uses BMI to measure the nutritional status of research subjects (Barao & Forones, 2012). The results of the percentage of BMI between the Mountain Areas Group (MoA) and the Coastal Areas group (CoA) are presented in more detail in table 2 below.

<table>
<thead>
<tr>
<th>BMI level Category</th>
<th>MoA</th>
<th>CoA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys %</td>
<td>Girls %</td>
</tr>
<tr>
<td>High-grade underweight</td>
<td>7.60</td>
<td>0</td>
</tr>
<tr>
<td>Low-grade Underweight</td>
<td>34.00</td>
<td>0</td>
</tr>
<tr>
<td>Normal</td>
<td>53.85</td>
<td>0</td>
</tr>
</tbody>
</table>
Low-grade overweight

<table>
<thead>
<tr>
<th>Grade</th>
<th>MoA</th>
<th>CoA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Girls</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>All</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

High-grade overweight

<table>
<thead>
<tr>
<th>Grade</th>
<th>MoA</th>
<th>CoA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Girls</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>All</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: MoA = Mountain Areas; CoA = Coastal Areas

Fig. 2. (a) BMI level of the MoA group; (b) BMI level of the CoA group

Body Mass Index (BMI) level is categorized based on the Ministry of Health of the Republic of Indonesia with the criteria of High-grade underweight if the BMI value is <17, High-grade underweight if the BMI value is between 17.0 - 18.4, Normal if the BMI value is between 18.5 - 25.0, Low-grade overweight if the BMI value is around between 25.1 – 27.0 and High-grade overweight if the BMI value is > 27.0 (Harahap et al., 2014). Table 2 shows that the BMI level in the MoA group is mostly in the normal category with a percentage of 53% for men, 48% for women, and 50.98% for all genders. Meanwhile, the BMI level in the CoA group obtained similar results, namely most were included in the normal category with a percentage of 43.75% for men, 50% for women, and 47.83% for all genders. Thus it can be concluded that the average research subjects have a normal BMI.

Table 3. Percentage of PA level category in both groups

<table>
<thead>
<tr>
<th>PA Level Category</th>
<th>MoA</th>
<th>CoA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys %</td>
<td>Girls %</td>
<td>All Gender %</td>
</tr>
<tr>
<td>Low</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Moderate</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>High</td>
<td>3</td>
<td>18</td>
</tr>
</tbody>
</table>

Fig. 2. (a) BMI level of the MoA group; (b) BMI level of the CoA group
PA level in this study was measured using the IPAQ Short form scoring instrument. The IPAQ was used to calculate MET as an estimate of the energy expenditure of total weekly physical activity by weighting the minutes reported per week in each activity category (Craig et al., 2003). Category low if the MET value is < 600 minutes/week, moderate if the MET value is 600 to < 3000 minutes/week, and high if the MET value is 3000 minutes/week (Ashok et al., 2017). In Table 3 above, the percentage of the Low MoA group category is the largest compared to other categories, both in boys (43.75%) and girls (53.33%). While the CoA group showed different results, the largest percentage in boys was in a low category (34.62%) and high category (34.62%), while for girls it was in the moderate category (40%).

Table 4. Percentage of SL level category in both groups

<table>
<thead>
<tr>
<th>SL Level Category</th>
<th>MoA Boys %</th>
<th>MoA Girls %</th>
<th>MoA All Gender %</th>
<th>CoA Boys %</th>
<th>CoA Girls %</th>
<th>CoA All Gender %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>26</td>
<td>10</td>
<td>18</td>
<td>7</td>
<td>44</td>
<td>86.2</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3.33</td>
<td>2</td>
</tr>
<tr>
<td>High</td>
<td>0</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3.33</td>
</tr>
</tbody>
</table>

Note: SL level = Level of Sedentary lifestyle as measured by ASAQ; MoA = Mountain Areas; CoA = Coastal Areas
SL level was measured using the ASAQ instrument (Hardy et al., 2007). The SL level is in the high category if the SL value is > 5 hours/day and the low category is if the SL value is 5 hours/day (Andriyani et al., 2020). Table 4 shows the value of 100% in the low category in the Boys MoA group and 72% in the Girls MoA group. While in the CoA group, the percentage with a large score is also in the low category, namely 93.75% for boys and 96.67% for girls. These results can be concluded that the average SL level category of the two groups is in the low category for both boys and girls.

To find differences in the BMI, PA level, and SL level variables in the MoA group and CoA group, the Mann Whitney test was carried out. The results of the Mann-Whitney test are presented in Table 5 below.

Table 5. Differences in BMI PA and SL levels in MoA group dan CoA group

<table>
<thead>
<tr>
<th>Group</th>
<th>BMI (kg/m²) Mean±SD</th>
<th>Sig.</th>
<th>PA (MET) Mean±SD</th>
<th>Sig.</th>
<th>SL Mean±SD</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoA</td>
<td>19.35±2.78</td>
<td>0.454</td>
<td>1970±2633.16</td>
<td>0.106</td>
<td>187.85</td>
<td>0.059</td>
</tr>
<tr>
<td>CoA</td>
<td>20.25±4.00</td>
<td></td>
<td>1388.12±2290.20</td>
<td></td>
<td>217.62</td>
<td></td>
</tr>
</tbody>
</table>

Note: *significant difference at α<0.05; MoA = Mountain Areas; CoA = Coastal Areas

Table 5 above shows that the value of sig. > 0.05 on all variables. So it can be concluded that there is no difference in the variables of BMI, PA, and SL in the MoA group and CoA group.

4 Discussion

The results of the descriptive analysis of this study showed that the nutritional status as measured by BMI was normal in both the CoA and MoA groups. The Mann-Whitney test also showed no significant difference in nutritional status between the CoA and MoA groups (p=
Thus it can be concluded that students who live in coastal areas have no difference in nutritional status with students who live in mountainous areas. Nutritional status is influenced by 2 factors, namely total energy expenditure and dietary energy intake (Basain Valdés et al., 2017). Several mechanisms affect a person's weight, one of which is physical activity in response to the weather in the area (Tucker & Gilliland, 2007). Physical activity has an important role in weight loss because it involves a 20-50% increase in energy expenditure (Puspitasari, 2016). Some studies also reveal that a person will be more active in physical activity in hilly areas and pleasant scenery (Brownson et al., 2001). By the results of this study which states that the two areas have a normal average BMI because they are located in mountainous areas which are hilly areas and coastal areas that have beautiful scenery.

According to Westerterp et al. (2002), the environment can also affect physical activity because of the existing temperature (Westerterp-Plantenga et al., 2002). Exposure to cold temperatures causes behavioral changes to generate or conserve heat (Kingma et al., 2012). In the short term, cold temperatures can increase food intake and metabolic energy expenditure (Brobeck, 1997). In the mountainous area (MoA group) which in this study is in Malang Regency, it is an area with an average cool temperature between 18.25-31.45°C (Herlina & Prasetyorini, 2020). Thus the research subjects did physical activity well, this is evidenced by the results of the study which showed the average MET for students in mountainous areas was 1970 minutes/week which was included in the moderate category (see tables 1 and 5).

The coastal area (CoA group) which in this study is the Pacitan Regency area is a mountainous and coastal area. In this study, the research subjects were taken several students who went to school in the Ngadirojo sub-district which is a coastal area with an average temperature of 32.5 – 37°C (Pacitan, 2020). The results showed that the average MET CoA group value was 1388 min/week which was included in the moderate category (see tables 1 and 5). This result is by Hernandez's research (2020) which reports that 52% of students in coastal areas have MET scores which are in the moderate category with an average MET score of 1076.93 min/week (Hernández-Gallardo et al., 2020).

The results of the sedentary lifestyle (SL) in both groups showed values that were included in the low category of 187.85 min/day for the MoA group and 121.12 min/day for the CoA group. From these results, it can be concluded that students who are in schools in mountainous and coastal areas have a low sedentary lifestyle which means they are active in physical activity. This is good because according to some studies, the mortality rate increases by 2% for every hour of sitting and can reach up to 8% per hour when spending time sitting more than 8 hours per day (Bailey et al., 2018).

Sedentary Lifestyle is sitting time or simply low-level physical activity or activities that refer to all kinds of activities carried out outside of bedtime, with very few calorie output characteristics such as lying down, sitting, watching television, using computers, and other forms of screen-based entertainment (Muflihah & Wardhani, 2021). Sedentary lifestyle results in energy that was previously not needed for activities which are then stored as fat deposits and eventually causes obesity (De Gouw et al., 2021).

Physical activity is related to the status of the city because substantially the progress of transportation and technology in urban areas, as well as the modernization and transfer of the function of work and agricultural aids in rural areas, is associated with a decrease in physical activity which increases obesity cases. The influence of advances in transportation and
technology such as television, the internet, games also has an impact on decreasing physical activity (Puspitasari, 2016). From this explanation, it can be concluded that mountainous and coastal areas have a low level of sedentary lifestyle due to undeveloped transportation facilities and technology such as in urban areas which result in daily activities being carried out manually by involving physically. Residents in coastal areas have a relatively low economic level. Resource economists view that the poverty of coastal communities, especially fishermen, is mostly due to socio-economic factors related to the characteristics of the resources and the technology used (Kristiyanti, 2016).

Based on the results of the Mann Whitney test in table 5, states that there is no significant difference between the MoA group and CoA group on the PA (P = 0.106) and SL (P = 0.059) variables. This is because the conditions of the people in the area are not much different. they generally still do not have the means of transportation and technology that is not yet advanced like urban areas, resulting in life there being done manually by involving physically.

5 Conclusions

Junior high school students in the mountains and coastal areas have a normal average nutritional status, moderate level of physical activity, and low sedentary lifestyle. It’s good but needs to improve the level of physical activity because the percentage of the low category is still a lot. By statistical test, there was no meaning of differences in nutritional status value, level of physical activity, and sedentary lifestyle between students living in the mountains and coastal areas. This is due to the conditions of the two areas that are not much different in socio-economy. Suggestions for future research, apart from measuring the level of physical activity, nutritional status, and sedentary lifestyle; it also discusses socio-economic conditions, parental education levels, and the character and culture of the people of each region to identify factors that cause differences in levels of physical activity, nutritional status, and sedentary lifestyle.

6 Acknowledgement

The author would like to thank the teachers and students of SMPN 01 Jabung Malang and SMPN 03 Ngadirojo Pacitan for allowing their students to participate in this research as research subjects. Thank you also to PNBP Unesa who has provided financial support to carry out this research.

7 Conflict of interest

All researchers declare that there is no conflict of interest in this research.

References


Study Of Information And Characteristics Of Handball Athletes

Asyifa Tsalisafriana¹, Ranu Baskora Aji Putra²

{ salisyifa@students.unnes.ac.id¹ , ranu_baskora@mail.unnes.ac.id²}

Universitas Negeri Semarang, Semarang, Indonesia¹ Universitas Negeri Semarang, Semarang, Indonesia²

Abstract. Information about handball in Indonesia has not yet spread throughout society so that the sport has not been widely played among the people of Indonesia. The purpose of this study is to describe and identify information and knowledge about handball and the needs of handball players. The method used is the Systematic mapping study which is systematic. The articles cited for reference were published between 2004-2018. The study map was taken from various reviews related to reviews of research results and articles about handball, characteristics of handball players, needs in handball games. The results of this study describe the information and characteristics of handball players who require endurance, speed, agility, arm muscle strength, muscle explosive power and throwing accuracy.

Keywords: Physical condition, handball athlete, handball

1 Introduction

Handball is a sport that is relatively new in Indonesia. Handball is a sport that uses a small ball media and is played in teams of 14-16 players per team with 7 core players including goalkeepers and the rest are reserve players. This handball sport requires players with excellent abilities and skills. Each player must be able to make decisions quickly and accurately in every opportunity/decision in his game.

Mahendra in (1) said "Handball is a team game where the ball as a tool is played with one/both hands". The ball can be given to teammates by throwing or bouncing. Handball is a sport that combines basketball and football. Because handball has basic techniques that resemble basketball techniques such as passing, dribbling, shooting, and others. But this sports field is more like a football field but with a smaller size and uses two goals.

Increasing the enthusiasm of people who like Handball is a challenge for the players of this handball sport. The large number of human resources for coaches, referees and other supporting staff in Handball is one of the benchmarks for the development of this sport. The increasing quantity of human resources who develop the Handball sport needs to be anticipated with adequate quality and competency improvements. This can have an impact on improving the quality of coaches and improving overall athlete achievement in handball.

According to Mustofa quoted by (2) explaining that the history of handball began in 1928 with the formation of the International Amateur Handball Federation (IAHF) which was ratified to coincide with the Olympics de Amsterdam with chairman Avery Brundage from the USA. After 1936 the members of the IAHF became 23 countries and continued with the championship which is usually called the "Berlin Olympic Games" in the city of Berlin,
Germany. Finally, in 1946 at the suggestion and invitation of Denmark and Sweden, the eight countries that pioneered the International Hand Football Federation. The eight countries are: Denmark, Finland, France, Netherlands, Norway, Poland, Sweden and Switzerland.

2 Method

The method used in this study is the Systematic mapping study. This paper presents a study of 3 main subject areas. The method used revolves around the main variable entities of handball history in Indonesia, handball game rules, physical condition of handball players. Found and peer reviewed articles identified by search engines PubMed, Crossref, GoogleScholar articles, Scopus and publications by local universities. The following is a concept map of this study approach.

3 Results And Discussions

3.1. History of Handball in Indonesia

In Asia the Handball Federation (Asian Handball Federation) was formed in 1974 at the time of the Asian Games in the city of Tehran which was then officially inaugurated in Kuwait
in 1967. In Indonesia, if we look at the history sheet, it turns out that the National Sports Week (PON) to II, which was held in Jakarta, handball played by 11 players once filled the event even though at that time there were only 4 participants in the match, namely: Greater Jakarta, West Java, Central Java and East Java (3). In addition to the II PON, handball also participated in the V Student Sports Week in 1960 in Medan. However, the 11-player handball game did not progress until it became unpopular (4).

3.2. Handball Game Rules

Handball game is played by 6 people and 1 goalkeeper. The goal of the game is to get the ball into the opponent's goal as much as possible. Handball is played by 6 players and 1 goalkeeper using a court with a length of 40 meters and a width of 20 meters with a time of 2x30 minutes for men and 2x20 minutes for women, the weight of the ball in handball is about 425-475 g and the ball diameter is 54-60 cm. Penalty on handball occurs because the first foul results in a player being warned a yellow card from the referee then a second foul yellow card which is a suspension for 2 minutes from the field. During those 2 minutes a team plays without one player. Players may return after the suspension period has ended and enter the field via the substitution area.

Handball game is played by 2 teams each consisting of 7 players or 6 players and 1 goalkeeper. The game starts from the middle of the court by the team that gets the task of attacking and the other team gets the task of defending. How to throw the ball is by passing by hand, dribbling with 3 steps, and how to enter the ball by shooting from the outer half circle in front of the goal. The goal of handball is to get as many balls into the opponent's goal as possible. This game is a bit similar to soccer, but what distinguishes handball from soccer is how to move the ball using your hands.

1) Court

A handball court measuring 40 m x 20 m with a dividing line in the middle and a goal in the middle of the two short sides. There is a line around the goal to mark the area that only goalkeepers can enter.

The rectangular field measures:
Field length: 40 meters
Field Width: 20 meters

2) Goal

![Fig. 2. (2) Handball Court](image-url)
The goalposts are rectangular in size with a size of 8x8 cm, while the dimensions of the goal are as follows:

Width of the goal: 3 meters
Goal height: 2 meters

3) Goal Area
   The goal area is made a line 3 meters long, at a distance of 6 meters (end) and its ends are connected to the goal line, by forming a semicircle with a radius of 6 meters measured from the goal post.

4) Free throw line
   The free throw line (9 meters line) is the dotted line, drawn 3 meters outside the goal line area.

5) Punishment shot line
   The penalty shot line or penalty line is 7 meters from the goal line and 1 meter long parallel to the goal line.

6) Ball
   The shape of the ball must be round and the outside is made of rubber or of leather or other synthetic material. Ball size:
   For men: ball weight: 425 – 475 grams
   Diameter: 58-60 cm.
   For girls: ball weight: 325 – 400 grams.
   Diameter: 54-56 cm.

7) Game time
   The duration of the game is divided into 2 rounds, namely:
   For men: 2x30 minutes with a break of 10 minutes.
   For girls: 2x 20 minutes with a break of 10 minutes.

8) Referee
   Handball matches are led by 2 referees, both referees have the same authority assisted by a timer.
9) Player
Each team consists of 12 players, but only 7 players are on the court including a goalkeeper. The rest are substitutes during the game. They enter and leave the court of play must cross the substitution line.

Here are the positions of handball player:
1. Attacking or defending Positions
2. LW - Left Wing OD - Outside defender
3. LB - Left Back HD - Half Defender
4. CB - Center Back playmaker FD - forward Defender
5. RB - Right Back GK - goal keeper
6. RW - Right Wing
7. PV – Pivot

3.3. Physical Condition of Handball Player
1) Durability
In the game of handball, endurance is very important because the game time is long enough if it is not balanced with strong endurance, it cannot produce a maximum score. In conducting an endurance test, you can use a beep test to determine the ability of VO2max. VO2max is the ability of the cardiovascular system to send oxygen to the muscles, which at that time was used as the main point in motion, the data can also be used to see the ability of athletes’ aerobic and cardiovascular fitness levels (5). In the process of increasing endurance, consistent exercises are carried out, and one of the good exercises for that is 12-minute running, multistage running and running up and down hills.

2) Speed
A handball athlete must be able to have good speed because it can be seen that the game of handball is a game with a fast flow, especially in defense and attack movements, so it requires the ability to run fast and agile. The concept to optimize the game of handball is by doing continuous exercises to improve physical condition. There are several ways that can be done to increase speed with depth jump exercises.

3) Agility
In accordance with the description in the speed sub-chapter that handball requires agile body movements, this is because in one field there are 14 players who are divided into 2 teams with the main goal being the opponent's goal. The existence of 14 players by winning one ball of course requires a good body agility skill to be able to get the ball. In knowing agility, you can use an Illinois agility run test, where an athlete must be able to complete a movement pattern that has been arranged in the fastest time (6)

4) Arm muscle strength
Arm muscle strength is a basic physical condition that needs to be mastered because increasing arm muscle strength can reduce motion errors or injuries in the training process. Handball game is a game that mostly involves the hands as the driving force, techniques in handball that are often heard are holding the weight (ball) with a tight grip (catching) and also throwing (passing), where the alignment can work well if there is a touch of strength. arm muscles (6)

5) Muscle Explosion
Explosive power is the ability of muscles to produce as much force as possible in a short time. Increasing the explosive power of the leg muscles can use box jump exercises because they can train the lower muscles. The box jump can be done by jumping onto the block box and then dropping back down in a backward position according to the initial attitude (6)
6) **Throwing Accuracy**

Accuracy is the ability to hit the intended target correctly. In the game of handball, the goal is the goal, meaning the accuracy of the player in throwing the ball into the goal.

The following are the physical conditions of handball players based on their position:

1. **Left Wing**: Speed, agility, endurance, arm muscle strength, muscle explosive power, throwing accuracy.
2. **Left Back**: Speed, agility, arm muscle strength, endurance, throwing accuracy.
3. **Center Back**: Speed, agility, arm muscle strength, endurance, throwing accuracy.
4. **Right Back**: Speed, agility, arm muscle strength, endurance, throwing accuracy.
5. **Right Wing**: Speed, agility, endurance, arm muscle strength, muscle explosive power, throwing accuracy.
6. **Pivot**: Endurance, arm muscle strength, muscle explosive power, agility, throwing accuracy.
7. **Goal Keeper**: Speed, agility, arm muscle strength, muscle explosive power, endurance, throwing accuracy.

**Conclusion**

Handball is a sport that is relatively new in Indonesia. Handball is one type of sport that uses a small ball media and is played in teams of 14-16 players per team with 7 core players including goalkeepers and the rest are reserve players.

**References**

Determine fitness of UNNES basketball players using sport-specific tests and measurements

Ayu Tri Agustin¹, Anggit Wicaksono²
{ayutriagustin@students.unnes.ac.id¹, anggit_w@mail.unnes.ac.id²}

Sport Coaching Education, Faculty of Sport Science, Universitas Negeri Semarang¹; Sport Coaching Education, Faculty of Sport Science, Universitas Negeri Semarang²

Abstract. Individual fitness levels can affect team performance. The problem of this study is to describe the fitness level of male basketball players at Negeri Semarang University. A total of 19 male athletes participated in this study. A descriptive quantitative method with sport-specific tests and measurements was used in this study. His average BMI is 2.52. Average agility he is 12.92 seconds. His average balance is 9.03 seconds. Average aerobic endurance is 39.20 ml/kg/min. His average arm strength is 33.94. The average abdominal muscle strength is 26.52 times. The average explosive force is 58.57 cm. Flexibility averages him 15.78 cm, and eye-hand coordination averages 17.68 catches. As a result, male basketball players at Negeri Semarang University reported an average of 55.7% of their fitness levels.

Keywords: physical condition, test and measurement, basketball.

1 Introduction

The basketball game demands excellent physical condition from every athlete. According to Barth and Boesing (2010: 41), basketball players need good endurance to meet the demands of the game with total concentration and in the best physical condition without weakening due to fatigue because basketball players should be able to maintain their performance throughout the game.

Basketball is included in the intermittent game category, which means that it involves high-intensity physical activity interspersed with low-intensity physical activity and periods of rest (amir-Vicen et al., 2014; ba, Coetzee, & Asadi, 2012). Games at high intensity require physical endurance that can last during the match. Competitive basketball games also involve physical contact between players. If the player's physical condition cannot answer the challenges of the current game, the player or team concerned will inevitably fail to compete. Studies on elite players reveal that success in playing basketball from the physical side is more determined by anaerobic capacity (Klausemann, Pyne, Foster, & Drinkwater, 2012). However, aerobic capacity also remains a basketball player's need (McInnes, Carlson, Jones, & McKenna, 1995).

In general, McKeg (2008) revealed that there are at least several components of physical fitness that every basketball player must possess, including (1) aerobic capacity, (2) anaerobic capacity, (3) strength, (4) speed, (5) agility, (6) flexibility, and (7) body mass profile. Without physical development related to the above components, the development of basketball athlete achievement will not be able to run optimally. It is because the physical is the basis for
developing sports skills. Physical conditions will affect the appearance of athletes on the playing field (Kuroda et al., 2015).

The advantage of this research is that it includes physical attributes directly related to basketball to be measured and evaluated using a specific set of tests and measurement methods. This study's physical attributes include body mass index, agility, balance, aerobic endurance, arm muscle strength, abdominal muscle strength, explosive power, flexibility, and hand-eye coordination. Physical tests and measurements should depart from the goal and be designed in such a way as to suit the needs of basketball players so that sports tests and measurements can be used as a means of predicting athlete achievement as well as talent scouting recruitment programs (Zhanmsa & Sugiyanto, 2015). Morrow (2015) states that at least four things must be met to create quality tests and measurements, including objectivity, reliability, relevance, and validity. Relevance means that the test items and measurements must be adapted to the physical needs of the sport in question.

This study aimed to determine the physical condition of basketball athletes at Universitas Negeri Semarang in 2022 using test and measurement methods relevant to the sport of basketball. The subjects of this study were 19 male basketball athletes from Universitas Negeri Semarang. At the same time, the object of this research is the physical component related to basketball, which includes body mass index, agility, balance, aerobic endurance, arm muscle strength, abdominal muscle strength, explosive power, flexibility, and hand-eye coordination. This research can complement the study of tests and measurements, especially regarding the sport of basketball. It can be used as a reference for coaches or basketball stakeholders in screening, selecting, and evaluating the physical condition of basketball athletes.

2 Method

Nineteen basketball athletes from Universitas Negeri Semarang were recruited for this study as research subjects. This research is quantitative and descriptive. Determination of the research sample was taken by using the total sampling method. This study uses a cross-sectional test and measurement technique, which means that data collection is carried out simultaneously over time.

The variables measured included: a) body mass index, b) agility, c) balance, d) aerobic endurance, e) arm muscle strength, f) abdominal muscle strength, g) explosive power, h) flexibility, i) hand-eye coordination. The data collection instruments used to measure the above variables in succession are as follows: a) Semo agility, b) Standing stork, c) Multi-stage Fitness, d) Push-up and sit-up test, e) Vertical jump, f) V-sit and reach, g) Alternate hand wall toss test.

The tests and measurements in this study were selected based on their suitability for basketball (McKeag, 2008). All players in this study were in good health and understood every test item being tested. Subjects were given time to warm up before testing and measuring. The study’s results were processed using statistical analysis descriptive percentage techniques to show the subject's achievements on all test items and measurements taken.
3 Result

The data collection results summarize the physical condition scores for UNNES basketball athletes. There are at least 8 test items and one measurement item carried out. Information on the types of tests and their results can be seen in Table 1.

Table 1. UNNES basketball athlete physical test scores in 2022.

<table>
<thead>
<tr>
<th>No</th>
<th>Test</th>
<th>Measured</th>
<th>Result (Mean±SD)</th>
<th>Norm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body Mass Index</td>
<td>Body mass profile</td>
<td>20.52±2.36</td>
<td>Fair</td>
</tr>
<tr>
<td>2</td>
<td>Semo Agility</td>
<td>Agility</td>
<td>12.92±0.71</td>
<td>Average</td>
</tr>
<tr>
<td>3</td>
<td>Standing Stork</td>
<td>Balance</td>
<td>8.58±7.82</td>
<td>Poor</td>
</tr>
<tr>
<td>4</td>
<td>Multi-stage Fitness</td>
<td>Aerobic endurance</td>
<td>39.20±5.38</td>
<td>Fair</td>
</tr>
<tr>
<td>5</td>
<td>Push-up</td>
<td>Arm muscle strength</td>
<td>33.94±10.89</td>
<td>Above Average</td>
</tr>
<tr>
<td>6</td>
<td>Sit-up</td>
<td>Abdominal muscle strength</td>
<td>26.52±5.97</td>
<td>Poor</td>
</tr>
<tr>
<td>7</td>
<td>Vertical Jump</td>
<td>Explosive power</td>
<td>58.57±8.26</td>
<td>Above Average</td>
</tr>
<tr>
<td>8</td>
<td>V-sit and Reach</td>
<td>Flexibility</td>
<td>15.78±8.79</td>
<td>Fair</td>
</tr>
<tr>
<td>9</td>
<td>Alternate Hand Wall Toss Test</td>
<td>Hand-eye coordination</td>
<td>17.68±2.84</td>
<td>Fair</td>
</tr>
</tbody>
</table>

The tests indicate that the level of the physical condition of the basketball athletes at the State University of Semarang can be considered moderate. It can be seen through the data presented in Table 1. Several parameters, such as arm muscle strength and explosive power, obtained above-average achievements with an average value of 33.94 repetitions and 58.57 cm. Agility is in the average category (12.92 s). Three other physical parameters were at a poor level, namely aerobic endurance (39.20 ml/kg/min), flexibility (15.78 cm), and eye-hand coordination (17.68 catches). However, two physical parameters fall into the poor category: balance (8.58 s) and abdominal muscle strength (26.52 repetitions). Body mass profiles of all athletes were within normal limits, with an average BMI of 20.52 (kg/m)².

4 Discussion

The level of strength and explosive power affects the competitiveness of a basketball athlete in a match. Explosive power in basketball is manifested through various variants of jumps, acceleration starts, sudden changes in direction, decelerations, sudden stops, and passing. Explosive power is an essential characteristic of professional basketball players and one of the most critical factors for achieving the best results. Explosive power is not only influenced by the default coefficient. Explosive power development can be realized through planned, rational, and well-organized training. Positive correlations were determined between explosive power and short-distance running, jumping, and throwing and between explosive strength and lean body mass in basketball players of different ages. The size of the explosive power obtained in this study showed an achievement above-average (58.57±8.26 cm).
means that it is good enough but must be continuously improved because explosive power contributes positively to the efficiency of basketball players.

Basketball is a game that demands the dominance of hand skills in processing the ball. Arms and shoulders muscular endurance is a crucial component in basketball. How long a player can process the ball will determine a team's success. Therefore, this aspect is essential for every player to survive at a competitive level of competition. In this study, the average value of upper extremity muscular endurance for UNNES basketball athletes obtained through a one-minute push-up test was in the above-average category (33.94 ± 10.89). These results are still not entirely satisfactory, so they must continue to be improved to increase the game's level. Increased muscular endurance can be obtained through strength training both with internal loads (bodyweight exercise) and external loads (free weight exercise).

Furthermore, the agility of the UNNES basketball athletes showed unsatisfactory results. Through the semi agility test, the average time recorded by the players was 12.92 ± 0.71 seconds; this figure was categorized as average. Agility is one of the essential instruments that basketball athletes must have. Agility is a common athletic maneuver that requires the athlete to possess a combination of physical, technical, and tactical attributes to avoid or catch up to an opponent. Agility affects the athlete's ability to change direction. Implementation of efficient change of direction both with and without the ball often determines the playing performance of basketball athletes. Therefore, athletes need a combination of perceptual-cognitive factors and strength characteristics to sustain rapid changes in direction and gain a positional advantage during competition.

Endurance is an essential asset for every basketball player. Athletes with good endurance will be able to maintain their performance on the court and have a higher fatigue threshold to have superior competitiveness. Athletes can have a good appearance in a high-level basketball competition if supported by excellent cardiorespiratory and muscular endurance. Physical components such as power and agility are also crucial for basketball athletes (Alemdaroğlu, 2012). The highly competitive level of competition at the University level requires basketball athletes to have good endurance to compete at their level. Movement in a basketball game, dominated by high-intensity movements such as jumping, running, and changing direction, certainly requires excellent stamina that can be formed from exercise routines (Abdelkrim, El Fazaa, & Jalia, 2007). The results in the field showed that the endurance of UNNES basketball athletes was at an average level (39.20±5.38).

Several physical aspects also require improvement efforts because the results are unsatisfactory. The physical aspect is flexibility and hand-eye coordination. The modified V-sit and reach test showed that the average result was 15.78±8.79 cm, which was included in the fair category. Flexibility is the ability of the joints of the body to move within the range of motion (ROM), the more flexible a body part is, the greater the ROM that can be generated from the movement of that body part. Optimal flexibility and improving the quality of motion can reduce the risk of injury while moving. Shrier (2004) states that increased flexibility can positively impact other physical components, including speed, agility, and jumping height. Flexibility can be increased through stretching activities before and after exercise. Flexibility can be easily increased if stretching activities have been accustomed to athletes from an early age because, with increasing age, anatomically, the obstacles to increasing flexibility will undoubtedly be more significant (Bompa & Carrera, 2015, p. 67).

On the other hand, the level of hand-eye coordination obtained in the alternating hand-to-wall throw test yielded an average score of 17.68 ± 2.84, an unsatisfactory result for inclusion in the “fair” category. Hand-eye coordination is one of many important components of physical fitness. Coordination is the movement to perform motor movements quickly and
directly, determined by the control and regulation of movement and the cooperation of the central nervous system. A multi-handed basketball game requires movement control and coordination, as well as eye-hand nervous system cooperation, to enable the rapid and deliberate execution of motor tasks such as shooting, dribbling, and passing. In performing movements, the eye is the visual organ that provides information while the hand performs the task. Balance is the ability to keep the body's center of gravity above the base of support and results from neuromuscular activity that responds to continuous visual, vestibular, and somatosensory feedback. In basketball, players regularly have to deal with a variety of situations related to physical contact and imbalance. These actions are often performed in tight spaces and require quick movements, a high degree of coordination, and good strength. For this reason, balance components are required to minimize imbalance when performing movements that can increase the risk of injury. As a result, the balance level obtained in the stork standing test showed a poor result with a score within the bad category (8.58±7.82).

Abdominal muscle strength is also included in the poor category. The results of the one-minute sit-up test showed the results of 26.52±5.97. These results indicate that the component of abdominal muscle strength must be considered in order to be able to support the athlete's physique as a whole. The average BMI of UNNES basketball athletes is in the ideal category of 20.52±2.36. An integrated intake control scheme can ensure adequate nutrition for athletes and maintain an ideal weight-to-height ratio.

Physical capacity building is carried out through the periodization of training carried out by trainers. Periodization of exercise is used to adjust the training load in such a way as to get optimal results. Excellent physical condition is necessary for all athletes involved in the game, both as starters and substitutes. It means a structured and planned exercise program so that an increase in physical capacity can be achieved.

5 Conclusion

This study concluded that the average physical condition of UNNES basketball athletes was in an average condition of 55.7%. There are still many minor results that need to be improved to increase the competitiveness of athletes to achieve maximum performance at the university level.

The results in this study can be used to evaluate exercise programs by rearranging physical exercises to improve the athlete's physical condition. So that they can compete in a competitive competition in every match held. Coaches and related stakeholders can also use the test items and measurements in this study to monitor the level of the physical condition of basketball athletes.

Although this study uses nine test and measurement variables which include: a) body mass index, b) agility, c) balance, d) VO2 Max, e) arm muscle strength, f) abdominal muscle strength, g) explosive power, h) flexibility, i) hand-eye coordination, the development of this research is still needed so that all the specific physical components of basketball can be fully identified as evaluation material in the training program. Suggestions for the development of further research are to test and measure other physical components needed in basketball games, such as speed and specific other physical components.
References


How to Improve National Branding through Sport Event in Post-Pandemic Era? A Literature Review

1st Billy Castyana1, 2nd Tandiyo Rahayu2, 3rd Heny Setyawati3, 4th Agus Darmawan4, 5th Risky Vidiana Sari5
{billycastyana@mail.unnes.ac.id1, tandiyorahayu@mail.unnes.ac.id2, henysetyawati@mail.unnes.ac.id3}

Faculty of Sports Science, Universitas Negeri Semarang, Indonesia1, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia2, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia3, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia4, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia5

Abstract. National branding is an attempt to show the country's image by focusing on improving the economy, culture, and politics. However, due to corona virus, many countries are facing economic losses of up to US$450 billion as a result of the decline in tourist arrivals. Although vaccine is already spreading worldwide, they are still struggling on their branding as safe place to visit. Therefore, sport events can be a solution to improve national branding by forcing people to come to prove that the country is safe. Through this literature review article, it showed that sport events are a momentum to bring in visitors for a long period of time so it is necessary to prepare a variety of activities at sport event locations, such as cultural festivals, culinary festivals, and tours to tourism destinations for free so visitors can promote it through social media.

Keywords: National Branding, Sport Event, Post-Pandemic Era.

1 Introduction

In 2020, the emergence of the corona virus or commonly referred to as Covid-19 in Wuhan City, China and has spread throughout the world until the World Health Organization (WHO) declared a pandemic situation on March 11, 2020 (1). With the pandemic, many sectors have been affected, one of them is tourist visits (2) even according to records from the World Tourism Organization predicting that there will be a 20%-30% decline in tourist arrivals and losses of up to US$450 billion or equivalent to income for 5-7 years from this sector (3). Although now a vaccine has been found and according to data from the World Tourism Organization in 2022, tourism has increased by up to 45% compared to 2019, the corona virus has not completely disappeared and has caused many countries to still seek prevention, such as social distancing, restrict some of the various public facilities, and limit the business center (4). In addition, the threat of contagion that still exists makes many tourists feel afraid to travel. This statement is in line with previous research which emphasized the long-trauma people have to visit a country after a pandemic, such as the Ebola virus pandemic that occurred in Africa (5).

In addition, a country needs a long time to close the economic crisis that has occurred for almost 3 years (6). Reflecting on this, a solution is needed to be able to return when this pandemic is really over (7). This solution must be able to force people to come to a country so that they can prove for themselves that the country is safe from the pandemic and the ongoing
riots (8). With the presence of tourists, then, indirectly, tourists will promote the country by uploading their photos and videos on social media (9). This can be said as an effort by the Government to improve national branding. National branding as an effort from the government to show the existence of a country, both in the form of the country's image and reputation, usually focuses more on improving the economy, culture, and politics (10). Through increasing national branding, the government is expected to be able to develop strategies to convey and display the reputation of a country that has strength in terms of economy, politics, and culture (11), one of the efforts that can be done to improve national branding is by connecting sports and tourism.

Sport as a contributor to tourists, even during the last two decades has succeeded in developing sports tourism (8). Sport tourism can be a good solution to introduce tourists that security for traveling in the area or country is good (12) because by organizing sports events, many foreigners come and become a good promotional media (13). In addition, this activity is a way that can attract a large number of tourists (14). In addition, sporting events can be a way to brand a country through sporting events because through these activities, many media will cover it and many people will talk about it (15). However, how far the role of sporting events can return tourists' confidence to travel to a post-pandemic country is still a matter of discussion (16).

2 Methods

The data used in this article is secondary data. Secondary data were obtained from articles published in the last 10 years on the topic of National Branding and Sport Events. Materials are obtained from sources such as Google Scholar. The analysis used in this literature review includes four steps that must be carried out sequentially to provide an acceptable answer to the question. 1) The stage of finding and collecting materials on National Branding and Sport Events; 2) Reduction, coding, filtering, and classifying the material to suit the topic of discussion; 3) The analysis and synthesis stage, examines and explores detailed information about the material obtained; 4) The stage of presenting the conclusion is the final stage of the literature review process and stating the novelty of the research.

The database analysis was conducted through several criteria: (i) Articles on “Covid-19, Sport Tourism and Sports Events” (ii) articles published between 2012 and 2022, to see the latest evidence; (ii) original articles and reviews, excluding comments, posters and quotes; (iv) only full paper articles in Indonesian and English. After the first screening, the authors independently reviewed the articles established by title and abstract, to check their suitability with the research objectives. Then, they checked the long paper of each of the articles. Finally, a total of 32 articles were used as data in this review article. The review process can be seen in Figure 1.
3 Result

Sports events are an effort to increase tourist visits and become a way to improve post-pandemic national branding. The following table is various articles that discuss it or related to the statements that was needed.

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Author, Year</th>
<th>Nation(s) of participants</th>
<th>Organization/Location/Object</th>
<th>Type Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Risks, resilience, and pathways to sustainable aviation: A COVID-19 perspective</td>
<td>Stefan Gossling Western 2020</td>
<td>Norway &amp; Sweden</td>
<td>Norway &amp; Sweden</td>
<td>Literature Review</td>
</tr>
<tr>
<td>2</td>
<td>Impacts of Hosting a Sport Event in Tourism High Season</td>
<td>Jonsson, Cristina Lewis, C, Crystal 2014</td>
<td>West Indies</td>
<td>West Indies</td>
<td>Qualitative, Literature Review</td>
</tr>
<tr>
<td>3</td>
<td>The first COVID-19 infanticide-suicide case: Financial crisis and fear of COVID-19 infection are the causative factors</td>
<td>Mamun, Mohammed A. Bhuiyan, A. K.M.Israfil Manzar, Md Dilshad 2020</td>
<td>Indian</td>
<td>Indian</td>
<td>Literature Review</td>
</tr>
<tr>
<td>4</td>
<td>Optimalisasi Peran Keluarga Dalam Menghadapi Persoalan Covid-19: Sebuah Kajian Literatur</td>
<td>Santika, I Gusti Ngurah 2020</td>
<td>Indonesia</td>
<td>Indonesia</td>
<td>Qualitative</td>
</tr>
<tr>
<td>5</td>
<td>Athletes' experiences of expressive writing about sports stressors</td>
<td>Hudson, Joanne Day, Melissa C. 2012</td>
<td>United Kingdom</td>
<td>United Kingdom</td>
<td>Literature Review</td>
</tr>
<tr>
<td></td>
<td>Title</td>
<td>Authors</td>
<td>Countries</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Assessing and considering the wider impacts of sport-tourism events: A research agenda review of sustainability and strategic planning elements</td>
<td>Kersulić, Ana Perić, Marko Wise, Nicholas</td>
<td>Croatia &amp; England</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Penggunaan Multi Metodologi dalam Peningkatan Event Running</td>
<td>Auliamarsia, Annisa Rheananda Meisyahritaa, Tengku Dinda</td>
<td>Indonesia</td>
<td>multi-metodologi multi-metodologi yaitu DMAIC dan Soft System Methodology (SSM)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Festivals Post Covid-19</td>
<td>Davies, Karen 2021</td>
<td>United Kingdom</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The urban and economic impacts of mega-events: mechanisms of change in global games</td>
<td>Wolfe, S. D., et al 2021</td>
<td>Switzerland</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Peran Teknologi Digital di Destinasi Wisata Tanjung Puting</td>
<td>Christhe Nathalia, Theodosia 2021</td>
<td>Indonesia</td>
<td>kualitatif</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>The role of the interface of sport and tourism in the response to the COVID-19 pandemic</td>
<td>Weed, Mike 2020</td>
<td>United Kingdom</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Diplomasi Publik sebagai Nation Branding dengan Terpilihnya Indonesia Sebagai Tuan Rumah FIBA World Cup 2023 Analisis Framing terhadap Pemberitaan Pelatih Timnas Indonesia</td>
<td>Elen Puspitasari, Indrawati 2021</td>
<td>Indonesia</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Analisis Framing terhadap Pemberitaan Pelatih Timnas Indonesia</td>
<td>Rana Aqila W1, Fairuz Hasna Nadhifah 2022</td>
<td>Indonesia</td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Sport management internships: Recommendations for improving upon experiential learning</td>
<td>Brown, Chris Willett, Jennifer Goldfine, Ruth Goldfine, Bernie 2018</td>
<td>United States of America</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Progress and prospects for event tourism research</td>
<td>Getz, Donald Page, Stephen J.</td>
<td>Canada &amp; United Kingdom</td>
<td>Literature Review</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Title</td>
<td>Year</td>
<td>Countries</td>
<td>Method</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------</td>
<td>------</td>
<td>--------------------------------------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Symptomatic event reduction with extended-duration betrixaban in acute medically ill hospitalized patients</td>
<td>2014</td>
<td>United Kingdom &amp; United States of America</td>
<td>Experiment Research</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Environmental attitudes and adventure tourism motivations</td>
<td>2018</td>
<td>South Africa</td>
<td>Quantitative</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Negotiating the cultural and economic outcomes of sport heritage attractions: the case of the National Baseball Hall of Fame</td>
<td>2019</td>
<td>United Kingdom</td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>A meta-study of athletic identity research in sport psychology: Current status and future directions</td>
<td>2015</td>
<td>Finland</td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Revisiting the host city: An empirical examination of sport involvement, place attachment, event satisfaction and spectator intentions at the London Olympics</td>
<td>2016</td>
<td>London</td>
<td>Quantitative</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>The effect of experience quality on perceived value, satisfaction, image and behavioral intention of water park patrons: New versus repeat visitors</td>
<td>2015</td>
<td>United States of America, South Korea, &amp; Korea</td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Analisis Pengaruh Experiential Marketing Terhadap Tingkat Kepuasan Peserta Sports Event Jakabaring Wonderful Run Palembang</td>
<td>2020</td>
<td>Indonesia</td>
<td>Mix Method</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Perspektif Pengalaman Konsumen Terhadap Kesuksesan Event Lari Borobudur Marathon</td>
<td>2019</td>
<td>Indonesia</td>
<td>Quantitative</td>
<td></td>
</tr>
</tbody>
</table>
### Discussion

Based on the table above, it can be seen that research on the role of sporting events in the tourism sector and its relation to pandemic conditions has been discussed in various countries, including Indonesia. However, there is no article that specifically discusses the role of sporting events in improving national branding after the pandemic. This is a discussion that needs to be carried out more deeply to show that sporting events are an effort that can be used by various countries in restoring public trust. Through this article, it can also be seen why the Indonesian government holds so many sporting events in various regions. In addition, this article also discusses the role of sporting events to attract tourists, what is the community's perspective on organizing sporting events, and how tourists try to stay safe while traveling.

There are several sports tourism concepts, such as sports is a tool to move people from one place to another, many sports activities that can be done in tourist attractions, doing sports can provide a lot of experience, sports events can create memories, and the ability of sports to improve welfare (17). Those concepts are very suitable for conditions in Indonesia, where Indonesia will hold three major international events, one of which is the FIBA World Cup 2023 (18). In the same year, the biggest football event in the world was held, namely the FIFA World Cup 2023, in which Indonesia hosted (19). In addition, Indonesia will also host the 2023 Biathlon/Triathlon World Championship which is located in Bali. These various events can move people from all over the world and Indonesia to attend and watch the sporting event, so the government needs to pay attention to various factors to support the agenda and not waste this

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Authors</th>
<th>Year</th>
<th>Country</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Analisis Peran Stakeholders Dalam Pengembangan Destinasi Pariwisata Halal Di Pulau Penyengat Provinsi Kepulauan Riau</td>
<td>Destiana, Riska Kismartini, Kismartini Yunitisih, Tri</td>
<td>2020</td>
<td>Indonesia</td>
<td>Qualitative</td>
</tr>
<tr>
<td>26</td>
<td>Tingkat Pengetahuan Ibu Rumah Tangga Tentang Perilaku Hidup Bersih Dan Sehat (PHBS) Di Desa Onkaw I Kecamatan Sinonsayang</td>
<td>Evert Tontuli, Ahmad Paturusi, Anuardin Mokoagow</td>
<td>2020</td>
<td>Indonesia</td>
<td>Qualitative</td>
</tr>
<tr>
<td>27</td>
<td>World Tourism Organization</td>
<td>Patrick, U. Petit</td>
<td>2021</td>
<td>Indonesia</td>
<td>Qualitative</td>
</tr>
<tr>
<td>28</td>
<td>Olahraga, Ekonomi dan Konsumerisme</td>
<td>Maksum, Henry</td>
<td>2014</td>
<td>Indonesia</td>
<td>Literature Review</td>
</tr>
</tbody>
</table>
opportunity. Because sports events are also able to increase brand awareness of tourist destinations through media broadcasts (20). Therefore, the government must prepare well for Indonesian branding so that the world community remains confident and willing to come to Indonesia. One way that can be done is to increase the selling value of a place visited so that when tourists visit, they will feel that the time they spend traveling and the costs incurred are not wasted (21). This increase in selling value can be started by preparing tourist destinations at the location of sporting events, making sure all tourist destinations have good health protocols and the available facilities are also up to standard so that visitors are sure that they will be safe while traveling or watching sports events.

In addition, increasing the interest of visitors to attend sporting events or participate in sports activities at tourist attractions is also important. However, over the last ten years, the focus on efforts to improve the quality of the venues for organizing events and activities has begun to pay less attention (22). In fact, research shows that this increase can be the key to attracting visitors (23). This can be done by increasing the variety of activities that can be carried out at the location of sports events, such as cultural festivals or culinary festivals that are also held together with sports events. This will make the experience of visitors to sporting events and their activities more varied.

In addition, sports event players who have memories of a place can also be affected by the location of the event and can make them interested in attending (24). That's because memories of the location where they competed or even won the championship, can bring enthusiasm in participating in the championship because they usually already understand the existing situation and are finally able to overcome anxiety (25). The event requires the cooperation of the sports event manager and committee to organize events in unique locations and be able to bring back memories for visitors who have come there (26). For example, organizing sports events in stadiums that have been used as the location of the Olympics or other large-scale sporting events so that visitors can feel the euphoria and sensation when the Olympics were held there or events held at historical tourist sites.

In addition to preparing the concept, visitor satisfaction in participating or attending an event also needs to be considered. There are two aspects of satisfaction in sporting events that must be met, including entertainment provided during the event and service to visitors (27). If these two things can be fulfilled, then the perpetrators of sporting events will spread the positive things they get and can make them come back in the future (28). As much as 54% of participants' intention to come back to a country or region that organizes sporting events is influenced by satisfaction (29). Organizers and the government can work together by setting up an entertainment stage for visitors to sporting events, such as live music or booths that provide interesting games (30). In addition, the human resources involved must also be trained to be able to provide services in the form of fast and accurate information and be able to provide solutions to problems properly (31).

It can be seen that sporting events have various advantages to develop tourism which had apparent dead during the pandemic (32). However, this will not be realized optimally if there is no support from various parties. The government itself will not be able to revive this industry without the help of stakeholders and the community because tourism is very closely related to all of them (33). Public awareness to maintain health protocols and implement clean and healthy living behavior (PHBS) must be carried out massively so that people can further increase their immune system and help the government to quickly get through this pandemic period and give trust to the world (34). The public should also participate in supporting the government's efforts to restore world confidence that Indonesia is ready to host sporting events and welcome various
visiting tourists(35). Because sporting events should not only be successful in terms of achievement and implementation, but must be followed by economic success as well (36).

5 Conclusion

From the various facts that have been stated above, it can be seen that sporting events have various advantages to develop tourism which had apparent dead during the pandemic. However, this will not be realized optimally if there is no support from various parties. The government itself will not be able to revive this industry without the help of stakeholders and the community because tourism is very closely related to all of them. Public awareness to maintain health protocols and implement clean and healthy living behavior (PHBS) must be carried out massively so that people can further increase their immune system and help the government to quickly get through this pandemic period. The public is also expected to participate in supporting the government's efforts to restore world confidence that Indonesia is ready to host sporting events and receive various tourists who want to visit. Because sporting events should not only be successful in terms of achievement and implementation, but must be accompanied by economic success.

References

[10] Pop NA, Baba CA, Anysz RN, Tohanean D. National branding strategy and its effects
[25] Street RH, Nw L. Schapira_v7_DY - Final REVIEW.
[32] Di A, Karimun KAB, Kep P. No Title. 2020;III.
[34] Hidup P, Dan B, Phbs S, Desa DI. TINGKAT PENGETAHUAN IBU RUMAH TANGGA TENTANG. 2020;01(02).
The Correlation between The Energy Intake with Taste, Appearance, Maturity Level, and Food Variety in Athletes at Football Academy

Tsaniatin Nahla Al Amien¹, Mardiana²
{nahlatsaniatin1204@students.unnes.ac.id¹, mardiana.ikm@unnes.ac.id²}
Universitas Negeri Semarang¹, Universitas Negeri Semarang ²

Abstract. The data obtained from the preliminary study that conducted on adolescent athletes at the football academy were known that the average total intake was 1869.6 kcal. When compared with energy needs, a figure of 79% is obtained, which is included in the category of moderate deficit energy intake. The purpose of this study was to determine the correlation between taste, appearance, level of maturity, and variety of food provided by the dormitory to the total intake of football athletes. The research design used in this study was cross sectional, by using 30 athletes as samples, who were taken randomly using stratified random sampling technique. Data analysis was performed using the Pearson Product Moment and Rank Spearman tests. The results of this study showed that there was no significant correlation between total intake with taste, appearance, maturity level, and variety of food provided by the dormitory (p=0.708; p=0.924; p=0.852; p=0.973).

Keywords: total intake, food quality.

1 Introduction

The development of football academies in Indonesia, which are specifically for teenagers, is increasing rapidly along with the increasingly popular football game around the world. In addition to having to pay attention to physical aspects and skills for athletes, football academies also need to pay attention to aspects of food intake and nutritional adequacy. Adequate nutrition is needed so that athletes can display maximum performance when training and competing, as well as to support their growth and development in adolescence.

Lack of nutritional adequacy can cause an athlete to experience a decrease in performance, as well as inhibition of his growth and physical development. Previous research by Penggalih and Tahir stated that football athletes who live in dormitories have a total intake that is less than their needs (Penggalih, Tahir, Lestari). Some of the causes of the lack of total intake of athletes are the low knowledge of athletes about nutritional needs and nutritional functions in supporting stamina, the incompatibility of food nutrients served by food organizers, the effect of food quality aspects (taste and appearance) on athletes' eating satisfaction.

The food intake of the athletes living in the dormitory environment is obtained from the food provided by the dormitory meal organizers, and may be influenced by the consumer's assessment of the quality of the food (1). The quality of food according to Moehyi and Qin consists of taste, appearance, degree of doneness, and variety of food (1,2). Therefore, it is
necessary to have a good food organizer who can serve food with good quality and preference so that consumers' nutritional intake can be fulfilled optimally.

Preliminary studies conducted in football academies in starch districts produced data that 87% of athletes had energy intake in the less category. Based on the observations, some athletes do not eat the side dishes served because they feel that the side dishes are not cooked thoroughly and are bored with the variety of side dishes or menus served by food organizers. Based on this, the researchers were interested in knowing the relationship between taste satisfaction, appearance, maturity level, and food variation with the total intake of athletes in football academies in the Pati district.

2 Method

The study was conducted on football academy athletes in Pati Regency with data collection in June 2022. This type of research is analytical observational using a cross-sectional approach. The purpose of this study was to determine the relationship between taste, appearance, maturity level, and food variation with the total intake of athletes in football academies.

Participants were 30 athletes who lived in the dormitory of the football academy in the district with an age range of 13-20 years. Sampling was carried out using a simple random sampling method that represented all age groups. To participate in the research, the athlete must be someone who 1) resides in a dormitory, 2) is willing to be a research sample, 3) physically and spiritually healthy, 4) can communicate well.

Data collection in the form of athlete identity, food recall, and food quality satisfaction was taken directly using interview techniques. The data analysis techniques used are pearson product moment and spearman rank.

3 Result and Discussion

The sample assessment on food performance showed a median score of 65, an average score of 62 ± 12,972, a minimum score of 25, and a maximum score of 90. Sample assessment at the food maturity level showed a median of 35.5; the average score is 36.43 ±8,955; the minimum score is 17, and the maximum score is 50. The sample assessment on food variations showed a median of 58, an average score of 60.30 ±12,318; a minimum score of 25 and a maximum score of 83.
Table 2 below shows the results of the relationship statistical test using the spearman rank test and the person product moment. The test results showed that there was no relationship between total intake and taste (p=0.708), no relationship between total intake and appearance (p=0.924), no relationship between total intake and maturity level (p=0.852), and no relationship between total intake and dietary variation (p=0.973).

<table>
<thead>
<tr>
<th>Variabel</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy intake (kkal)</td>
<td>0.708</td>
</tr>
<tr>
<td>Taste</td>
<td>0.924</td>
</tr>
<tr>
<td>Appearance</td>
<td>0.852</td>
</tr>
<tr>
<td>Maturity Level</td>
<td>0.973</td>
</tr>
</tbody>
</table>

Discussion

A person's feeding intake is influenced by internal and external factors. Internal factors are factors that originate within a person, which include psychic, physical, eating habits, and gender factors. Meanwhile, external factors are factors that come from outside a person which include food consumed from outside the dormitory, the attitude of officers, meal schedules, and food quality (1). Food quality can be assessed in terms of taste, appearance, degree of doneness, and variety of food (1,3).

Based on the results of the correlation test between total food intake and taste scores, a p value of 0.708 was obtained which showed no relationship. This result is not in line with Berdhika's research which shows that there is a relationship between intake and the taste of food served at Puri Cinere Hospital, West Java (4). However, these results are in line with research by Nazahah that there is no relationship between food intake and taste in SDIT Flowing Quran (5). This means that taste does not have much effect on the total intake of respondents.

The correlation test between total intake and food appearance score showed a p value of 0.924, which means that there is no significant relationship between the two variables. This result is in line with research conducted by Siti Hadianti that there is no relationship between eating intake and the appearance of food in the College of Aviation Sciences (6).

Between the maturity level and the total intake resulted in a p-value of 0.852 indicating no significant relationship. This result is not in line with research by Rabbani in Rumkital Dr. Ramelan Surabaya that there is a significant relationship between maturity levels and pediatric patient intake (7). However, this result is in line with Hadianti's research, that there is no relationship between maturity levels and cadet intake in STIP (6).

The statistical analysis test between food variation and total intake resulted in a p value of 0.973, which means that there is no significant relationship between the two variables. These results are in line with research by Heidi that there was no significant association between food variation and intake in adolescents at BPSAA Pegadean, Subang (8).

The absence of a relationship between taste, appearance, maturity level, and food variation in this study was biased due to several things, one of which was that there were other factors that were not studied that were possible to affect total intake, namely the internal factors of the sample in the form of appetite, habits, emotions when eating, and the presence of certain taboos.
Conclusion

Based on the results of the study, it can be concluded that there is no relationship between total intake and appearance, maturity level, and food variation with a p value of $p=0.708$ respectively; $p=0.924$; $p=0.852$; $p=0.973$. The absence of a relationship between taste, appearance, maturity level, and food variation in this study was biased due to several things, one of which was that there were other factors that were not studied that were possible to affect total intake, namely the internal factors of the sample in the form of appetite, habits, emotions when eating, and the presence of certain taboos.

Thus, the advice for subsequent researchers is expected to be able to examine other factors that have not been studied in this study in the realm of institutional nutrition that can affect the total intake of athletes in football academies.

References

Risky Health Behaviors and Type 2 Diabetes Mellitus: Ecological Study in Central Java Province, Indonesia

Maulina Istighfaroh1, Lukman Fauzi2
{faramaulina511@students.unnes.ac.id1, lukman.ikm@mail.unnes.ac.id2}

Public Health Department, Faculty of Sports Science, Universitas Negeri Semarang1; Public Health Department, Faculty of Sports Science, Universitas Negeri Semarang2

Abstract. The prevalence of Type 2 Diabetes Mellitus (T2DM) in Central Java Province, Indonesia in 2013 was 1.6% then increased to 2.1% in 2018. T2DM is determined by various factors, one of which was risky health behavior. The aim of this study was to examine the correlation between risky health behavior and T2DM in Central Java. This study was an ecological study with city/regency as a unit analysis. We used secondary data from National Basic Health Research 2018. All collected data were analyzed with Pearson/Spearman test. We found that grilled foods consumption (p: 0.009; r: 0.435) as well as fruits and vegetables consumption (p: 0.049; r: 0.335) have correlations with T2DM. Furthermore, sweet foods consumption (p: 0.105; r: 0.279), fatty foods consumption (p: 0.947; r: 0.012), soft drinks consumption (p: 0.264; r: 0.194), and physical activity (p: 0.185; r: 0.229) have no correlations with T2DM.

Keywords: risky health behaviors, T2DM, ecological study

1. Introduction

The prevalence of non-communicable diseases in the world continues to increase. Even, in the last few decades experiencing an epidemiological transition, namely the pattern of disease spread that was initially dominated by communicable diseases, turning into non-communicable diseases. This increase in prevalence also occurs in one of non-communicable disease, namely Type 2 Diabetes Mellitus (T2DM). T2DM is one of the leading causes of death in the world. The prevalence of T2DM in the world continues to increase from year to year, especially in low- and middle-income countries [1]. T2DM can affect people's quality of life and become the leading cause of morbidity and premature mortality [2], [3]. One third of deaths due to T2DM occur in people under 60 years old [4].

In 2019, T2DM was ranked ninth as the leading cause of death in the world with 1.5 million deaths due to T2DM [5]. In Indonesia, the prevalence of T2DM continues to increase from year to year. Based on data from the National Basic Health Research, in 2013, the prevalence of T2DM based on a doctor's diagnosis in the population aged over 15 years was 1.5% then increased to 2.0% in 2018. Then in Central Java, the prevalence of T2DM in 2013 was 1.6% then increased to 2.1% in 2018 [6], [7].

The increasing prevalence of T2DM can be influenced by various risk factors. T2DM risk factors can be divided into non-modifiable and modifiable risk factors. Non-modifiable risk factors include age, sex, and genetics. While one of the modifiable risk factor was risky behavior. These risky behaviors include consumption of foods that are too sweet and salty,
consumption of fatty foods, less consumption of fruits and vegetables, lack of physical activity, consumption of alcohol, as well as consumption of cigarettes and tobacco. Based on data from Central Java Province Basic Health Research, people in Central Java have risky habits that are a risk factor for T2DM. The habit of consuming excess sweet food, consuming excess salty food, and consuming fatty food in Central Java are 40.5%, 32.0%, and 58.4%, respectively. In addition, as many as 63.6% of people consume less fruit and vegetables, and 29.5% do not do physical activity. This condition is estimated to have an influence on the high prevalence of T2DM in Central Java. Thus, this study aims to examine the correlation between risky health behavior and prevalence of T2DM in Central Java [8].

2. Material and Method

This study was ecological study with city/regency in Central Java Province as unit analysis. We used secondary data from Central Java Province Basic Health Research 2018. The dependent variable in this study took data from the indicator of diabetes mellitus prevalence diagnosed by doctors at all ages. Then for the independent variables using health behavior indicators consisting of the habit of sweet food consumption, fatty food consumption, grilled food consumption, soft drink consumption, fruit and vegetable consumption, and physical activity. All collected data were then analyzed using the Pearson/Spearman test.

3. Result

Risky health behavior is behavior related to the incidence or risk factors of non-communicable and communicable diseases. Based on the National Basic Health Research 2018, health behavior indicators consist of prevention of diseases caused by mosquito bites, consumption of risky foods, consumption of fruits and vegetables, bowel habits, hand washing behavior, cigarette and tobacco consumption, physical activity, as well as consumption of alcoholic beverages. Indicators of consumption of risky foods, less consumption of fruits and vegetables, consumption of cigarettes and tobacco, lack of physical activity, as well as consumption of alcoholic beverages are risk factors for non-communicable diseases. Meanwhile, the risk factors for communicable diseases consist of the habit of washing hands and defecating properly and correctly. The indicators measured in correlation to the prevalence of T2DM in this paper were consumption of risky foods, consumption of fruits and vegetables, and physical activity. Indicators of consumption of risky foods consist of excessive sweet and fatty foods consumption, grilled foods consumption, and soft drinks consumption.

Table 1. p-value and r-value of the Determinant of T2DM

<table>
<thead>
<tr>
<th>No</th>
<th>Determinant</th>
<th>p-value</th>
<th>r-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sweet food consumption (≥1 time per day)</td>
<td>0.105</td>
<td>0.279</td>
</tr>
<tr>
<td>2</td>
<td>Fatty food consumption (≥1 time per day)</td>
<td>0.947</td>
<td>0.012</td>
</tr>
<tr>
<td>3</td>
<td>Grilled food consumption (≥1 time per day)</td>
<td>0.009</td>
<td>0.435</td>
</tr>
<tr>
<td>4</td>
<td>Soft drink consumption (≥1 time per day)</td>
<td>0.264</td>
<td>0.194</td>
</tr>
<tr>
<td>5</td>
<td>Fruit and vegetable consumption (do not consume)</td>
<td>0.049</td>
<td>0.335</td>
</tr>
<tr>
<td>6</td>
<td>Physical activity (less)</td>
<td>0.185</td>
<td>0.229</td>
</tr>
</tbody>
</table>
The sweet food consumption indicator represents the consumption of sweet foods in the population aged 3 years and over which is grouped into 1 time per day, 1-6 times per week, and 3 times per month. In 2018, 40.48% of people in Central Java had the habit of eating sweet foods 1 time per day, 47.86% consuming 1-6 times per week, and 11.66% consuming 3 times per month. The results of the calculation of the correlation test with the Pearson/Spearman test, obtained a p-value of 0.105, so it can be said that the habit of excessive sweet foods consumption in population in Central Java has no correlation with the prevalence of T2DM.

The physical activity indicator represents an overview of the physical activity carried out by household members aged 10 years and over. Physical activity measured includes heavy and moderate physical activity in daily life. This physical activity indicator is divided into sufficient and less categories. Physical activity is said to be sufficient if it meets the criteria for moderate or heavy physical activity. Moderate physical activity is defined as physical activity carried out for 5 or more days a week with an average activity duration of 150 minutes a week or 30 minutes per day. While heavy physical activity is physical activity that is carried out for 3 or more days a week and has a MET minute value per week 1500. In 2018, 70.52% of population in Central Java were categorized as having sufficient physical activity and 29.48% were classified as less. The results of the calculation of the correlation test with the Pearson/Spearman test, obtained a p-value of 0.185, so it can be said that physical activity in the population in Central Java has no correlation with the prevalence of T2DM.

**Figure 1.** Graph of Correlation between a) Grilled Food Consumption and b) Fruit and Vegetable Consumption with Prevalence of T2DM

4. **Discussion**

Type 2 Diabetes Mellitus (T2DM) is a type of non-communicable disease associated with metabolic disorders. This disease develops due to a combination of 2 main factors, namely impaired insulin secretion by pancreatic β-cells and the inability of insulin-sensitive tissue to detect the presence of insulin [9]. This condition makes insulin secretion unable to maintain glucose homeostasis, causing hyperglycaemia [10]. The prevalence of T2DM in the last decade
has continued to increase. The main factors that cause high T2DM prevalence include the increasing population of people who are obese, have sedentary lifestyle habits, eat foods that are high in calories, and the increasing elderly population [11].

Risk factors of T2DM can be divided into two major types, namely non-modifiable and modifiable risk factors. Non-modifiable risk factors are innate risk factors that cannot be intervened for prevention, for example are age, gender, ethnicity, and family history or genetic predisposition [12]. While modifiable risk factors are risk factors that can be intervened to be changed so as to reduce risk for getting T2DM. Modifiable risk factors for T2DM include obesity; lack of physical activity; eating foods that contain excess sugar, salt, and fat; smoking habit; less consumption of fruits and vegetables; as well as alcohol consumption habits [13].

This ecological study was conducted to determine the level of vulnerability of the people of Central Java to the prevalence of T2DM in relation to risky health behavior. Based on data analysis from the results of Central Java Province Basic Health Research 2018 and the correlation test using the Pearson/Spearman test, it was found that the habit of grilled food consumption (p: 0.009; r: 0.435) and fruit and vegetable consumption (p: 0.049; r: 0.335) in the population of Central Java have correlation with prevalence of T2DM. Meanwhile, habit of sweet food consumption (p: 0.105; r: 0.279), fatty foods consumption (p: 0.947; r: 0.012), soft drink consumption (p: 0.264; r: 0.194), and lack of physical activity (p: 0.185; r: 0.229) have no correlation with the prevalence of T2DM.

The correlation between grilled foods consumption with T2DM in the population of Central Java is in line with research conducted by Gang Liu, et al. (2018) which states that the process of cooking chicken, fish, or red meat with open flame and/or high-temperature, such as broiling, barbecuing, grilling, or roasting is associated with an increased risk of T2DM [14]. The cooking method with open-flame and/or high temperature has been shown to increase body weight significantly and increase the risk of obesity, so that it can increase a person's risk of developing T2DM. The exact mechanism underlying this association is unknown. However, some studies suggest that certain chemicals, such as HAAAs, PAHs, nitrosamines, and AGEs, which are produced by cooking meat at high temperatures, are thought to increase the risk of diabetes [14]–[16].

Soft drink consumption habits in the people of Central Java also do not have a correlation with the prevalence of T2DM. This condition is not in line with the research conducted by Biggelaar, et al. (2019) which states that the habit of consuming artificially sweetened soft drinks has an effect on the prevalence of T2DM. This is because the artificial sweeteners contained in soft drinks, if consumed in excess, can cause a decrease in the sensitivity of pancreatic β-cells in secreting insulin. In addition, it can also affect β-cell rate sensitivity and overall insulin secretion [19]. The absence of a correlation between soft drink consumption habits and the prevalence of T2DM in population in Central Java is estimated because the category used is only the frequency of consumption of soft drink per day/week/month, but it does not explain the quantity of soft drink that consume per certain time period.

Furthermore, the habits of the population of Central Java who lack physical activity also have no correlation with the prevalence of T2DM. This is in contrast to research conducted by Hermawan A., et al. (2021) which states that the less physical activity a person does, the higher the risk for developing T2DM. Physical activity can be useful to prevent obesity. When the body is actively moving or exercising, glucose in the body will be processed into energy, so that glucose levels in the blood can be controlled and cells become more sensitive to insulin [20]. The absence of a correlation between physical activity habits and the prevalence of T2DM in the population of Central Java is estimated due to a bias in the data collection process for Central Java Province Basic Health Research, namely the respondent's bias in remembering the physical
activity carried out in a week and the bias when grouping for the category of sufficient or less physical activity [21].

5. Conclusion

Based on the results and discussion, it can be concluded that the risky health behavior that has a correlation with the prevalence of T2DM in Central Java is grilled food consumption as well fruit and vegetable consumption. Meanwhile, risky health behavior that has no correlation with the prevalence of T2DM include sweet food consumption, fatty food consumption, soft drink consumption, and physical activity.

References

The Analysis Of Physical Activity Knowledge, Awareness, And Implementation In Healthy Living Patterns Of Drug Addicts At Rumah Damai Semarang

Mohammad Arif Ali1, Ahmad Fathullah1, Sugiarto1, Siti Baitul Mukarromah1, Dewi Marfu’ah Kurniawati2, Adiska Rani Ditya Candra3
{hiarifalikhan@mail.unnes.ac.id 1, ahmadfathullah107@gmail.com1, sugiarto.edu@mail.unnes.ac.id1}

Department of Sports Science, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia1,
Department of Sports Science, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia2,
Department of Sports Science, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia3,
Department of Sports Science, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia4,
Department of Nutrition Science, Faculty of Medicine, Universitas Diponegoro, Indonesia5, Department
of Sport Coaching and Education, Faculty of Sports Science, Universitas Negeri Semarang, Indonesia6

Abstract. Addicts are commanded to receive rehab treatments such as medical, mental, and physical. Its main purpose is to improve their well-being. A program called healthy living patterns is a part of the main program at Rumah Damai Semarang, and it is a vital foundation post-rehab. This study aims to analyze the understanding, awareness, and implementation of physical activity. A descriptive quantitative method by performing an interview to collect data from addicts (n= 20). Knowledge levels include knowing, comprehending, applying, analyzing, evaluating, and synthesis. Forty percent (40%) of respondents are excellent, 10% very good, 10% good, 10% fair, 10% poor, and 20% very poor. Awareness levels include receiving, responding, valuing, and being responsible, 50% excellent, 25% good, 5% average, and 20% poor. The implementation is evaluated by perception, mechanism, and adoption, 50% good, 10% fair, and 40% poor. Addicts’ understanding of healthy living patterns is average; their awareness of it is good enough, but unluckily their attitude and behavior have not yet achieved the optimal implementation.

Keywords: sports medicine, health promotion, exercise rehabilitation.

1 Introduction

Health is one of the elements of welfare that must be realized and is a fundamental right. A healthy lifestyle contains three major components: physical, mental (spiritual), and social, demonstrating that everyone is capable of living effectively socially and economically [1]. In another hand, a drug addict is someone who uses or abuses narcotics, drugs, or toxic substances in a state of physical or psychological dependence, and in Indonesia drug addicts must assigned into rehabilitation program [2].

A healthy lifestyle is one of the key factors for wellbeing. by maintaining physical and mental health enables drug addicts to live productively and to perform better social functions. In different ways, it has a positive impact on recovery for drug addicts [3]. Healthy lifestyle indicators such as smoking cessation, regular physical activity, balanced diet, adequate sleep, abstinence from alcohol, and illicit drug abuse [4]. Physical activity can be defined as any
movement produced by skeletal muscle involving leisure, traveling to a place, or as part of work [5]. In dealing with pressure or stress, drug addicts usually overcome it by increasing physical activity such as cleaning the homestead, playing guitar, playing ping pong, and getting closer to God [6].

The implementation of physical activity within the application of a healthy lifestyle is exceptionally vital and must be made a habit by each individual, including drug addicts [7]. The rehabilitation stages carried out by the Rumah Damai Semarang Foundation are detoxification, physical exercise, and the provision of balanced nutrition. Detoxification in this term is referred to the process of eliminating toxins (narcotic substances or other addictive substances) from the body by completely stopping the use of all addictive substances used or by reducing the dose, and for the implementation of the physical activity program, the sports facilities at Rumah Damai Semarang Foundation including a volleyball court, basketball court, swimming pool, billiard table, ping pong table, and fitness room.

Based on the explanation above, this study aims to analyze the understanding of drug addicts on physical activity, the awareness on physical activity, and the implementation of physical activity within healthy living patterns.

2 Material and Methods

2.1 Study design, Population, and Sample

This is a descriptive quantitative study that presents the score of the answers through an interview with the respondents. The population in this study is drug addicts at Yayasan Rumah Damai Semarang, and the total sampling technique was chosen to draw the 20 respondents (males, aged 36.7±8.75 years old) in this study.

2.2 Knowledge levels

Knowledge levels have been determined as follows: 1) knowing which mean whether drug addicts can define physical activity in implementing a healthy lifestyle; 2) comprehending which can be defined whether drug addicts have understood physical activity by asking drug addicts to explain the benefits of physical activity; 3) applying which can be referred to whether drug addicts can create or provide examples of physical activity in implementing a healthy lifestyle; 4) analyzing which mean whether drug addicts able to describe in detail the physical activity program in a healthy lifestyle; 5) to evaluate is related to the ability of drug addicts to justify or assess the benefits they feel from physical activity programs in implementing a healthy lifestyle, and 6) synthesis is defined as drug addicts adjust their knowledge in carrying out physical activities in a healthy lifestyle.

2.3 Awareness levels

Awareness levels have been determined as follows: 1) receiving which means drug addicts accept or agree with a physical activity program in a healthy lifestyle; 2) responding which can be defined as drug addicts providing answers or responses when receiving material about physical activity in implementing a healthy lifestyle; 3) valuing which can be referred to drug addicts have invited other fellows to discuss physical activity programs in a healthy lifestyle,
and 4) responsible which mean as a form of commitment of drug addicts to their knowledge of the physical activity.

2.4 Implementation levels

Implementation levels have been determined as follows: 1) perception which means what actions will be taken by drug addicts to increase awareness of healthy lifestyles, especially regarding physical activity; 2) mechanism which can be defined that drug addicts are able to perform physical activities according to the correct mechanism/structure, and 3) adoption which can be referred to drug addicts have acknowledged/feel the benefits of physical activity in implementing a healthy lifestyle.

2.5 Data collection, and Analysis

Structured interview was used in this study to collect the data about the understanding of drug addicts on physical activity, the awareness on physical activity, and the implementation of physical activity within healthy living patterns. Twenty two questions in the questionnaire was approved by sports psychology expert from Universitas Negeri Semarang to be used to collect the data in this study. Since this is a descriptive quantitative study, the frequency distribution was used to analyze the collected data by administrating the variable into the pattern of frequencies in the form of percentages.

3 Results and Discussion

3.1 Knowledge levels on physical activity

Drug addicts' response were checked and classified into six categories. Once respondents able to answer all the questions about their knowledge on physical activity in implementing a healthy lifestyle, they are classified into excellent, and the norm of this category gradually decreases according to the respondent's ability to answer the questions such as very good, good, fair, poor, and very poor.

<table>
<thead>
<tr>
<th>Knowledge levels</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesis</td>
<td>✅ - - ✅ - ✅ - ✅ - ✅ - ✅ - ✅ - ✅ - ✅ - ✅</td>
</tr>
<tr>
<td>Evaluating</td>
<td>✅ - - - - - - - - - - - - - - - - - -</td>
</tr>
<tr>
<td>Analyzing</td>
<td>✅ - - ✅ - - - - - - - - - - - - - - - - - -</td>
</tr>
<tr>
<td>Applying</td>
<td>✅ ✅ ✅ - ✅ - - - - - - - - - - - - - - - - - -</td>
</tr>
<tr>
<td>Comprehending</td>
<td>✅ - ✅ ✅ ✅ ✅ ✅ ✅ ✅ ✅ ✅ ✅ ✅ ✅ - - - - - - - - - - - -</td>
</tr>
<tr>
<td>Knowing</td>
<td>✅ - - ✅ - ✅ - ✅ - ✅ - ✅ - ✅ - ✅ - ✅ - - - - - - - - - - - -</td>
</tr>
</tbody>
</table>

Forty percent (40%) or eight respondents fall into the excellent category, which means that they are able to recall facts and basic concepts, explain ideas or concepts, use information in new situations, draw connections among ideas, justify a stand or decision, produce new original
work [8]. Two respondents or 10% classified into the very good category, 10% or two respondents are falls into the good category, two respondents or 10% as fair, 10% or two respondents as poor, and four respondents or 20% in the very poor category (see Table 1 and Fig. 1).

A healthy lifestyle is the most appropriate way for physical recovery from drug dependence, with a healthy lifestyle, especially good and regular physical activity will make drug addicts stay away from unhealthy lifestyles [9]. Although a 2019 study by Dorado and Racca found that respondents were acquainted with a healthy lifestyle, scored fair on dietary practices, and moderately on physical activity participation [10], but developing good physical activity habits requires knowledge of physical activity, which can be acquired through observation, listening and experience [11].

![Knowledge Levels](image.png)

**Fig. 1.** Knowledge levels of drug addicts on physical activity.

### 3.2 Awareness levels on physical activity

Being conscious of something is the state of being aware. It is the individual capacity to personally know and sense, feel, or be aware of events, to put it more precisely [12]. Based on our results, half or 10 respondents (50%) at level IV which can be described as an excellent stage, a quarter or five respondents (25%) fall at level III or the good category, and only 1 respondent or five percent (5%) at level II or at the average category, and 20% or four respondents at the level I or poor category (see Table 2 and Fig. 2).

![Table 2](table.png)

**Table 2.** Awareness levels of drug addicts on physical activity.
Physical activity awareness was previously defined as the correspondence between self-reported and actual physical activity. Self-rated physical activity is assessed by asking an individual to rate the amount of physical activity he or she is doing [13]. Previous studies have shown that awareness of physical activity recommendations is associated with partnerships, higher levels of education, and recreational physical activity. Those who were unaware of the recommendations had lower cardiorespiratory and strength fitness scores than those who were aware [14]. From the interpretation data above and results of previous studies, drug addicts at Rumah Damai Semarang have a promising results from the program, which leads to fully recover. The important massage is that we can maximizing the health benefits of fitness routine by practicing exercise safety.

3.3 Implementation levels in healthy living patterns

The act of carrying out a plan, a method, or any other design, idea, model, specification, standard, or policy is known as implementation [15]. In this study, the implementation was evaluated in three stages, there are perception, mechanism, and adoption. Once respondents are able 1) to list actions they can take to increase their awareness of a healthy lifestyle, 2) become structurally involved in physical activity, and 3) they are able to understand the benefits of physical activity, at this point it can be classified into good. Meanwhile, the fair can be evaluated by the first and second points, and the poor can be evaluated by only the first point. Based on the data, the implementation levels is in line with the awareness levels that half of respondents or 50% (n= 10) fall into good category, two respondents (10%) at fair category, and eight respondents (40%) fall into poor category (see Table 3 and Fig. 3).

The management of Rumah Damai Semarang has provided clients with a healthy lifestyle program as one of the top programs offered to accelerate recovery from drug addiction. The Healthy Lifestyle Program begins with instructors providing educational materials, which drug addicts implement in the form of daily activities at Rumah Damai Semarang. It is considered as one of the main pillars of a healthy lifestyle.

Fig. 2. Awareness levels of drug addicts on physical activity.
Table 3. Implementation levels on physical activity in healthy living patterns.

<table>
<thead>
<tr>
<th>Awareness levels</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adoption</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mechanism</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Perception</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Fig. 3. Implementation levels on physical activity in healthy living patterns.

Physical activity could bring positive effects both for physical and mental. Generally, regular physical activity can improve muscle and cardiorespiratory fitness; improves bone and functional health; reduces the risk of high blood pressure, coronary artery disease, stroke, diabetes, many types of cancer (including breast and colon cancer), and depression. It also reduces the risk of falls, and hip or spine fractures, and helps maintain a healthy weight [5].

In psychology, physical activity plays an important role in the care of mild to moderate psychiatric disorders, especially depression and anxiety. People with depression tend to be less physically active than those without depression, but increased aerobic exercise and weight training have been shown to significantly reduce symptoms of depression [16]. Additionally, even light physical activity during the COVID-19 pandemic can help ease some of the negative mental health effects older adults may experience from isolation and adherence to the SDGs during the COVID-19 pandemic [17].

Lastly, this study would be better if future researchers are able to evaluate not only physical activity but also the dietary program, and mental training. Therefore, it can provide holistic information that rehabilitation programs for drug addicts may be referred to.

4 Conclusion

Based on the results above, we conclude that the knowledge, awareness, and implementation of physical activity in healthy living patterns of drug addicts at Rumah Damai
Semarang are good, although the management perhaps can make an outreach program to provide material on physical activity in a long-term and routine healthy lifestyle, and this aims to make drug addicts know the importance of physical activity for physical fitness, understand the benefits of physical activity that can accelerate the recovery period so that they have the right attitude and good behavior in physical activity.

**References**

Physical Activity Level and Quality of Life of Students During Covid 19 Pandemic

Wiga Nurlatifa Ronadhon
Nasuka
Anggit Wicaksono
Adiska Rani Ditya Candra
Erwin Nizar Priambodo

{ wiganurlatifa@mail.unnes.ac.id, nasuka@mail.unnes.ac.id, anggit_w@mail.unnes.ac.id

Faculty of Sports Science, Universitas Negeri Semarang, Semarang

Abstract. Through International Physical Activity Questionnaire (IPAQ) this research has
the intent and purpose of examining the extent to which physical activity and quality of
life is carried out by students in the Sports Coaching Education Department, especially in
the class of 2021. This research itself is based on the current situation in the world that is
still hit by Covid 19. As a result, the lecture activities are carried out separately, so for
practical lecture activities, controlling for monitoring and evaluating optimally from the
implementation of lecture activities cannot be carried out. The research uses a descriptive
percentage approach in its implementation. While the data collection used IPAQ
questionnaire as the instrument. A total of 80 samples used in this study were obtained
from students in the Sports Coaching Education Department. The results of the analysis
show that there are 30% of students who can be categorized as having a fairly high level
of physical activity, while for students who have a moderate level of activity, the results
are 45% and 25% for students with low levels of physical activity. Based on these results
it can be concluded that during the Covid 19 pandemic which is still ongoing today, it can
be interpreted that students have a tendency to decrease their physical activity level, where
one of the contributing factors is the reduced physical activity they do every day and of
course this also affects the quality of life of these students.

Keywords: Physical Activity, Quality of Life, Covid 19.

1 Introduction

In order to improve the quality of physical fitness, especially among students of the Department
of Sports Coaching Education in the class of 2021, physical activity can be said to be one of the
most important factors for an individual, because by doing physical activity or exercising
students will become fitter and healthier. In addition, physical activity is considered as one of
the important factors related to health and improving quality of life (1).
Quality of life is a subjective perception of an individual on psychological, social, physical activity, and environmental conditions in dealing with the daily life that is passed. A person's quality of life is also related to aspects of physical health related to daily physical activities.

Several studies have shown that a person who has low physical activity and has a poor diet can be a factor that can cause diseases related to the person's own lifestyle (2). In addition, physical activity is also related to physical fitness which can help a person increase his productivity which can later play an important role in measuring or knowing the risk of disease that will attack (3).

Magnitude of relationship between physical activity and health varies greatly from individual to individual, but in reality it is still difficult to make an accurate assessment of the relationship between pattern of physical activity in a large population and the energy used to perform physical activity (4), therefore there is still a need for research that can reveal differences in the results of physical activity of each individual.

A student has a risk of disease if the student has low physical activity results. However, if a student has productivity in carrying out physical activities, it will also have an impact on his good fitness level. So it is not surprising that currently the awareness of how students maintain and increase their level of physical activity is also increasing (5). In addition, if a person has low physical fitness and has a low physical level, this will have an impact on the risk of cardiovascular disease (6).

The Covid-19 outbreak that has hit the world and Indonesia is no exception has resulted in the process of learning or lectures that were originally conducted offline to be carried out online. This did not escape the impact on students in the Department of Sports Education Education who conducted online lectures in 2021. Where the online lecture process has an impact on practical courses including volleyball, basketball, soccer, swimming, physical fitness, etc. In addition, there are changes related to student lifestyles that have occurred due to the Covid-19 pandemic (7), as well as the recommendation to maintain distance, can also affect the physical and mental health of students. students themselves (8). For sports people, inactivity in doing physical activity itself can be considered as another pandemic that occurs by itself (9).

As a result of online lectures in practical courses, among others, lecturers cannot optimally provide material or evaluate student lecture activities. Where before the Covid-19 pandemic in practical courses, especially in physical fitness courses, the lecture activity process can be used as a guide by lecturers to be able to find out the level of students' physical activity and to evaluate the lecture process activities for now cannot be done because online lectures are still ongoing. And the Covid-19 outbreak hasn't gone away either.

Responding to the Covid-19 phenomenon that occurs related to physical activity, currently many researchers are interested in observing these problems, especially in the field of sports because in general it can be explained that reduced activity in carrying out physical activities risks reducing fitness levels.

Therefore, by applying appropriate and reliable measurement techniques to assess physical activity levels, not only practical data will be obtained in assessing students' fitness levels (10). Accurate measurement of physical activity is very important to identify and evaluate trends in physical activity levels related to the health benefits of physical activity itself (11).
On the basis of this, in accordance with the objectives of the research conducted, this study was carried out to determine and evaluate the level of physical activity of students of the Department of Sports Coaching Education during online lectures during the Covid-19 pandemic for students of the 2021 batch, which will be collected in 2021. Related to the level of physical activity of these students, to be able to evaluate the level of physical activity of students, this study required data on the level of physical activity of students which could reflect their level of physical activity during online lectures. Data relating to self-reports of student physical activity is actually easy to obtain using popular measuring instruments or instruments, but sometimes the reliability of these measuring instruments is still often questioned (12).

The purpose of evaluating the level of physical activity carried out is as follows: firstly it aims to identify conditions that can interfere with students' ability to participate in physical activity and sports activities, secondly aims to identify health problems that can increase the risk of injury or death when participating in sports activities, and the last aims to be able to assist students in determining the type of sport according to their abilities and physical status.

Therefore, in this study the data collected was obtained using a questionnaire from the IPAQ (International Physical Activity Questionnaire) which was used to determine the level of physical activity of the students. Where several studies related to physical activity have used the questionnaire to determine the level of physical activity of a particular population. The self-report questionnaire using the IPAQ was completed by students during the research day with the help of the researcher in filling it out. The results of this study are expected to be used as material for evaluation and reflection for students in the Department of Sports Coaching Education so that they can carry out regular physical activities so that they stay fit.

2 Material & Methods

This type of research uses descriptive research. Descriptive research is research that is used to explain or describe the data collected in a study, where this type of descriptive research is used to collect data about the level of physical activity of students. The data in this study were collected within 1 week. The instrument used in collecting data uses a questionnaire from the IPAQ (International Physical Activity Questionnaire). Furthermore, based on the data obtained, then an analysis was carried out using a descriptive percentage technique. Furthermore, the IPAQ (International Physical Activity Questionnaire) is used as an instrument in measuring the level of physical activity where the instrument is already valid based on the tests that have been carried out.

The research sample amounted to 80 people consisting of students of the 2021 Sports Coaching Education Study Program with an age range of 17-20 years. The sample was taken from a student population of 171 students of class 2021. Sampling was carried out based on a purposive sampling technique by taking into account inclusion and exclusion indicators. In detail, the criteria for inclusion factors are age in the range of 17-25 years, and are students of the 2021 Sports Coaching Education Department, active in the Student Activity Unit (UKM), active as athletes, and do not have cardiovascular disease. The exclusion criteria in this study were those who were less than 17 years old or more than 25 years old, had or were suffering from one of the degenerative diseases (cardiovascular, diabetes, etc.). This study was intended to obtain information and evaluate the level of physical activity of the 2021 students of the Department
of Sports Coaching Education in online lectures during the Covid-19 pandemic. At the
evaluation stage of the student's physical activity level, evaluation activities are divided into 5
activity procedures, namely: evaluation planning, evaluation implementation, data processing,
data interpretation and reporting results.

3 Results and Discussion

The data obtained in this study showed that from the total research sample, which amounted to
80, there were 30% (24 students) of the 2021 Department of Sports Coaching Education students
were classified as having their physical activity level in the high category, while 45% (36 students) had a level of physical activity moderate and 25% (20 students) have a low level of
physical activity low. The distribution of the data can be seen in the following figure.

![Graph 1. Results of Physical Activity Levels of Students](image)

The data shown in Graph 1 based on the results of data taken using a questionnaire
from the International Physical Activity Questionnaire does show that the students of the
Department of Sports Coaching Education class of 2021 have a moderate level of physical
activity. However, from these data, there are still around 25% of students who have low levels
of physical activity. So on this basis it is necessary to provide input for students who have low
levels of physical activity to be able to increase their physical activity activities. On this basis,
it is hoped that their activity level can rise to a medium or high level, because when someone
has a high level of physical activity it will be directly proportional to their good physical fitness.

<table>
<thead>
<tr>
<th>Reporting mode</th>
<th>Gender</th>
<th>n</th>
<th>Walking</th>
<th>Moderate activity</th>
<th>Vigorous activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>52</td>
<td>82.5</td>
<td>32.5</td>
<td>79.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9.7 ± 15.2</td>
<td>3.4 ± 6.1</td>
<td>5.7 ± 9.2</td>
</tr>
</tbody>
</table>

Table 1. Percentage of results of male and female students by type of physical activity and average duration of activity
Apart from the frequency described from the results of physical activity training, in this study related to intensity and duration were also calculated and the average value the average is also presented in Table 1.

Based on the research results obtained, it can be explained that the IPAQ test is right to use to monitor trends and evaluate public health or individual interventions aimed at increasing levels of physical activity, valid measurements of physical habits are performed (13). The physical activity questionnaire commonly called the IPAQ was developed to address this problem by a group of experts in 1998 to facilitate monitoring of physical activity based on global standards (14).

Given the wide range of abilities, the IPAQ is considered one of the most advanced international questionnaires to measure physical activity (frequency, duration, and intensity of an activity) in various populations (in both developed and developing countries), (15). In addition, the use of IPAQ (International Physical Activity Questionnaire) showed positive results in several studies using diverse populations (16).

In addition, physical activity is positively related to motor skills and physical fitness. In particular, a person who has a strong, or moderate level of physical activity associated with changes in the individual's aerobic fitness (17). Here it should be remembered that the physical activity carried out involves the movement of each individual that is intentional, voluntary, and directed towards achieving goals whose results can later be identified.

Thus, it is very important to integrate physical activity into the lives of students and establish provisions regarding how to continue to facilitate them in maintaining a healthy and active lifestyle during this pandemic (18). Based on the results of research from (19) showed that the level of physical activity among college students during the lockdown, showed that Health Science students performed significantly higher.

This study also verifies and examines the different results between the physical activity of male and female students (see table 1). Where for female students have a tendency that the results of physical activity is lower than male students. This is in accordance to (20) which states that female physical education students have lower physical activity results than male students. Although many factors influence the female students that encourage them to be able to explore physical activity, as well as many factors that can be a barrier for them to do so. The obstacles that become the barrier may occur because physically they lack time to be able to do activities, lack of access to sports facilities, and the unsafe environment that will be used for physical activities. However, this should not be the biggest factor that hinders them from doing physical activities or exercising.

| Self-completion (SC) | Female | 28 | 89.3 | 5.2 ± 5.7 | 56.2 | 2.0 ± 2.4 | 43 | 3.7 ± 5.8 |

4 Conclusions
Based on the research above, it can be concluded that the results of the students studied had different results, where for the 24 batch of 2021 students of the Department of Sports Coaching Education, 30% had a high level of physical activity high. As for the 36 students, 45% had a moderate level of physical activity, and a number of 20 students had a low physical activity level low visits of 25% results.

From the results above, it can be explained that during the ongoing Covid-19 it turned out that it was not a barrier for students to carry out physical activity activities, where this can be seen based on the results of the dominant student IPAQ in the moderate category for the level of physical activity of students in the class of 2021. However, it should be noted in particular for female students whose average results are lower than male students regarding their level of physical activity, so it is recommended for female students to do physical activity more often so that later the level of activity and quality of life will increase also their physique and fitness can improve gradually. In addition, because the potential of physical activity can help a student in expressing what is happening to his body, therefore it seems that each student needs to maximize the opportunity to be involved in various physical activities and make it a routine activity carried out in daily life.

References


Practice-Based Learning Method to Improve Physical Education Teacher Understanding of TGMD-2 Usage

Baskoro Nugroho Putro1, Hanik Liskustyawati2, Djoko Nugroho3, Sri Santoso Sabarini4, Sunardi Sunardi5, Budhi Satyawan6

{baskoro.np@staff.uns.ac.id1, hanik_l@staff.uns.ac.id2, djokonugroho@staff.uns.ac.id3, srisantoso@staff.uns.ac.id4, sunardi58@staff.uns.ac.id5, budhisatyawan@staff.uns.ac.id6}

Faculty of Sports, Universitas Sebelas Maret, Surakarta, Indonesia1, Faculty of Sports, Universitas Sebelas Maret, Surakarta, Indonesia2, Faculty of Sports, Universitas Sebelas Maret, Surakarta, Indonesia3, Faculty of Sports, Universitas Sebelas Maret, Surakarta, Indonesia4, Faculty of Sports, Universitas Sebelas Maret, Surakarta, Indonesia5, Faculty of Sports, Universitas Sebelas Maret, Surakarta, Indonesia6

Abstract. Elementary school physical education teachers must understand gross motor development. Elementary school students must have good gross motor skills to learn motion at the next level. The development of gross motor skills should be evaluated periodically. TGMD-2 is a gross motor skill test instrument that has been widely used. Implementing TGMD-2, which tends to be easy, can help teachers identify the development of gross motor skills. Elementary school physical education as the samples need to learn how to use TGMD-2. Samples study TGMD-2 using practice-based learning to learn TGMD-2 deeper. The research design used a one-group pretest and posttest design. Pretest and posttest instrument tested to a group of samples that have the same characteristics as research samples. The samples' understanding of the use of TGMD-2 increased after undergoing treatment. Paired t-test with a probability value of significantly smaller than 0.05 declared that practice-based learning impacted samples. The achievement of N gain with the lowest category "average" and a decrease in the posttest percentage of Error compared to the pretest strengthens the hypothesis. Samples had the opportunity to see TGMD-2 from the learner, location setter, test taker, and testers side. This perspective provides complete knowledge for samples in using TGDM-2 as an evaluation tool.

Keywords: physical education; teacher; TGMD-2; pratice; learning

1 Introduction

Physical education teachers must understand the needs of students for their lives. Competencies achieved through education show learning outcomes and emphasize using knowledge gained in activities [1]. High-quality education and the needs of all students can be met with a teacher-appropriate response [2]. Poor physical education quality is one factor in the decline in the quality of movement development in children [3]. Physical education teachers are responsible for how to move using the correct technique, the ability to detect motion errors, and how to correct them [4]. Teachers must understand and have technology that can be used to increase effectiveness and efficiency in teaching physical education [5]. Technology in physical education can facilitate an authentic assessment [6].
Gross motor skills are one of the student competencies and need. Locomotor and object control are skills that included gross motor skills [7]. The development of gross motor skills is one of well-being and general development indicator [8]. Human ability to learn and develop gross motor skills can be varied [9]. Space, opportunity, and trust in the school environment will develop optimally gross motor skills [10]. Physical activity also has a massive impact on gross motor skills development [11]. Physical activity is produced by skeletal muscles and requires energy expenditure [12]. Gross motor skills give a chance to developed physical fitness since associated with physical activity that requires energy expenditure. A student with high gross motor competence tends to be more physically fit than low gross motor competence students [13]. As crucial for advanced movement learning, gross motor skills should be monitored and screened periodically [14].

TGMD-2 is an assessment instrument that builds for identified three until 10 years of children's gross motor skills. TGMD-2 is one of the most frequently used test instruments to measure children's gross motor skills [15]. TGMD-2 is not only used as a test instrument in clinical and research fields but can also be used in education [17]. TGMD-2 measured the development of gross motor skills through two sub-tests [18]. The two sub-tests used in TGMD-2 are divided into a sub-test of six locomotor skills and six object control [19]. The test is used to identify the development of gross motor skills, plan gross motor skill development learning programs and evaluate gross motor skill development programs' success [20].

Practice-based learning gives the teacher a more significant opportunity to understand TGMD-2. Practice is a learning situation that gives the learner a clear goal, immediate feedback on performance, and enough repetition to level up the performance [21]. Practice-based learning can be considered an excellent approach to develop learner competency [22]. The focus of practice-based learning is firmly juxtaposed ground knowledge and how to use in actual condition [23]. When undergoing practice-based learning, learners are put in genuine professional environments [24].

2 Method

The research design used was one group pretest and posttest design. Samples got treatment after pretest until approaching posttest. Treatment that was given to respondents was a practice-based learning method. Samples had the opportunity to become examiners and test objects during treatment. Research instrument for pretest and posttest adapted from TGMD-2 skill indicator. The test instrument uses a true-false model. The validity test instrument uses biserial point since the instrument was a true-false questionnaire. The reliability test uses KR 20 for the same reason as using biserial point. The pretest and posttest instruments were tested on 20 elementary school physical education teachers other than the Samples. Categorization of pretest and posttest results using the ideal score as basic formula (Table 1).

Table 1. Categorization of Result

<table>
<thead>
<tr>
<th>Norm</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X \geq \bar{X}<em>{\text{ideal}} + 1.5 S</em>{\text{ideal}}$</td>
<td>Very High</td>
</tr>
<tr>
<td>$\bar{X}<em>{\text{ideal}} + 0.5 S</em>{\text{ideal}} \leq X &lt; \bar{X}<em>{\text{ideal}} + 1.5 S</em>{\text{ideal}}$</td>
<td>High</td>
</tr>
<tr>
<td>$\bar{X}<em>{\text{ideal}} - 0.5 S</em>{\text{ideal}} \leq X &lt; \bar{X}<em>{\text{ideal}} + 0.5 S</em>{\text{ideal}}$</td>
<td>Average</td>
</tr>
</tbody>
</table>
Ideal Score, $\bar{X}_{\text{ideal}} = \frac{1}{2}\text{Ideal Score}$, $S_{\text{ideal}} = \frac{1}{3}\bar{X}_{\text{ideal}}$

Interpretation of improvement in test results using the normalized gain score (Table 2). Interpretation was used to strengthen the research hypothesis. Data normality was tested with Kolmogorov-Smirnov (KS) test. A normality test was carried out on the difference between the two groups of data. The homogeneity test uses the F test to determined variance similarity. The research hypothesis was tested using paired t-test. The null hypothesis is rejected, and the alternative hypothesis is accepted if the paired t-test result is less than 0.05. The Samples involved in this study were 20 elementary school teachers. Samples are members of the physical education elementary school teachers association in Mojolaban District, Sukoharjo Regency.

### Table 2. Norm of Normalize Gain Score

<table>
<thead>
<tr>
<th>Formula</th>
<th>Norm</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttest Score – Pretest Score</td>
<td>$g &lt; 0.00$</td>
<td>Degradation</td>
</tr>
<tr>
<td>Ideal Score – Pretest Score</td>
<td>$g = 0.00$</td>
<td>No Improvement</td>
</tr>
<tr>
<td>Ideal Score – Pretest Score</td>
<td>$0.00 &lt; g \leq 0.30$</td>
<td>Low Improvement</td>
</tr>
<tr>
<td></td>
<td>$0.30 &lt; g \leq 0.70$</td>
<td>Average Improvement</td>
</tr>
<tr>
<td></td>
<td>$0.70 &lt; g \leq 1.00$</td>
<td>High Improvement</td>
</tr>
</tbody>
</table>

### 3 Result

The preliminary design of the research instrument consists of 48 questions. The instrument validity and reliability still need to be analyzed, although the instrument was adapted from the TGMD-2 indicator. The result of the instrument reliability calculation was $r_{11}=0.98$. The result of $r_{11}$ was substituted into $t_{\text{count}}=3.81$. The instrument was declared reliable since the result of $t_{\text{count}}$ was greater than $t_{\text{table}}=1.75$. The validity test showed seven items were invalid and had to be removed. Detail of instrument validity can be seen in table 3.

### Table 3. Instrument Validity ($t_{\text{table}}=1.73$)

<table>
<thead>
<tr>
<th>Item</th>
<th>$r_{11}$</th>
<th>$t_{\text{count}}$</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.66</td>
<td>4.89</td>
<td>Valid</td>
</tr>
<tr>
<td>2</td>
<td>0.72</td>
<td>6.25</td>
<td>Valid</td>
</tr>
<tr>
<td>3</td>
<td>0.43</td>
<td>2.21</td>
<td>Valid</td>
</tr>
<tr>
<td>4</td>
<td>0.49</td>
<td>2.75</td>
<td>Valid</td>
</tr>
<tr>
<td>5</td>
<td>0.60</td>
<td>3.91</td>
<td>Valid</td>
</tr>
<tr>
<td>6</td>
<td>0.68</td>
<td>5.27</td>
<td>Valid</td>
</tr>
<tr>
<td>7</td>
<td>0.38</td>
<td>1.87</td>
<td>Valid</td>
</tr>
<tr>
<td>8</td>
<td>0.38</td>
<td>1.87</td>
<td>Valid</td>
</tr>
<tr>
<td>9</td>
<td>0.50</td>
<td>2.86</td>
<td>Valid</td>
</tr>
<tr>
<td>10</td>
<td>0.41</td>
<td>2.09</td>
<td>Valid</td>
</tr>
<tr>
<td>11</td>
<td>0.02</td>
<td>0.10</td>
<td>Invalid</td>
</tr>
<tr>
<td>12</td>
<td>0.05</td>
<td>0.19</td>
<td>Invalid</td>
</tr>
</tbody>
</table>
Samples performed pretest and posttest during the research. The pretest was used to identify the teacher's initial understanding of TGMD-2 usage. Samples learn how to run TGMD-2 after the pretest. Samples implemented the TGMD-2 instrument as the examiner and test object. Respondents performed the posttest after finished the treatment. The results of the posttest showed that all Samples experienced an increase in understanding TGMD-2 (Table 4). 9 Samples had average improvement, and the rest had significant improvement of understanding. Improvement range is affected by the difference between pretest and posttest results. Samples with the highest posttest score do not necessarily get the most significant improvement.

**Table 4. Pre and Post Test**

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Pretest Result</th>
<th>Pretest Score</th>
<th>Posttest Result</th>
<th>Posttest Score</th>
<th>N Gain</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Very Low</td>
<td>10</td>
<td>High</td>
<td>26</td>
<td>0.5</td>
<td>Average</td>
</tr>
<tr>
<td>R2</td>
<td>Low</td>
<td>14</td>
<td>Very High</td>
<td>35</td>
<td>0.8</td>
<td>High</td>
</tr>
<tr>
<td>R3</td>
<td>Average</td>
<td>20</td>
<td>Very High</td>
<td>34</td>
<td>0.7</td>
<td>Average</td>
</tr>
<tr>
<td>R4</td>
<td>Average</td>
<td>13</td>
<td>Very High</td>
<td>33</td>
<td>0.7</td>
<td>High</td>
</tr>
<tr>
<td>R5</td>
<td>Low</td>
<td>12</td>
<td>Very High</td>
<td>32</td>
<td>0.7</td>
<td>High</td>
</tr>
<tr>
<td>R6</td>
<td>High</td>
<td>24</td>
<td>Very High</td>
<td>35</td>
<td>0.7</td>
<td>Average</td>
</tr>
<tr>
<td>R7</td>
<td>Very Low</td>
<td>10</td>
<td>Very High</td>
<td>32</td>
<td>0.7</td>
<td>High</td>
</tr>
<tr>
<td>R8</td>
<td>Average</td>
<td>19</td>
<td>Very High</td>
<td>34</td>
<td>0.7</td>
<td>High</td>
</tr>
<tr>
<td>R9</td>
<td>Average</td>
<td>18</td>
<td>Very High</td>
<td>32</td>
<td>0.6</td>
<td>Average</td>
</tr>
<tr>
<td>R10</td>
<td>Average</td>
<td>18</td>
<td>Very High</td>
<td>36</td>
<td>0.8</td>
<td>High</td>
</tr>
<tr>
<td>R11</td>
<td>Average</td>
<td>23</td>
<td>Very High</td>
<td>37</td>
<td>0.8</td>
<td>High</td>
</tr>
<tr>
<td>R12</td>
<td>Low</td>
<td>11</td>
<td>Very High</td>
<td>35</td>
<td>0.8</td>
<td>High</td>
</tr>
<tr>
<td>R13</td>
<td>Average</td>
<td>22</td>
<td>High</td>
<td>29</td>
<td>0.4</td>
<td>Average</td>
</tr>
<tr>
<td>R14</td>
<td>Average</td>
<td>21</td>
<td>Very High</td>
<td>37</td>
<td>0.8</td>
<td>High</td>
</tr>
<tr>
<td>R15</td>
<td>Low</td>
<td>17</td>
<td>High</td>
<td>29</td>
<td>0.5</td>
<td>Average</td>
</tr>
<tr>
<td>R16</td>
<td>High</td>
<td>27</td>
<td>Very High</td>
<td>32</td>
<td>0.4</td>
<td>Average</td>
</tr>
<tr>
<td>R17</td>
<td>High</td>
<td>26</td>
<td>Very High</td>
<td>38</td>
<td>0.9</td>
<td>High</td>
</tr>
<tr>
<td>R18</td>
<td>Average</td>
<td>21</td>
<td>Very High</td>
<td>35</td>
<td>0.7</td>
<td>High</td>
</tr>
<tr>
<td>R19</td>
<td>Average</td>
<td>19</td>
<td>High</td>
<td>30</td>
<td>0.5</td>
<td>Average</td>
</tr>
<tr>
<td>R20</td>
<td>Low</td>
<td>16</td>
<td>High</td>
<td>28</td>
<td>0.5</td>
<td>Average</td>
</tr>
</tbody>
</table>
The normality test showed that the pretest and posttest data had a normal distribution with $KS_{\text{count}} 0.12$ was smaller than $KS_{\text{table}} 0.30$. The homogeneity test shows that the data was homogeneous with the value of $F_{\text{count}} 2.49$ was greater than $F_{\text{table}} 2.17$. Pretest and posttest must be carried out by Samples to identify prior knowledge and knowledge after experiencing treatment. Pretest result showed that most of the Samples seem not familiar with TGMD-2. Samples with high category scores were only 3 out of 20 Samples. The practice-based learning treatment succeeded in improving Samples' understanding. All Samples made score increasement in the posttest. Pretest and posttest results showed significant differences in the results (Figure 1).

![Figure 1. The Difference of Respondens Achievement in Pretest and Posttest](image)

The pretest results can be used as a mapping of skills that the participants did not understand. A skill needs special attention in the treatment process if it had an error percentage of 50%. The error percentage is taken from the proportion of incorrect answers multiplied by 100. During treatment, locomotor skills that need special attention were gallop, hop, leap, and slide (Figure 2). In the locomotor skills indicator, the Gallop, leap, and slide skills were the most difficult skills for Samples to understand. All indicators of gallop, leap, and slide skills have an error percentage above 50%. Hop skills only need to inform the respondent about how many hops the test taker must do.
Skill indicators on object control require more special attention than locomotor skills (Figure 3). Object control skills require special attention. Striking a stationary ball, underhand roll, and overhand throw skills were the most difficult skills for participants in object control skills. The Samples do not sufficiently understand the skill indicators. Stationary dribble, kick and catch skills only need to match the perception of the number of moves, catch and kick conditions standardized by TGMD-2.
Paired t-test shows that the probability value of significantly smaller than 0.05. Paired t-test results declared that the null hypothesis was rejected. Samples have different understandings after learning TGDM-2 with the practice-based learning method. The different understandings mean that Samples improve their understanding after experienced the treatment. The decrease in the percentage of errors during the posttest emphasized the participants’ improvement after undergoing the posttest. The decrease in the percentage of errors also shows participants’ progress in understanding the indicators of the subtest (Table 5). It strengthens the hypothesis that practice-based learning improves the understanding of Samples.

**Table 5.** Difference of Error Percentage

<table>
<thead>
<tr>
<th>Skills</th>
<th>Item</th>
<th>Questions</th>
<th>Percentage (%) of Error</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run</td>
<td>1 Foot Position</td>
<td>5</td>
<td>5</td>
<td>No Changes</td>
</tr>
<tr>
<td></td>
<td>2 Arm Movement</td>
<td>5</td>
<td>5</td>
<td>No Changes</td>
</tr>
<tr>
<td></td>
<td>3 Landing Phase</td>
<td>25</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>4 Non-pedestal Position</td>
<td>35</td>
<td>20</td>
<td>Decreased</td>
</tr>
<tr>
<td>Gallop</td>
<td>5 Arm Position</td>
<td>80</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>6 Foot Movement</td>
<td>85</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>7 Foot Rhythm</td>
<td>95</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>8 Movement Quantity</td>
<td>100</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td>Hop</td>
<td>9 Pedestal Position</td>
<td>20</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>10 Arm Position</td>
<td>30</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>11 Movement Quantity</td>
<td>100</td>
<td>35</td>
<td>Decreased</td>
</tr>
<tr>
<td>Leap</td>
<td>12 Pedestal Position</td>
<td>60</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>13 Foot Position when Preparing</td>
<td>75</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>14 Direction and Arm Movement</td>
<td>65</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td>Horizontal</td>
<td>15 Preparation Phase</td>
<td>35</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td>Jump</td>
<td>16 Movement when Jump</td>
<td>40</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>17 Movement when Land</td>
<td>35</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td>Slide</td>
<td>18 Body Rotation Direction</td>
<td>75</td>
<td>35</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>19 Foot Movement</td>
<td>50</td>
<td>35</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>20 Movement Quantity</td>
<td>100</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td>Striking a Stationary Ball</td>
<td>21 Dominant Hand Position</td>
<td>45</td>
<td>20</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>22 Dominant Body Side</td>
<td>75</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>23 Ball Hitting Phase</td>
<td>55</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td>Stationary Dribble</td>
<td>24 Hand Position</td>
<td>35</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>25 Location of the Bouncing Ball</td>
<td>45</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>26 Movement Quantity</td>
<td>95</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td>Catch</td>
<td>27 Arm Position when Preparing</td>
<td>40</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>28 Arm Position when The Ball Comes</td>
<td>20</td>
<td>5</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>29 Condition when Catching</td>
<td>65</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td>Kick</td>
<td>30 Step Rhythm</td>
<td>50</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>31 Step Quantity before Kicking</td>
<td>50</td>
<td>20</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>32 Pedestal Position</td>
<td>10</td>
<td>5</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>33 Foot Impact on the Ball</td>
<td>40</td>
<td>20</td>
<td>Decreased</td>
</tr>
<tr>
<td>Overhand Throw</td>
<td>34 Arm Position</td>
<td>25</td>
<td>10</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>35 Hip and Shoulder Position</td>
<td>65</td>
<td>30</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>36 Foot Position when Throwing</td>
<td>80</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>37 Follow Trough</td>
<td>100</td>
<td>15</td>
<td>Decreased</td>
</tr>
<tr>
<td>Underhand</td>
<td>38 Dominant Hand Movement</td>
<td>40</td>
<td>15</td>
<td>Decreased</td>
</tr>
</tbody>
</table>
### Skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Item</th>
<th>Questions</th>
<th>Percentage (%) of Error</th>
<th>Before Treatment</th>
<th>After Treatment</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll</td>
<td>39 Foot Movement</td>
<td></td>
<td></td>
<td>65</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>40 Hip Position</td>
<td></td>
<td></td>
<td>80</td>
<td>25</td>
<td>Decreased</td>
</tr>
<tr>
<td></td>
<td>41 Throwing Result</td>
<td></td>
<td></td>
<td>100</td>
<td>25</td>
<td>Decreased</td>
</tr>
</tbody>
</table>

#### 4 Discussion

Samples studied TGMD-2 in theory and practice (Figure 4). Samples try to understand skill indicators by learning skill by skill. The learning process was carried out on each skill so that Samples can focus on understanding each skill indicator. Learning by completing tasks one by one provides many advantages in learning conditions that get more targets [25]. Users of test instruments are expected to be familiar with the assessment process and have a high level of understanding about the development of children's movements [26]. The practice of setting the test location was carried out by Samples after studying the test indicators. The setting of the test location must be understood by the respondent to have the ability to organize an efficient and effective test site. The specially designated location for instruments must be standard and safe [27]. Samples were also simulated as test-takers to practice the assessed skills. Errors while practicing moves provide an opportunity to explore and identify the correct moves [28]. Samples carry out their duties as testers after understanding theoretically and practically. Simulation facilitates learning participants to get special situations according to learning needs [29]. The learning process returns to the initial stage to learn other skills when the respondent has understood the indicators of one skill well.

![Figure 4. Treatment Cycle](image)

Practice-based learning demands Samples' high involvement. The Samples' ability to implement the material following the guidelines affects the treatment results [30]. Prior knowledge has no significant role in learning results and conditions [31]. The seriousness of the Samples in undergoing treatment plays an essential role in increasing understanding. The Samples' learning outcomes about TGMD-2 should be implemented periodically when evaluating their students' motor skill development. The periodic implementation will sharpen Samples' understanding of the use of TGMD-2 as an evaluation tool.
5 Conclusion

Practice-based learning with a focus on learning skills one by one helps Samples to understand TGMD-2 better. Samples get a complete learning experience during treatment. Samples build an understanding of TGMD-2 through various points of view. Samples had the opportunity to see TGMD-2 from the learner, location setter, test taker, and testers side. This perspective provides complete knowledge for Samples in using TGDM-2 as an evaluation tool.

Acknowledgments. The research group would like to thank LPPM UNS for providing research funding.

References


Appropriate of Participation Solid Waste Management Model for Students in Suburban Schools

Anong Hansakul¹, Thaninatphasit Sangpakdee²

{ anongh@g.swu.ac.th}

Department of Public Health, Faculty of Physical Education, Srinakharinwirot University¹, Faculty of Environmental Culture and Ecotourism, Srinakharinwirot University²

Abstract. This research study the purposes were study solid waste management behavior, the participation solid waste management and develop model appropriate for solid waste management of high school students in suburban schools. The sample size were 591 of high school students. Multi-stage random sampling was performed. The research instrument was the questionnaires. Using Cronbach’s alpha coefficient tested the reliability of the assessment tool was 0.96 level and KR 20 was 0.95 level. Data analysis was done by computer program. Statistics were to acquire frequencies, percentage, means, standard deviation, minimum, and maximum. The result revealed that: knowledge level about solid waste management of high school students in suburban schools almost of was moderate level 53.1%, attitude level about solid waste management was moderate level 68.9%, behavioral level about solid waste management was moderate level 69.0%, and overall the participation solid waste management of high school students almost of was moderate level were 67.6%. When separated by aspects, it were found that score were moderate level 3 steps; by participating in the development initiation phase were 57.0%, participation in the planning phase of development were 77.5%, participation in the development process were 52.3%, and score were high level 2 steps; by participation in the process to benefit from development were 43.7%, and participation in the development evaluation stage were 36.5%.

Keywords: Solid Waste Management, Student, Suburban Schools

1 Introduction

Environmental toxicity is one of the major problems at the national level. At present, Thailand has given great importance to environmental issues because it affects the quality of life and the living conditions of the people, both directly and indirectly. There are many environments in Thailand such as various pollutants, solid waste and sewage lavish use of resources, especially the things that cause major environmental pollution are solid waste. It is the closest thing that has been overlooked that is a big problem in the consumerist society this is a problem that both the government and local governments are interested in and urgently need to fix because it is an object left behind from consumption daily human consumption. The amount of solid waste
The problem of solid waste is considered an important problem of the community, especially in large communities with large populations, the violence continues to escalate day by day directly affecting society and ecosystems, especially at present there has been a leaping economic expansion resulting in the production of products and packaging in different formats to attract and meet the needs of more consumers. Most of the packaging has a complicated manufacturing process use materials that naturally decay slowly and are difficult to dispose. [2] Another big problem with solid waste is the collection is inefficient. Most importantly, there is very little hygienic disposal of waste disposal systems cause environmental problems and affecting the health of the people, as well as causing nuisance and unsightly. The eliminating solid waste in the community as part of the local government organization or the Subdistrict Administrative Organization must be responsible for the implementation of the B.E. 2540 Constitution, subject: Opportunity for people to participate in the prevention and suppression of acts that destroy natural resources and cause pollution. Including the enactment of the Act Prescribing Plans and Procedures for Decentralization of Powers to Local Administrative Organizations, B.E. 2542 from this Act, a plan has been developed to decentralize powers to local administrative organizations by the scope of mission transfers to local government organizations. There are important parts related to solid waste management, including environmental and pollution management work, tracking tasks, and checks related to the environment and pollution. The disposing of solid waste in the community as part of the local government or municipality must be responsible for the operation clearly, since the compilation process storage, transportation, sorting and disposal of solid waste, etc.[3]

Research objectives

1. To study solid waste management behavior of secondary school students in suburban schools.
2. To study the participation in solid waste management of secondary school students in suburban schools.
3. To develop an appropriate model of solid waste management of secondary school students in suburban schools.
Methodology

The sample size were 591 of high school students. Multi-stage random sampling was performed. The research instrument was the questionnaires. The content validity was improved and adjusted by the suggestion of the experts. Using Cronbach’s alpha coefficient tested the reliability of the assessment tool was 0.96 level and KR 20 was 0.95 level. Data analysis was done by computer program. Statistics were to acquire frequencies, percentage, means, standard deviation, minimum, and maximum.

Research results

Part 1 Personal characteristics and general information of students in suburban schools

Personal characteristics and general information in secondary school students in 7 suburban schools. A sample of 591 students in grades 1-6, most of them studying in the lower secondary level of 471 (80.2%). Result was found that the majority of 299 were male (50.6%), with a mean age of 14.52 years (S.D. = 1.6), the lowest age was 12 and the highest was 19 years. The state of trash bins or garbage collection accommodation provided by the school in various places have dirty periods: 49.6% of the garbage bins that the school provide is insufficient, 19.1%, no separate garbage bins, 28.4% garbage bins or garbage collection accommodation. that the school has arranged to cause trouble and annoyance, most of which will cause a foul smell, 24.2 percent. Resources and frequency of receiving information about solid waste management most in every aspect will receive information once in a while, details are shown in Table 1.

<table>
<thead>
<tr>
<th>Personal characteristics</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School 1</td>
<td>146</td>
<td>24.7</td>
</tr>
<tr>
<td>School 2</td>
<td>119</td>
<td>20.1</td>
</tr>
<tr>
<td>School 3</td>
<td>75</td>
<td>12.7</td>
</tr>
<tr>
<td>School 4</td>
<td>54</td>
<td>9.1</td>
</tr>
<tr>
<td>School 5</td>
<td>40</td>
<td>6.8</td>
</tr>
<tr>
<td>School 6</td>
<td>81</td>
<td>13.7</td>
</tr>
<tr>
<td>School 7</td>
<td>76</td>
<td>12.9</td>
</tr>
<tr>
<td>Total</td>
<td>591</td>
<td>100</td>
</tr>
</tbody>
</table>

| 2. Sex                   |                 |            |
| Man                      | 299             | 50.6       |
| Female                   | 292             | 49.4       |

3. Age

\[ \bar{X} = 14.52, S.D. = 1.6, \text{Min}=12, \text{Max}=19 \]

4. Education level

junior high school 471 80.2
### Personal characteristics

<table>
<thead>
<tr>
<th></th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>high school</td>
<td>117</td>
<td>19.8</td>
</tr>
</tbody>
</table>

5. The state of trash or garbage collection accommodation that the school has prepared in various places

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good condition</td>
<td>331</td>
<td>52.6</td>
</tr>
<tr>
<td>Dirty</td>
<td>293</td>
<td>49.6</td>
</tr>
<tr>
<td>Damaged, cracked, or leaked</td>
<td>128</td>
<td>21.7</td>
</tr>
<tr>
<td>The container is made of unstable/unhealthy material</td>
<td>44</td>
<td>7.4</td>
</tr>
<tr>
<td>The appearance of the container is difficult to clean</td>
<td>67</td>
<td>11.3</td>
</tr>
<tr>
<td>There is no cover or it does not close completely</td>
<td>133</td>
<td>22.5</td>
</tr>
<tr>
<td>Other (not enough small enough to accommodate garbage)</td>
<td>9</td>
<td>1.5</td>
</tr>
</tbody>
</table>

6. Trash bins or garbage collection accommodation provided by the school causing trouble and nuisance

<table>
<thead>
<tr>
<th>Problem</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Stench disturbing</td>
<td>143</td>
<td>24.2</td>
</tr>
<tr>
<td>- Nuisance caused by animals and insects such as flies, rats, etc.</td>
<td>44</td>
<td>7.4</td>
</tr>
<tr>
<td>- Other (garbage flowing along the floor)</td>
<td>5</td>
<td>0.8</td>
</tr>
</tbody>
</table>

7. Separation by type of trash or existing waste collection

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Have</td>
<td>423</td>
<td>71.6</td>
</tr>
<tr>
<td>- Not have</td>
<td>168</td>
<td>28.4</td>
</tr>
</tbody>
</table>

8. The adequacy of existing waste bins or containers to accommodate waste

<table>
<thead>
<tr>
<th>Adequacy</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Enough</td>
<td>319</td>
<td>54.0</td>
</tr>
<tr>
<td>- Not enough</td>
<td>113</td>
<td>19.1</td>
</tr>
<tr>
<td>- Don't know</td>
<td>159</td>
<td>26.9</td>
</tr>
</tbody>
</table>

9. Frequency of garbage collection that occurs in schools

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Enough</td>
<td>276</td>
<td>46.7</td>
</tr>
<tr>
<td>- Not enough</td>
<td>92</td>
<td>15.6</td>
</tr>
<tr>
<td>- Don't know</td>
<td>221</td>
<td>37.4</td>
</tr>
</tbody>
</table>

10. Sources and frequency of receiving information about solid waste management

<table>
<thead>
<tr>
<th>Source</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Placard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>often</td>
<td>173</td>
<td>29.3</td>
</tr>
<tr>
<td>once in a while</td>
<td>329</td>
<td>55.7</td>
</tr>
<tr>
<td>never received</td>
<td>89</td>
<td>15.1</td>
</tr>
<tr>
<td>- Television/radio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>often</td>
<td>171</td>
<td>28.9</td>
</tr>
<tr>
<td>once in a while</td>
<td>312</td>
<td>52.8</td>
</tr>
<tr>
<td>never received</td>
<td>108</td>
<td>18.3</td>
</tr>
<tr>
<td>- Academic guidance documents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>often</td>
<td>124</td>
<td>21.0</td>
</tr>
<tr>
<td>once in a while</td>
<td>303</td>
<td>51.3</td>
</tr>
<tr>
<td>never received</td>
<td>164</td>
<td>27.7</td>
</tr>
<tr>
<td>- Newspapers and publications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>often</td>
<td>102</td>
<td>17.3</td>
</tr>
<tr>
<td>once in a while</td>
<td>313</td>
<td>53.0</td>
</tr>
<tr>
<td>never received</td>
<td>176</td>
<td>29.8</td>
</tr>
</tbody>
</table>
Personal characteristics | Number (person) | Percentage
---|---|---
- Voices on the line in school
  often | 176 | 29.8
  once in a while | 286 | 48.4
  never received | 129 | 21.8
- Posting announcements in schools
  often | 158 | 26.7
  once in a while | 332 | 56.2
  never received | 101 | 17.1
- School website
  often | 159 | 21.5
  once in a while | 305 | 51.6
  never received | 127 | 17.1
- Teachers
  often | 440 | 74.5
  once in a while | 122 | 20.6
  never received | 29 | 4.9

Part 2 Solid Waste Management Knowledge of Students in Suburban Schools
Knowledge of solid waste management for secondary school students in suburban schools. It was found that most of the students had knowledge about solid waste management at a moderate level of 314 students (53.1%), followed by a knowledge of solid waste management at a low level of 268 students and 45.3% had knowledge. About the management of solid waste at a high level, 9 people, 1.5% details are shown in Table 2.

<table>
<thead>
<tr>
<th>Score level of knowledge</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (Score 16 or more)</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>Moderate (scores between 10-16 points)</td>
<td>314</td>
<td>53.1</td>
</tr>
<tr>
<td>Low (less than 10 points)</td>
<td>268</td>
<td>45.3</td>
</tr>
<tr>
<td>X = 9.53 S.D. = 3.15 Min. = 0 Max. = 17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>591</td>
<td>100</td>
</tr>
</tbody>
</table>

Part 3 Solid Waste Management Attitudes of Students in Suburban Schools
Attitudes of waste management in secondary school students in suburban schools this was found that the majority of students had 407 attitudes about solid waste management at a moderate level (68.9%), followed by 114 students (19.3%) with a high level of attitude towards solid waste management, and attitudes about solid waste management were at a low level, 70 students (11.8%) details are shown in Table 3.
Table 3 Number and percentage of attitudes scores about solid waste management

<table>
<thead>
<tr>
<th>Score level of attitude</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high (score more than 73.79 or more)</td>
<td>114</td>
<td>19.3</td>
</tr>
<tr>
<td>Moderate (scores between 55.75-73.79 points)</td>
<td>407</td>
<td>68.9</td>
</tr>
<tr>
<td>Low (score less than 55.75 down)</td>
<td>70</td>
<td>11.8</td>
</tr>
<tr>
<td>Total</td>
<td>591</td>
<td>100</td>
</tr>
</tbody>
</table>

Attitudes of waste management of secondary school students in suburban schools

this was found that the students had the attitude of categorizing them by item with the highest score, which was the sorting of solid waste before throwing it into the bin, indicating their participation in social responsibility, the mean was 3.99, the S.D. was 1.19. Secondly, schools should have a policy to force restaurants and shops in the school to use environmentally safe food packaging instead of using foam, the mean was 3.89, the S.D. was 1.15, and the campaign uses cloth bags or baskets to put products instead, use large quantities of plastic bags. it's good the mean was 3.89, the S.D. was 1.23.

Part 4 Solid Waste Management Behavior of Students in Suburban Schools

Solid waste management behavior of secondary school students in suburban schools this was found that the majority of students had solid waste management behaviors at a moderate level of 408 (69.0 %), followed by 92 students (15.6 %) of solid waste management behaviors, solid waste was at a low level of 91 students (15.4 %) details are shown in Table 4.

Table 4 Number and percentage of behavior scores about solid waste management

<table>
<thead>
<tr>
<th>Score level of behavior</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high (score more than 79.02 or more)</td>
<td>92</td>
<td>15.6</td>
</tr>
<tr>
<td>Moderate (between 59.96-79.02 points)</td>
<td>408</td>
<td>69.0</td>
</tr>
<tr>
<td>Low (score less than 59.96 down)</td>
<td>91</td>
<td>15.4</td>
</tr>
<tr>
<td>Total</td>
<td>591</td>
<td>100</td>
</tr>
</tbody>
</table>

Solid waste management behavior of secondary school students in suburban schools classified by item, it was found that the students' solid waste management behaviors had the highest score, which was to separate wet and dry waste before disposing and changing their use according to the trend, when it's not popular, it's thrown away, the mean was 3.94, the S.D. was 1.11, followed by the separation of plastic drinking water bottles from other waste or throw it in the recycling bin, the mean was 3.83, the S.D. was 1.03.
Part 5 Participation in Solid Waste Management of Students in Suburban Schools

The participation in solid waste management of secondary school students in suburban schools found that the students were the most involved in solid waste management overall. was moderate, of 399 students (67.6 %)details are shown in Table 5.

<table>
<thead>
<tr>
<th>Score level of participation</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level (over 55.54 score)</td>
<td>96</td>
<td>16.2</td>
</tr>
<tr>
<td>Moderate level (scores between 44.20-55.54)</td>
<td>399</td>
<td>67.6</td>
</tr>
<tr>
<td>Low level (less than 44.20 scores)</td>
<td>96</td>
<td>16.2</td>
</tr>
<tr>
<td><strong>X</strong> = 49.87  S.D.= 5.67  Min.= 23  Max=60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>591</td>
<td>100</td>
</tr>
</tbody>
</table>

The level of participation in solid waste management by aspect of secondary school students in suburban schools. Most of them are moderate in 3 stages. Participants in the development initiation phase were 337 students (57.0%), 458 students (77.5%) were involved in the development planning phase, there were 309 students (52.3%), and there will be two high levels of participation: participation in the process of receiving benefits from development, with 258 students (43.7%) and 216 students (36.5%) participated in the development evaluation stagsdetails are shown in Table 6.

<table>
<thead>
<tr>
<th>Score level of participation</th>
<th>Number (person)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level (score above 11.96)</td>
<td>171</td>
<td>28.9</td>
</tr>
<tr>
<td>Moderate (scores between 8.5.4-11.96)</td>
<td>337</td>
<td>57.0</td>
</tr>
<tr>
<td>Low level (score less than 8.54)</td>
<td>83</td>
<td>14.0</td>
</tr>
<tr>
<td><strong>X</strong> = 10.25  S.D.= 1.71  Min.= 3  Max=12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High level (score more than 12.19 or above)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Moderate (scores between 9.36-12.19)</td>
<td>458</td>
<td>77.5</td>
</tr>
<tr>
<td>Low level (score less than 9.36)</td>
<td>133</td>
<td>22.5</td>
</tr>
<tr>
<td><strong>X</strong> = 10.53  S.D.= 1.66  Min.= 3  Max=12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High level (score greater than 11.02 or higher)</td>
<td>157</td>
<td>26.6</td>
</tr>
<tr>
<td>Moderate (scores between 8.68-11.02)</td>
<td>309</td>
<td>52.3</td>
</tr>
<tr>
<td>Low level (score less than 8.68)</td>
<td>125</td>
<td>21.2</td>
</tr>
<tr>
<td><strong>X</strong> = 9.82  S.D.= 1.97  Min.= 3  Max=12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score level of participation</td>
<td>Number (person)</td>
<td>Percentage</td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>-----------------</td>
<td>------------</td>
</tr>
<tr>
<td>4. Participation in the process of benefiting from development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High level (scoring more than 10.59 and above)</td>
<td>258</td>
<td>43.7</td>
</tr>
<tr>
<td>Moderate (scores between 8.29-10.59)</td>
<td>225</td>
<td>38.1</td>
</tr>
<tr>
<td>Low level (score less than 8.29)</td>
<td>108</td>
<td>18.3</td>
</tr>
<tr>
<td><strong>X = 9.99</strong> [S.D. = 1.58] [Min. = 4] [Max. = 12]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Participation in the development evaluation stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High level (scoring more than 10.59 and above)</td>
<td>216</td>
<td>36.5</td>
</tr>
<tr>
<td>Moderate (scores between 8.30-10.59)</td>
<td>177</td>
<td>29.9</td>
</tr>
<tr>
<td>Low level (score less than 8.30)</td>
<td>198</td>
<td>33.5</td>
</tr>
<tr>
<td><strong>X = 9.28</strong> [S.D. = 2.13] [Min. = 3] [Max. = 12]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion**

The result revealed that: knowledge level about solid waste management of high school students in suburban schools almost of was moderate level 53.1%, attitude level about solid waste management was moderate level 68.9%, behavioral level about solid waste management was moderate level 69.0%, and overall the participation solid waste management of high school students almost of was moderate level were 67.6%. When separated by aspects, it was found that score were moderate level 3 steps; by participating in the development initiation phase were 57.0%, participation in the planning phase of development were 77.5%, participation in the development process were 52.3%, and score were high level 2 steps; by participation in the process to benefit from development were 43.7%, and participation in the development evaluation stage were 36.5%. It was found that all 5 steps the level of participation is at a high level there were percentage less than 50 percentage which indicates that relevant agencies and including the teachers should promote and encourage students in high schools enter to the participation solid waste management at appropriate and student's potential is developed to operate in solid waste management at appropriate by bringing the curriculum to learn about environmental education for waste management for students be used in development the participation solid waste management at appropriate of people in community.

**Discussion the results**

The level of participation in solid waste management of secondary school students in suburban schools most of them were at the moderate level in 3 stages: the level of participation in the development initiative stage, participation in the planning phase of development participation in the development implementation process and at a high level were two: participation in the process of receiving benefits from the development. Participation in the development evaluation stage and overall participation was moderate. The results of this study are consistent with the study of Chompoonut Songklang (2014)[4]. On title solid waste management behavior of students at Ban Na Dee - Sang Bong School, Phasuk Sub-district, Kumphawapi District. Udon Thani Province. The results showed that articles that students have behavior in every practice concerning solid waste management, the largest number is students throw garbage in the trash every time (55.56%). The target group's behavior in solid waste management was at a very
The students put the solid waste into the trash every time ($x = 3.63$). The item with the least desirable behavior was when students buy groceries or snacks at school and tell the seller not to put plastic bags for them ($x = 3.17$).

Corresponding to the study of Jirarak Boonyod. (2014) [5]. The study of waste management guidelines in schools using the A-I-C process: a case study of Boonlue Wittayanusom School, Nakhon Ratchasima Province. The results of the study revealed that most of the sample groups had a low level of knowledge and understanding about solid waste, with the mean was 6.10. The attitudes towards solid waste management of the sample group were at a moderate level, the mean was 2.76, the overall solid waste management behavior was at a moderate level, the mean was 1.67. The school rules for waste management were followed. Promoting the participation of teachers/staff, students and restaurant operators using the A-I-C process to find a solution for solid waste management in Boonlue Wittayanusom School, Nakhon Ratchasima Province found that the participants in the A-I-C process, participate in problem analysis in particular, the students were the most involved; this was also involved in planning, participate in the benefits by joining together to propose guidelines for the use of waste and participate in the improvement of project activities plan consultation was conducted with fellow members to revise the project's operational model as appropriate.

Corresponding to the study of Thanongsak Padsin. (2018)[6]. On the participation of the people in the management of solid waste in the community of Kung Sawan Subdistrict Kosum Phisai District Maha Sarakham Province. The results showed that the participation of the people in the management of solid waste in Kung Sawan sub-district community, overall and in all 4 aspects were to participate in decision making, participation in operations, participation in the evaluation moderate in accordance with the study of Salinar Keiklinhom. (2019)[7]. Guidelines for people's participation in community solid waste management: Nakhon Si Thammarat Municipality the results showed that the level of public participation in solid waste management was moderate. This was in line with the study of Songsak Walaijai (2021)[8]. on the solid waste management process with community participation Wiang Phrao Subdistrict Municipality, Phrao District, Chiang Mai Province that uses the waste management process with community participation there were 7 operational strategies, transfer knowledge and technology that will be used in each type of solid waste management by using the 3R principles (Reduce, Reuse, Recycle) integration between communities and units local jobs.

Inconsistent with the study of Paniphan Thepsorn. (2017)[9]. Regarding the implementation of waste management policies of educational institutions in Chonburi Province. The results showed that the implementation of waste management policies of educational institutions in Chonburi province Overall, it's at a good level. When considering each aspect, it was found that the cultivation of consciousness. Reduction of waste disposal was the highest average, followed by cultivating awareness of waste classification, while cultivating a proper waste management awareness was ranked last. As for the results of the comparison of the implementation of the waste management policy of educational institutions in Chonburi province, it was found that educational institutions in Chonburi province with different educational areas and types of educational institutions operate in accordance with the policy of organizing Garbage is no different as for educational institutions with different affiliations, they operate in accordance with the policy on organizing. Garbage differed at the statistical significance level of .05.
Inconsistent with the study of Ninraphat Phromrit, Kanokrat Ratanaphan, Suwit Jitphakdee and Umaporn Muneenam. (2021)[10]. On title developing environmental education curriculum for solid waste management for high school students, year 1: A case study of Sametjuan Wittayakhom School Thung Yai District Nakhon Si Thammarat Province. This study was to study the effectiveness of the environmental education curriculum for waste management for Grade 1 students. The instrument used in the study was the environmental education learning management curriculum garbage for Grade 1 students. The results showed that the school had a total waste volume of between 47.6-54.5 kg. per day or an average of 51.7 kg. per day. Consists of recycled waste with an average volume of 20.00 kg. per day or 38.68 percent, which is the largest amount. Next was general waste with an average volume of 16.20 kg. per day or 31.34 percent, organic waste with an average volume of 15 kg. per day or 29.01 percent, and hazardous waste with an average volume of 0.50 kg. per day, or 0.97% per day respectively. The results of the curriculum construction revealed that the curriculum consisted of 7 learning units, namely 1) Samet Kuan of the mouse 2) Recognizing garbage 3) Analyzing the relationship 4) Selectively determine 5) exhaustive management 6) cooperate to develop and 7) share learning. The results of the study on the effectiveness of the curriculum showed that the students in the experimental group had a statistically significantly higher score than the control group at the 0.05 level, and the students in the experimental group had a high level of satisfaction with the curriculum ($ = 4.49$, S.D. $= \pm 0.54$), and the school had a 19.07 percent reduction in waste.

Inconsistent with the study of Kittima Netbukkana. (2019)[11]. On title the development of waste management processes of Koh Phangan Suksa School, Koh Phangan District, Surat Thani Province. This was the development of waste management processes in the first cycle with workshop activities to enhance knowledge of waste management and lead to operations in waste management activities. Continuing development in the second cycle, paper reduction with paperless office workshops and paperless office activities. Assessing the results of the development of waste management processes of Koh Phangan Educational Schools, it was found that in the first cycle, the amount of waste decreased by 118.93 kilograms, representing 65.02%. The satisfaction level was at a high level. Development in the second cycle, the amount of waste decreased from the first cycle by 20.57 kilograms or 47.43 percent, the satisfaction level was at a high level. When comparing the results of both cycles, it was found that government teachers and educational personnel at Koh Phangan School had a higher understanding of waste management can be used to continuously reduce the amount of waste. Waste management comparatively higher results in all aspects including reduction of use, reuse and recycling at a high level and the level of satisfaction towards the development of waste management was at a high level.

Overall participation in appropriate waste management of secondary in suburban school students. It was found that it was at a moderate level. Separated by aspects, it was found that the scores were at a moderate level in 3 stages by participating in the development initiative stage, participation in the planning phase of development, participation in the development process and a high score of 2 steps by participating in the development benefit process, participation in the development evaluation stage, it was found that in all 5 stages, the level of participation was high have a percentage less than 50 percent, indicating that related agencies including teachers students should be encouraged to participate in proper waste management, and to develop the potential of students in educational institutions to operate on solid waste management.
Acknowledgments

I am truly grateful and would like to thank those who have assisted me in the research. Appreciation is also extended to all teachers and students in suburban schools who provided valuable information, without their assistance this research would not have been possible.

I would like to thank the scholarships from Science, Research and Innovation (PMU: Srinakharinwirot University, 2021) and very nice and support from Institute of Intellectual Strategy and Research, Srinakharinwirot University.

References


Relationship Between Competitive Anxiety and Performance: A Study of the Archers at the National Competition

Jamalul Shahidah Shaari, Nur Farah Diyana Mohd Nizam, Mohad Azizud Mohd Nor, Nur Asmidar A. Halim, Suhana Aiman, Yudik Prasetyo

{jamalul@uitm.edu.my, mohadanizu@uitm.edu.my, nurasmidar@uitm.edu.my, yudik@uny.ac.id}

Universiti Teknologi MARA, Shah Alam, Malaysia1, Universiti Teknologi MARA, Shah Alam, Malaysia2, Universiti Teknologi MARA, Shah Alam, Malaysia3, Universiti Teknologi MARA, Shah Alam, Malaysia4, Universiti Teknologi MARA, Shah Alam, Malaysia5, Universitas Negeri Yogyakarta, Indonesia6

Abstract. The main objective of this study was to analyze whether anxiety was related to the archers’ performance during the competition situation. A total of 44 archers aged from 18 to 24 years old, who represent at the national level participated in this study. The archers were asked to answer Sport Anxiety Scale-2 with 15 items in three domains before they scored the event. The performance of archers was observed in competitive situations at a distance of 70 meters at each end, with 36 arrows recorded. The results show the influence of competitive anxiety on performance, mostly addressed on worry (M=12.62, SD=3.54), whereas it followed by concentration disruption (M=10.47, SD=2.93) and somatic anxiety (M=10.33, SD=2.91). There was a significant correlation between the competitive anxiety and performance, r(44) = -0.45, p = 0.002. In conclusion, it was found that there is a moderate negative relationship between the two variables. Implications for emotional perception and the study of competitive anxiety among archers are discussed.

Keywords: Competitive situation, Anxiety, Archers Performance

1 Introduction

Archery is an individual sport that uses a bow to shoot an arrow at a target and the center of the target is in yellow [1]. This sport is a complex motor skill sport and it requires accuracy to enhance performance [2]. Other complex motor skill sports are dart and golf where accuracy and precision are needed and a lower level of anxiety can increase performance [3]. By means of, anxiety is a negative emotional state of a person. A person can experience a combination of fear, nervousness, and worry during experiencing anxiety. Anxiety is multidimensional in nature and consists of cognitive and somatic components [4].
Archery is a sport that requires precision and accuracy for the arrow to land at the center of the target. Physical and psychological factors affect high accuracy. Some of the physical factors that lead to high accuracy is a good technique, specific physical conditions, and tactics. For psychological factors, motivation, anxiety control, confidence, self-control, concentration, and the ability to overcome pressure can result in high accuracy [2, 5]. When the person has high accuracy and precision, the arrow would land at the center of the target every time the person shoots an arrow and thus leading to getting a higher point and score.

A previous study shows that athletes from individual sports resulted in a higher level of general sports anxiety compared to team sports [6]. Anxiety is multidimensional in nature which it is consists of both cognitive and somatic components. Cognitive anxiety is anxiety that is associated with the mental component of a person. The person that experiences cognitive anxiety will feel fear of failure, worries, negative thoughts, and low or loss of self-confidence and self-esteem [5]. Ahead, somatic anxiety is anxiety that is associated with the physical component of a person. The person that experiences somatic anxiety will feel changes in their physiological.

Some of the physiological changes are an increase in heartbeat, difficulty in breathing, tension of the muscle, and sweating. Physiological changes of somatic anxiety can happen to the person or it is just a perception of the person because of the anxious feelings and the changes are did not happens [7]. Furthermore, worry is a psychological component that leads to being troubled or anxious about potential or actual problems [8]. Concerning, worry is a cognitive subscale in anxiety that is associated with a concern about poor sports performance [9, 10]. It can be experienced more frequently by an athlete that tends to feel anxious. They tend to worry more especially about factors that relate to negative social evaluation and poor performance. Worry also is a component that positively influences the general fear of failure. Worry becomes a stronger predictor of fear of failure [6]. Another study stated that worry is one of the components that can badly influence the performance of athletes [8]. Hence, somatic anxiety is one of the anxiety components that give a negative thrill and withstand or endure emotions during competitions [11].

Somatic anxiety is also one of the factors that assess the physiological component of hyperactivation. This would make the athletes feel uneasiness in their stomachs. Moreover, somatic anxiety also involves a bodily reaction to activation and it leads to muscle tension [9, 10]. Other reactions or symptoms that correlated with somatic anxiety when an athlete experiences it is an increase in heart rate and muscle tension which leads to stiffness of the body while executing technique or skills [5]. A previous study analyzed the physiological changes and correlate them with anxiety [12].

It is clear about the salivary alpha-amylase of athletes during competition is one of the physiological changes and it has been seen in people that have acute stress in which their saliva alpha-amylases have elevated. Archery is one of the sports that is affected by somatic anxiety. When an archer experiences somatic anxiety such as muscle tension, it affects the execution of the correct technique. Muscle tension can also cause stiffness when drawing the bow, releasing an arrow with difficulty and no smoothness, trouble exiting the clicker, cannot control and putting the sight pin at the center of the target, and trouble releasing the arrow at a suitable time [5].
Concentration disruption is a difficulty for the athletes to focus on relevant aspects during the tournament [9, 10]. Concentration is the ability to focus on the task given or relevant information and ignore the distractive stimuli. Concentration is also the act of focusing on the major activity. It is difficult to focus since the mind is easy to be distracted and this leads to concentration disruption. Anxiety is an internal distractor that can disrupt athletes’ concentration which leads to performance during competition [13, 14].

The previous study reported that 60% of archers from public university and state archers in Malaysia shows anxiety symptom [1]. More than 50% of archers in Malaysia have experienced anxiety and this might affect their performance. Malaysia states archer is an archer that represents their state in national level competition such as Malaysia Sport (SUKMA) which is a competition between states. The SUKMA archer will use the name of their states while competing in the competition.

Anxiety is appraised differently by athletes based on their type of sport [6]. Moreover, sports with low complexity such as running are been facilitated with a higher level of anxiety while sports that use complex skills that require more precision and concentration such as archery and golf can be performed better with lower anxiety levels [3]. Getting a high score is important to the archer, especially during competition since a high score can lead to winning the competition. To gain a high score, archers require high accuracy and precision. These two factors can be affected when there is anxiety involved since psychological and physiological factors will change when the person experiences anxiety and thus lead to different scores collected by different archers [2, 5].

Previous studies examined the correlation between anxiety levels and game records in Korean archers [12] and the psychological profile of anxiety among athletes from public universities and states in Malaysia [1, 15]. Several studies have investigated the relationship between anxiety levels and performance but the results show contradicting findings [12, 16]. When anxiety level increase, the performance of the archers is alternately decreased. Athletes who show a higher level of anxiety can negatively affect their performance. The findings were also supported by a few studies [12, 15].

Anxiety is an important component that associates with an archer’s performance [12]. However, other studies show that there is no correlation between anxiety and performance [16] and there is also a positive correlation between anxiety and athletes’ performance [16]. However, there are limited studies that investigate the relationship between competitive anxiety and performance among Malaysian state archers.

2 Method

This study aims to investigate the relationship between anxiety levels and athletes’ performance of SUKMA archers. Some methods were been used to collect data and analyze for any relationship between anxiety level and performance among SUKMA archers. Anxiety level was measured using a specific instrument which is the Sport Anxiey Scale-2 questionnaire [9]. The performance was measured by collecting the archer’s score during the scoring event. This study used the non-experimental correlational design to test the hypothesis. This design is selected because the study was to investigate the relationship between the level of anxiety and athlete
performance among SUKMA archers. The first variable in this study is anxiety level. The second variable in this study is the athlete’s performance.

A. Sample

The target population for this study is the state archers from Selangor, Wilayah Persekutuan, Pahang, Terengganu, Perak, and Johor. Each state from every region in Malaysia has been chosen because these states are in centralized training and currently training in their respective shooting range. Participants are ages 18 to 24 years old and represent their respective states for national-level competition. The total number of archers that represent Selangor, Wilayah Persekutuan, Pahang, Terengganu, Perak, and Johor according to the SUKMA registration format is 48 archers. The sample size is determined using Krejcie and Morgan’s (1970) table. The 48 archers are rounded off to 50 and has a sample size of 44 archers. The sample size is 44 (N=44). The sample is recruited because they are archers that represent their state in the national level competition such as National Archery Circuit Championship and SUKMA. The other inclusion criteria are they are currently active archers for the past three years representing the state for national level competition and participating in recurve category.

B. Instrumentation

Questionnaire

In this study, the anxiety level was been measured using the Sport Anxiety Scale-2 (SAS-2) which has three domains which are somatic anxiety, worry, and concentration disruption [9]. Somatic anxiety has a reliability alpha of 0.84. Next, the worry component with 0.89 and concentration disruption with 0.84 reliability alpha. The reliability alpha for the whole questionnaire is 0.91. The questionnaire has 15 items with five items in each domain. All of the items in the questionnaire used a four-point Likert scale. The scale ranges from not at all (1) to very much (4). The total scores can range from a minimum of 15 to a maximum of 60. Somatic anxiety items are in question number 2, 6, 10, 12, and 14. For the worry domain, the items are in question numbers 3, 5, 8, 9, and 11. Lastly, concentration disruption is in question numbers 1, 4, 7, 13, and 15.

Performance Scoring

The performance of the archers was been measured during the scoring event. Archer shot at 70 meters during the scoring event with six arrows at each end. Archer shot one set of 70 meters which consist of six ends. The total number of arrows that the archer shot is 36 arrows. The score was recorded after a total of 36 arrows has been shoot. The score for each arrow is range from miss which is 0 points to 10 points and the maximum total score that the archer can achieve is 360 points [18].

3 Data Collection
Once the ethical form has been approved, permission to do the research was been asked from the coach and the athletes. Next, participants were recruited based on the criteria that have been set. Google Form platform was used to store the data. Google Form was shared with the coaches once they agreed. Then, the Google Form was been distributed to the participants by coaches 30 minutes before the scoring event at the archery range. A scoring event is an event where the archer shot 70 meters at the shooting range. The archer shot 6 arrows in 1 end and it takes four minutes to complete 1 end. They need to shoot a total of 36 arrows in 6 ends. The scoring event is important to the archers because it can affect their ranking in the team and thus will determine if they are selected for the future tournament. Moreover, scoring results will also be sent to the association for an update on the archers and sometimes allowance can be reduced according to the result during the scoring event.

Participants spend their time answering the questionnaire. The questionnaire takes 10 minutes to be answered by participants. No other risk is involved. Since the questionnaire needs to be answered before the scoring event and it takes 10 minutes to complete the questionnaire, 30 minutes is a suitable time for the participants to not be in rush to complete the questionnaire and have enough time to check their equipment and do a warm-up shooting. Participants read the information and explanation of the SAS-2 before answering the questions. Then, participants submitted the questionnaire through the Google Form after they have done fill out the questionnaire. After the questionnaire has been answered, participants started the scoring event. Once the scoring event has ended, the scoring result was been collected using Google Forms. Participants were thanked for their time and cooperation.

A. Data Analysis

This study used two analyses which are descriptive analysis and inferential analysis. The descriptive statistic has been used to analyze demographic data which is age and years of experience. Statistical Package for the Social Sciences version 20 was used to analyze data. The data is presented in mean ± standard deviation (M±SD). Furthermore, the inferential statistic was been used to analyze data. The significant level is been set at p < .05.

4 Results

The total number of participants that participated in this study is 44 sukma archers (n=44). Table 1 shows that the percentage of female archers that participated in the study is 45.5% and the percentage of male archers is 54.5%. The age of the participants is 20.7±2.08 years old and their years of experience in archery is 7.8±2.21 years.

Table 1. Descriptive result of gender, age and years of experience in archery.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>N (%)</td>
<td>54.5</td>
<td>45.5</td>
</tr>
<tr>
<td>Age Mean</td>
<td>20.66</td>
<td></td>
</tr>
</tbody>
</table>
Years of Experience

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.82</td>
<td>2.21</td>
</tr>
</tbody>
</table>

The anxiety level has been measured using the SAS-2 questionnaire which has three domains which are somatic anxiety known as a physical component, a worry which is a mental component, and concentration disruption [9]. The overall data for somatic anxiety is $10.33\pm2.91$, worry with $12.62\pm3.54$, and concentration disruption with $10.47\pm2.93$. The data in Table 2 shows that the mean for worry among the SUKMA archers is higher than somatic anxiety and concentration disruption.

<table>
<thead>
<tr>
<th>Component</th>
<th>Category</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>somatic anxiety</td>
<td></td>
<td>10.33</td>
<td>2.91</td>
</tr>
<tr>
<td>worry</td>
<td></td>
<td>12.62</td>
<td>3.54</td>
</tr>
<tr>
<td>concentration disruption</td>
<td></td>
<td>10.47</td>
<td>2.93</td>
</tr>
</tbody>
</table>

Table 3. Correlation Analysis between competitive anxiety and performance.

<table>
<thead>
<tr>
<th>Component</th>
<th>Competitive Anxiety</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive Anxiety</td>
<td>1</td>
<td>-0.45</td>
</tr>
<tr>
<td>Performance</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Significant on level $p<.05$

Out of Table 3, Pearson correlation coefficient showed a negative correlation result with a moderate of $0.45$ ($r = -0.45$, $p = 0.002$). The result explains that a relationship exists between competitive anxiety and performance where the significant value is 0.002, with the $p$-value is set less than 0.05. This allows the hypothesis of this study to be supported and proves that there is a moderate negative relationship between archers’ competitive anxiety and their performance.

V. Discussion

A. Archers and Anxiety

There are three components when an athlete experience anxiety which is somatic anxiety, worry, and concentration disruption. The current study showed that the archer experiences more worry compared to somatic anxiety and concentration disruption. Worry is a component of cognitive anxiety and is also correlated and a strong predictor of fear of failure [6]. Anxiety levels can increase and be heightened especially during a tournament or in a contest [19]. Athletes would experience anxiety and the more the athletes experience anxiety, it can affect the way the athletes think, and the technique that needs to be executed. The athletes also can develop anxiety while competing in competitions [20].
In the current study, the maximum score of anxiety of the archer is 50 and the minimum is 16 (M=33.32, SD=8.41). This showed that the athletes especially athletes who practiced individual sports had experienced anxiety. Previous research showed that anxiety is appraised differently according to the type of sports [6, 21]. Athletes from individual sports showed a higher level of anxiety than in team sports. Athletes practicing individual sports are competing as individuals. While competing as an individual, the athlete experienced and suffered the pressure to achieve the desired outcome alone.

The individual also has to bear the burden alone to achieve success and thus leading to increased anxiety symptoms. Moreover, it also stated that athletes who involve in team sports and are a part of a team have experienced less pressure than athletes who are involved in individual sports. Playing as an individual makes the athlete responsible alone for their performance and results and thus leads to sleeping problems among individual sports athletes which then correlated with the anxiety of the athletes [21].

An athlete that is at a young age is directly related to factors such as the feeling of insecurity, an emotional dependency and also uses fewer strategies to cope with physiological responses. When the athlete does not know how to deal with problems and does not use any coping strategies during tournaments, the athlete will develop anxiety symptoms [22]. According to the previous study, fewer experienced athletes tend to experience anxiety. Beyond this, a group of young athletes showed a higher tendency to experience anxiety than adult athletes [19].

B. Archers and Performance
Archery is an individual sport where it requires high accuracy and precision. Moreover, archery is one of the sports that needed fine motor precision skills to achieve high scores and success [2, 5]. In the current study, SUKMA archers achieved a minimum score of 204 and a maximum score of 335 (M=286.91, SD=25.24). The maximum score that the archer can achieve is 360 points. Throughout, the archery expert believes that the most important aspect of achieving a good performance in a match is the mindset of the athlete [23]. One of the important mental factors was concentrating on the match. Concentration can be disrupted especially if the archer experiences anxiety [20]. Other than that, the performance of a sport that requires fine motor skills requires high accuracy where specific physical conditions, good technique, and a good psychological condition can help in having a better performance. It is also stated that psychological condition that can affect accuracy and precision is anxiety and concentration [2, 5].

Performance of fine motor skill sports also requires good technique and skills to enhance performance [2, 5]. Archers who experience psychological conditions such as somatic anxiety can affect the execution of the right technique [5]. Moreover, the unstable psychological condition can also make the body stiff and it can hinder a performance and skill execution that
the athlete was already mastered with the effort put during training [23]. Disturbed sleep also can reflect the athlete’s performance. When the athlete does not sleep well enough, it can disturb the cognitive system of the body and thus lead to slow cognition and the ability to concentrate during daytime [21].

C. Anxiety and Performance among Archers

Based on the result, this study shows a negative moderate correlation between competitive anxiety and the performance of the SUKMA archers. A negative correlation means that when the level of anxiety increases, the lower performance of the archers. Other than that, the worry factor has a higher result than the somatic anxiety and concentration disruption scale. This shows that most of the archers feel worried more than other factors and thus leads to lower performance.

The result of the negative correlation is supported by the previous study which stated that when the anxiety of the archers increased, their performance decreased. It also associates with physiological factors when anxiety increased, the salivary alpha-amylase and cortisol levels are also increased and thus lead to a decrement in performance [12]. On the other side, the increase the age improves the overall scoring and confidence component of the state competitive anxiety scale and also shows a significant positive correlation with the performance of the players [24].

Related to this, when an archer experiences somatic anxiety in case of muscle tension, it can cause stiffness when drawing a bow and difficulty in releasing an arrow. The arrow will have trouble exiting the clicker and the archer cannot control and put the sight pin at the center of the target and further, have trouble releasing the arrow at a suitable time. The high anxiety also can lead to a choking experience and can result in getting target panic. These factors can decrease the performance of the archer and result in a decrement of points collected during the scoring event [5].

Fear of failure was a stronger predictor, especially in the worry factor [6]. The athlete might also have the fear of failure since the worry factor is higher than another factor that the archers react to in this study. Fear of failure also can influence athlete anxiety and lead to a decrement in performance. On top of that, the higher levels of anxiety that have been experienced by athletes were related to the negative pattern of perfectionism [25]. A focus on performance during executing skill can also predict an athlete’s state of worry. Athletes who immerse in negative expectations can affect their performance [20].

Other than that, anxiety also is a factor that can distract an archer’s concentration. A previous stated that concentration disruption occurs because the archer experience anxiety. When the archer’s concentration is disrupted and distracted, the performance of the archer is decreased [14]. This show a negative correlation where when the concentration is disrupted, the lower the
performance. In a situation where the athlete experiences anxiety and is absorbed by negative thinking and expectations, it is unable for the athlete to concentrate.

When the athlete is absorbed with a negative expectation, concentration is disrupted and the attention of the athlete on the signal that is associated with the performance also be disturbed and thus leading to decrement in performance.

Trouble to sleep is also one of the factors that affect concentration. Having trouble to sleep can affect the ability to concentrate during the match and it also slow the cognitive component process and thus leading to decrement in performance since archery is a sport that requires high concentration and accuracy [2, 21]. Athletes who experience sleep disorders was the athlete that has developed anxiety and cannot control their anxiety [5].

However, the finding from this study contradicts a previous study [16]. A study shows that the higher the performance of the archer, the higher the anxiety of the archer. This might be related to the functional zone of anxiety. When the archer shoot with the optimal zone of anxiety, the archer should be experiencing the best performance. Subjects from this study might be shooting in their zone of optimal functioning and thus leading to the contradicting finding where the higher the anxiety level, the higher the performance. Moreover, an increasing trend of somatic anxiety is accompanied by an improvement in performance until a certain point. If the somatic anxiety increases above the point, it will lead to deterioration in the performance of the athletes [20].

This study shows a significant relationship between anxiety levels and the performance of SUKMA archers. The negative correlation indicates that the higher the anxiety level, the lower the performance. Archery is a sport that requires complex skills. Sports with complex skills require more precision and concentration [3]. Precision and concentration can be affected by anxiety [5, 14]. A sport with a complex skill such as archery can be performed better with a lower anxiety level [3].

5 Conclusion

In conclusion, the result from the study shows a significant relationship between competitive anxiety and performance of the athletes among SUKMA archers and the null hypothesis has been rejected because of the significance of the p-value. Other than that, there is a negative moderate correlation ($r = -0.45$) which conclude that when anxiety level increase, performance decreases. The measurement of anxiety level in this study is using SAS-2 [9] and performance was measured by collecting scores during the scoring event.
This study can provide awareness of anxiety among athletes, coaches, and organizations. Since anxiety can affect performance, the athlete can find a suitable coping strategy to deal with anxiety. Athletes also can find their optimum anxiety level to have a better performance. Moreover, coaches can find a suitable coaching behavior to deal with an athlete that has different anxiety levels. This can improve and increase the performance of the athlete. Sports associations also can provide and design suitable programs that potentially can create crystal awareness and help the athlete in controlling their anxiety during shooting.

For future study, some suggestions and recommendations are proposed, including dealing with a wide range of ages of archers. Other than that, a study involving archers should be investigated broadly since there are still fewer previous studies that involve this population. Moreover, the study on psychological factors in Malaysia also should be focused on and expand the scope of research. In addition, future studies should include all states in Malaysia to get a comprehensive landscape of the involvement among competitive archers in Malaysia.

References

The Effect Of Post Activation Potentiation Of Back Squat On 50 Meter Sprint Performance Among 100m Male Sprinters

Kwong Kar Jun
{karjun_kwong@hotmail.com}
Universiti Putra Malaysia

Abstract. Post Activation Potentiation (PAP) refers to performance improvement through neuromuscular stimulation in a short period of time as a result of undergoing specialized training activities. PAP is also referred to as a physiological condition in which an increase in muscle power over the previous one such as the movement of plyometric activity. Although research has shown lifting heavy back squat to be an effective method of increasing PAP effects, little data exist on its effect on distance above 40 meter sprinting. This study aims to investigate the effect of post activation potentiation of back squat on 50 meter sprint performance among 100 meter male sprinters. Specifically, it investigates whether the effect of post activation potentiation of back squat has an impact on 50 meter sprint performance. There are 20 of 100 meter male sprinters performed 50 meter sprints and rest 1 minute after the 1 repetition of the back squat at 90% of 1 Repetition Maximum [RM]). Maximal sprint times at 50 meter were measured using timing gates. Data were analyzed using paired sample t-test. However, with large individual variations in the response to the back squat with 90% of 1RM, data shown some sprinters benefit from the effects of PAP and others not. Thus, the results showed no significance difference in investigate the effect of post activation potentiation of back squat on 50 meter sprint performance among 100 meter male sprinters.

Keywords: Back Squat, Sprint Performance.

1 Introduction

Post activation potentiation (PAP) is a well recognized phenomenon that involves the preconditioning of muscle through heavy exercise to induce acute improvements in human performance during sprinting, running, throwing, and weightlifting activities (1). The mechanism for PAP has been primarily attributed to the phosphorylation of myosin regulatory light chains, which make the protein filaments acting and myosin more sensitive to the release of calcium (Ca2+), and this triggers a cascade of events to enhance the muscle response (2). The recruitment and subsequent expression of the high order motor units offer a secondary mechanism to explain PAP response of muscles (3).
Back squat are a popular exercise and it might be the one that necessary equipment s that will equip in the training centre (4). Usually back squats have been frequently utilised in study for induce a response in PAP for elite, beginners or unskilled people. Although numerous research on PAP have found increases in terms of functional results following various squat workouts and procedures (5), a comparable number have found no effect in results (6). On the other hand, an important factor is the transfer of the PAP stimulus to specific sports muscle actions. In this context, most studies investigate the influence of PAP on lower limbs and evaluate the performance improvement through vertical jumps (7). Therefore, despite the evidence supporting the acute potentiating effects of heavy resistance exercises on improving subsequent explosive performance, there is smaller number of studies investigating the effects of heavy resistance exercises on subsequent sprint running performance. This study will close the gap in the literature by investigate the effect of post activation potentiation of back squat on 50 meter sprint performance among 100m male sprinter. The result will provide suggestions to the coaches and athletes to implement the PAP method in the training and competitions.

2 Experimental Approach to Problem

To investigate the effects of back squats on sprinting performance, a randomised, crossover, and counterbalanced design was utilised. Back squats were chosen because they are simple to do and have been shown to improve performance (8). The chosen test (50m sprint) was designed to give a performance outputs that were relevant to the research group (100m male sprinters), such as speed and power, and allow direct comparisons between lower-body workouts and speed.

2.1 Subjects

This research included 20 trained 100m male sprinters who were all current active athletes for the collection of data. The participants must have experience in pull-push training (resistance) for about a year and sprint training experience, and the inactive period cannot be more than three weeks. Subjects must have at least one year of back squat experience and be able to attain or surpass 90% of their 1RM intensity. Subjects who have an illness or injury that prevents them from doing well in any of the study’s activities are barred from taking part.

2.2 Study Protocols

The individual took part in the first training session and finished the test process to achieve 1RM in the back squat. Following the completion of the first session, the participants took part in a second session to assess sprinting result that under free weight circumstances and next under post activation potentiation settings. The 20 subjects will be testing the PAP protocol (90% of 1RM back squat) in the first week. The 20 subjects will be testing the non-PAP protocol using free weights (back squats) in the following week to avoid muscle fatigue. The subject will perform a dynamic warm-up before lifting. Before attempting 1RM, subjects performed 10 reps of 35%, 5 reps of 75%, and 1 rep of 90% of back squat. Between each attempt, the subject rested for 6 minutes. The test is performed on a squat rack using free weights and an observer. For a successful attempt, at the end of eccentric exercise, their feet must be level on the platform and their thighs must be parallel to the platform. Before the 50-meter sprint test, the subjects rested for 1 minute after performing 1RM squats and weight control. Subjects are required to wear
running gear during every test phase with the control and experimental phases at the same time of the day. The test takes place on the outdoor track from late in the morning to early in the afternoon. The course starts with a dynamic warm-up, including jogging and 30 minutes of dynamic exercises. After warming up, instruct the subjects to start post-control or PAP squat exercises. The subjects rested for 1 minute between the back squat and the first of the three repetitive sprints to be performed in each group. Before the next PAP training, the individuals executed three reps of 50-meter sprints with a rest time of 9 minutes. This is the end of the first 10 minutes of the test. Two more groups were conducted. At the end of the rest period after the 9-minute sprint, the subject squatted again and started the next set.

2.3 Statistical Analyses

The subjects got to perform three sprint test during the non-PAP session and three sprint tests during the PAP session. Furthermore, every subjects best sprint time, in seconds (sec), from each session was analyzed, with the help of Microsoft Excel 2020. The Shapiro-Wilks test was used to check for normality and the Paired Sample T-Test will determine significant differences in sprint performance with and without PAP. Both the Shapiro-Wilks test and the Paired Sample T-Test were executed in IBM SPSS v.21. The level of significance was set at p < 0.05.

3 Results

There were the same 20 subjects listed in the testing. The effect of PAP of back squat (90% of 1RM) result elicited decreased of 0.03150 (95% CI, -0.42 to 0.11) compared to with back squat (no weights) on 50 meter sprint performance result showed in Figure 3. The effect of PAP of back squat (90% of 1RM) a statistically significant decrease in the 50 meter sprint performance compared to with back squat (no weights), t (19) = 0.896, p<0.001.

With a median value of 6.405 seconds, a minimum value of 6.01 seconds and a maximum value of 6.68 seconds for the sprint result with back squat (no weights). Besides, a median value of 6.34 seconds, a minimum value of 5.91 seconds and a maximum value of 6.65 seconds for the sprint result with back squat (90% of 1RM). It is including the maximal effort in the back squat, consisting of one repetition of half squat with the weight of ninety percent of 1 rep max, did not result in post activation potentiation and did not increase the sprint performance amongst the male sprinters in the study. There was no statistically significant difference between means (p>.05), and therefore, we can reject the hypothesis.

4 Discussion

| Table 1 Paired Samples Test |
The aim of the present study was to investigate the effect of post activation potentiation of back squat on 50 meter sprint performance among 100m male sprinters. Our findings show that lifting back squat with 90% of 1RM that induced PAP did not have any significant differences compared to doing back squat without weights. We found out that it may cause by the volumes, rest intervals and intensities in the study. Heavy weights have been shown to improve vertical jump and sprint performance, in both intervention and acute studies (9). In contrast, previous studies have reported no difference in acute sprint performance after heavy-resistance exercise . Indeed, in the current study, over the course of three trials, there was no significant difference in sprint performance. These results agree with the findings of McBride, who reported no effect of heavy-resistance exercise on repeated sprint performance using similar rest intervals. Although, it was suggested that PAP can only effectively contribute to performance enhancements within 1–5 minutes after conditioning contractions. As PAP and fatigue are simultaneously initiated after muscle contractions, we posit that the effect of PAP was sufficient to counteract the effect of fatigue in doing the back squat with 90% of 1RM but inadequate for enhancing the sprinting performance. Besides that, the inconsistencies in the research regarding the optimal intensity for inducing PAP make it difficult to provide recommendations for training prescription. Despite the fact that the bulk of studies indicates that heavy-load intensities tend to be the most beneficial . For example, doing a 3RM back squat at around 90% of 1RM may elicit a higher PAP response than performing a 10RM back squat at 50% of 1RM. As a result, it is recommended that employing large loads (>80% of 1RM) may be the most effective for producing substantial potentiation. In this study, we did 1 repetition of back squat at around 90% of 1RM and did not shows significant differences in improving the 50 meter sprint performance. Therefore, we believed that we may need to do 3 to 5 repetitions with the same intensities (90% of 1RM) or lower the repetitions with higher intensity such as 95% of 1RM. The volumes, rest intervals and intensities that used in our study have previously been shown to be sufficient for improving the sprint performance (10). However, it shows no significant differences in the sprint results, therefore, it would be interesting to indicating that the complex relationship between the volumes, rest interval and intensities warrants further investigation.

### 4.1 Conclusion

The result shows no significant differences in sprint performance in doing heavy back squat, as a result, we need to reject the hypothesis. This study may need to further investigate in the volumes, rest intervals and the intensities. Post activation potentiation has been consistently
proven to improve subsequent athletic performance such as sprint, however, it may be necessary to take into account the type, intensity, and volume of the conditioning exercise since this has been shown to contribute to both the amount of the fatigue and the magnitude of the potentiation. PAP benefits are generally maximised when biomechanically comparable workouts are done with high loads for minimum repetitions. PAP's effects are extremely personalised, according to the research, implying that there will never be a "one size fits all" approach for training prescription.

4.2 Suggestion for Future Research

Future research is recommended to conduct the research has several aspects must be considered when adopting back squat protocols for competition, including an individual’s athletics ability, equipment availability, time restrictions, Modality, and coach/athlete buy in.

References

Performance Of Using Digital Platforms For The Management Of Promote Ideas And Improve Life Through Movement Workshop Project

Rawiwan Suesuwan¹, Jongrak Karam², Kritchaya Poompin³, Piyanat Huykodwattana⁴, Supawan Vongsrangsap⁵

{ rawiwan.su@ku.th¹, jongrak.kar@ku.th², kritchaya.p@ku.th³, piyanat.huy@ku.th⁴, feduswv@ku.th⁵ }

Kasetsart University kampangsan campus¹, Kasetsart University kampangsan campus², Kasetsart University kampangsan campus³, Kasetsart University kampangsan campus⁴, Kasetsart University kampangsan campus⁵

Abstract. The objectives of this research were to study (1) a competency in the use of digital platform of a workshop project promoting ideas for the life development throughout body movement and (2) a satisfaction of a workshop project improving thought for life development via body movement. The methodologies were research and development (R&D) with project samples of 38 participants, who were registered to participate in this project through the admission platforms. The questionnaires, which were about the competency of using digital platforms and the satisfaction of performances, were created in Google Form with parameters, i.e., percentage, mean, and standard deviation. The qualitative data were analyzed by Content Analysis and the confidence value of 1.00 is given. The results showed that performance of using digital platforms with a total average of 4.57. Most of participants had the ability to understand the process of using Google Form program in order to register into the program. Moreover, the total mean of the project evaluation through Google Form, the evaluation of information receives about public relation news via digital platforms, and the satisfaction of using digital platforms is equal to 4.74. For the most applicants’ opinions, it was a convenient and fast service among various platforms not only to register but also to join the project.

Keywords: Competence, Digital Platform, Project Management
1 Introduction

Currently, the dramatical changes in population structure and in advance of science and technology become new challenges due to an easy access of internet. Moreover, almost all devices are connected to internet all the time, leading to the big progress of technology (Office of the Education Council of Thailand, 2018). This progress guides toward Thailand 4.0 that the learners have the ability to approach unlimited information and learning resources, related to the self-development through technology, which is a modern learning with the 20-year Thailand National Strategy (2018-2037) and the National Education Plan 2017-2036, as well as the National Plan Policy on digital development for the economy and society. It is such an important change in 21st century, an era where digital technology advances have changed dramatically. In addition, it leads Thailand to be grown as a developed country with stability, wealth, and long-term sustainability. This could be done by the improvement of population, research, and innovation, including digital technology that also related to the National Strategy on resource development and enhancement as part of the reformation for learning process that responds to changes in the 21st century. It focuses on the learning skills and willingness to learn at all times in order to lay out the foundation for the system to support learning using a digital platform (National policies and plans on digital development for the economy and society (2018-2037), 2019).

![Fig. 1 The development of 21st century](https://www.google.com/search วันที่ 6 กรกฎาคม 2565)

**Fig. 1** The development of 21st century (Reference: https://www.google.com/search วันที่ 6 กรกฎาคม 2565)

**Fig. 2** The use of digital platform

Nowadays, the combination of digital platform and technology is used in workings, seminars conferences, activities, and teaching managements via online and internet system, including the communication. These leads to a more convenient and faster way to manage all the activities, e.g., Ding Talk as a communication and working platform within Aliabad organization. Digital platforms are new presentations by using technology to take part in changing the presentation style with the goal of increasing interest and there can be an interaction between presenters and audiences (Watanyoo Suksangiam, 2020). This may be displayed through a variety of devices, e.g., computers, tablets, smartphones, that are related to current situation of technology to be
used in a part of dairy life. So, it is very important in improving the use of internet to be convenient and easy for information access and communication. The introduction of digital platform into management activities and projects escorts the help in the operation for convenience, speed, and systematic storage. It also creates interest for participants in the event or project to respond to their needs.

Fig. 3 Modern technology in the city (Ref. https://th.lovepik.com/image: access 06.July.2022)

Fig. 4 Modern technology

Praweenya Suwannatthachote and Prachyanun Nilsook (2005) described the adoption of innovation and technology in educational institutions that most of them have problems with ignorance and uncertainty about technological innovations being developed to be suitable for educational management. The learning of students depends on the thinking of administrators and teachers in the institutions that innovation and technology are useless and do not understand the benefits causing them not to be published. Although how good qualities these innovations and technologies in the institutions have, especially, in private vocational institutes. They would be accepted by the administrators and teachers only if they are well-known to be very practical and convenient in using. Meanwhile, Wilaiwan Wongjinda and coworker (2021) studied the effect of readiness in changing and training on the technology adoption. Because the experiences of users in working with the technologies lead to the easier acceptance, many institutions have plans and strategies to introduce the modern technologies to make their users ready in the training, providing knowledge, understanding, and building trust among users, including develop the ability to use that technology continuously. Technology Acceptance Model (TAM) is a model that describes the factors affecting the acceptance of technology-related innovations. This model is widely accepted and has a reputation for being a measurement of the success of the technology. The study of the cause-and-effect factors influencing the intention to show behavior in the use of information technology consists of 3 main factors (1) perceived usefulness (PU), (2) perceived ease of use (PEOU), and (3) intention to use

As abovementioned, digital platform technologies become an important role in dairy life, working, and teaching-learning. They can be considered as new innovations suitable for the current situation requiring facilities that fast in communication and also promote good efficiency for working. However, there are still many people who have not opened their minds or do not understand the use of this technology, as well as, they cannot keep up with self-improvement and organizational development

Nowadays, the use of technology has become more popular, therefore, it is a way to develop various systems that will further be the driving force of potential development in order to increase the performance of work through digital platforms such as education management,
marketing, living, or even the development of personnel in various organizations. They need to learn and promote the use of various technologies to be adapted as suitable uses. Besides, this is also a self-improvement through a project to promote ideas and improve life through movement. Moreover, it is a project that uses digital platform technologies helping in project management. So, the key to success in the project management is to use various platforms in helping public relations, recruitment, giving knowledge, and evaluation. Therefore, the researcher would like to study the satisfaction of technologies in the project management in order to use them as a guideline for developing the competency of using digital platform in the management of the workshop project in the future.

2 Research methodologies

Population / Sample
In this research, 38 people have been registered as population into workshop project to promote ideas for life development through movement.

Research tools
The tools in this research are questionnaires that can be divided into 3 parts

Part 1 A questionnaire about the general status of the respondents as a check list form.

Part 2 A questionnaire about digital platform satisfaction of the workshop project to promote ideas for life development through mobility as an estimated scale according to Likert's rating scales. There are 5 levels as follows (Boonchom Srisa-ard, 2011: 90-92).

- Average score 4.20 – 5.00 means the highest level of satisfaction
- Average score 3.40 – 4.19 means high level of satisfaction
- Average score 2.60 – 3.39 means moderate satisfaction.
- Average score 1.80 – 2.59 means low level of satisfaction.
- Average score 1.00 – 1.79 means the lowest level of satisfaction.

Part 3 Other suggestion questionnaires, which are open-ended questions.

Tool inventing process
This study was a research and development (R&D) that was descriptive research as a guideline to develop the competency of using digital platforms utilized in the management of workshop projects. The procedures for conducting research were as follows:

Step 1: To study documents and research related to digital and technology as well as collecting opinions from technology experts to create a questionnaire.

Step 2: To create a questionnaire about the satisfaction of using the digital platform of the workshop project promoting ideas to improve life through movement.

Step 3: To bring the questionnaire created to the advisor for an improvement.
Step 4: To take the revised questionnaire for content fidelity and confidence

To find the questionnaires’ confidences, they were brought to the 3 experts for data and confidence analysis of the suitability assessment form and the feasibility of the model by calculating the alpha coefficient according to Cronbach's method (Cornbrash, 1970, p. 161). The result yielded a confidence with value of 1.00. In addition, questionnaires were about the competency and satisfaction in using digital platforms as the questions on a 5-level assessment scale.

3 Data collection

To collect data, the researcher will proceed as following:

1. The researchers coordinate with the Faculty of Education and Development Sciences, Kasetsart University Kamphaeng Saen Campus was prepared a letter for permission and cooperation in collecting information.

2. The researchers coordinate with the project participants and operators had requested cooperation in data collection.

3. The researchers collect the data by sending the questionnaires to the sample group via Application Line as online channel by creating the questions in the online form (Google Form) and collecting data from the 38 participants.

4. Statistical analysis of data obtained from the questionnaires.

Data analysis

The quantitative data were statistically analyzed using mean, percentage, and standard deviation. Qualitative data were analyzed by content analysis and then present the data by using a compositing table.

3 Research results

The study of competence of using digital platforms to be useful in the management of workshop projects can be summarized as follows:

Table 1 Amount and percentage of applicants according to ages.

<table>
<thead>
<tr>
<th>Applicants</th>
<th>Amount</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30 Years</td>
<td>13</td>
<td>34.21</td>
</tr>
<tr>
<td>31-40 Years</td>
<td>15</td>
<td>39.47</td>
</tr>
<tr>
<td>41-50 Years</td>
<td>5</td>
<td>13.16</td>
</tr>
<tr>
<td>50 Above 50 years</td>
<td>5</td>
<td>13.16</td>
</tr>
</tbody>
</table>

According to Table 1, most applicants’ age range are 31-40 years (15 applicants) as 39.47%. Secondly, 21-30 years with values of 13 applicants and 34.21% are found. Then, 5 applicants each in age ranges of 41-50 years and above 50 years are calculated as 13.16%.
Table 2: Amount and percentage of applicants according to status.

<table>
<thead>
<tr>
<th>Status</th>
<th>Amount</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>25</td>
<td>65.79</td>
</tr>
<tr>
<td>Graduated students</td>
<td>11</td>
<td>28.95</td>
</tr>
<tr>
<td>Academic</td>
<td>1</td>
<td>2.63</td>
</tr>
<tr>
<td>Coach</td>
<td>1</td>
<td>2.63</td>
</tr>
</tbody>
</table>

From Table 2, most of the respondents were 25 teachers calculated as 65.79%, followed by 11 students as 28.95%, 1 academic as 2.63%, and 1 coach as 2.63%, respectively.

Table 3: Performances of using digital platforms.

<table>
<thead>
<tr>
<th>No.</th>
<th>Assessments</th>
<th>X</th>
<th>S.D.</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The platforms can be used to improve clearness and completeness public relation information</td>
<td>4.58</td>
<td>0.55</td>
<td>highest level</td>
</tr>
<tr>
<td>2</td>
<td>Ability to choose the appropriate public relation channels</td>
<td>4.55</td>
<td>0.55</td>
<td>highest level</td>
</tr>
<tr>
<td>3</td>
<td>Ability to use variety of public relations in the platforms</td>
<td>4.50</td>
<td>0.60</td>
<td>highest level</td>
</tr>
<tr>
<td>4</td>
<td>Ability to use channels for acknowledging information and communication</td>
<td>4.50</td>
<td>0.60</td>
<td>highest level</td>
</tr>
<tr>
<td>5</td>
<td>Understanding the procedures to fill out the application forms</td>
<td>4.58</td>
<td>0.55</td>
<td>highest level</td>
</tr>
<tr>
<td>6</td>
<td>Ability to use the administration program through the Google form</td>
<td>4.63</td>
<td>0.49</td>
<td>highest level</td>
</tr>
<tr>
<td>7</td>
<td>Ability to use program to evaluate the project through the Google form</td>
<td>4.68</td>
<td>0.47</td>
<td>highest level</td>
</tr>
</tbody>
</table>

Average: 4.57, S.D. 0.54, highest level

Table 3 shows a total average of digital platform performance of 4.57. Most of applicants were able to use the program for project evaluation through Google form (4.68), followed by the administration program through the Google Form of 4.63, then understanding the procedures to fill out the application forms (4.58).

Table 4: Satisfaction in using digital platforms.

<table>
<thead>
<tr>
<th>No.</th>
<th>Assessments</th>
<th>X</th>
<th>S.D.</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed of project registration</td>
<td>4.76</td>
<td>0.41</td>
<td>highest level</td>
</tr>
<tr>
<td>2</td>
<td>Readiness and modernization of technology in training</td>
<td>4.76</td>
<td>0.43</td>
<td>highest level</td>
</tr>
<tr>
<td>3</td>
<td>Convenience and speed of using service through various platforms</td>
<td>4.79</td>
<td>0.41</td>
<td>highest level</td>
</tr>
<tr>
<td>4</td>
<td>Appropriation of knowledge assessments through Google form system</td>
<td>4.76</td>
<td>0.43</td>
<td>highest level</td>
</tr>
</tbody>
</table>
Clearness and completeness of public relation information 4.68 0.47 highest level
Response of service using through various platforms 4.74 0.45 highest level
Training documentation service 4.68 0.53 highest level
Overall satisfaction in using the information technology system 4.76 0.43 highest level

Average 4.74 0.45 highest level

The average satisfaction in using digital platforms is 4.74 (Table 4). Most of applicants evaluate the convenience and speed of using service through various platforms as 4.79, followed by the speed of project registration, readiness and modernization of technology in training, appropriation of knowledge assessments through Google Form system, and overall satisfaction in using the information technology system with all the values of 4.76.

It can be summarized from the evaluation of participants in use of digital platform performances, it is found that the average age of applicants is 31-40 years, followed by 21-30 years, which are the age of working and learning, respectively, with readiness to learn a new thing. Moreover, most of applicants are teachers and graduated student. The evaluation shows that the average performances of using digital platforms defines in the highest level of satisfaction (4.57). Mostly, the program can be used to evaluate project through Google form (4.68), followed by the use of administration program through the Google form and it can be used as a platform to improve clearness and completeness public relation information. They have average satisfaction scores equal to 4.74. In addition, most of applicants evaluate the convenience and speed of using service through various platforms as the highest satisfaction level, followed by the speed of project registration, readiness and modernization of technology in training, appropriation of knowledge assessments through Google form system, and overall satisfaction in using the information technology system.

In further study, it could be suggested to develop digital platforms of practical workshops promoting ideas and life through movement. The use of modern technology leads to easy access and continuous activities in Line application groups, including the photos of activities have been sent directly via the application at the end of the activities.

4 Discussion

The abovementioned results of the study of competence using digital platforms to be useful in the management of workshop projects were discussed as follows:

1. Competency in using digital platform of workshop project promoting ideas to improve life through movement was highly satisfactory. Specifically, participants were able to use the administration program through the Google Form channel with the highest average related to the digital development plan in Economy and Society (2016:4). For strategy 3, it is mentioned to build an inclusive society with digital technology in terms of creating opportunities and equal access. Also, the chances of getting a standard education for students and people of all ages,
anywhere, and anytime with digital technology should be improved. In case of strategy 5, it shows develop manpower to be ready for the digital economy and society in 3 areas of action plans: (1) to develop digital technology skills for personnel in the labor markets, including government and private personnel, and personnel of all occupations and ages, (2) to promote skill development expertise that specialized in the profession digital technology that operate in the public and private sectors to support future, and (3) to develop executives of information technology in order to plan the improvement of digital technology mission as well as to create value from organizations’ data. These 3 areas are related to the study of Wilaiwan Wongjinda and coworkers (2021, abstract). It was found that the efficiency of the learning platform for the development of learning skills in the 21st century for educational disciplines was 81.54/81.46, higher than the specified threshold of 80/80. In addition, the average opinion on acceptance of learning platforms for the development of learning skills in educational disciplines of 21st century was 4.01 suggesting a high level. Likewise, the results are also related to the work of Chalermpol Saengkaew and Passapan Jinota (2019, abstract) that was about an application of information technology in sports facilities services on the topic of information technology models suitable for sports facilities services. The results revealed that most of the personnel wanted information issues to be easily accessible, such as via the internet and via mobile phones, at a high and highest level of satisfaction, respectively, accounted in total of 90 %, followed by the issue that all users can access the service through information of sports facilities, e.g., reservations for sports facilities, booking a meeting room, or notifying repair, in terms of simpleness and convenience of information format, at a high and highest level suitability for 87.1 and 89.3 %, respectively. Besides, 80.7 % of personnel thought that information, e.g., website, application, program, should be created, as it is convenient and easy to be in service of self-requesting for sport facilities, considered as a very high and highest level of suitability.

2. A highest satisfied level of applicants in the use digital platform of practical workshop promoting ideas through movement belongs to the convenience and speed of using service through various platforms (4.79), followed by the speed of project registration, readiness and modernization of technology in training, appropriation of knowledge assessments through Google form system, and overall satisfaction in using the information technology system with all the values of 4.76. These results are related the work of Ntapat Worapongpat (2021) that was about the development of a digital platform for the course of Business Economics using a problem-based management and learning model for undergraduate students in the Faculty of Business Administration. The study displayed that a digital platform for the course of Business Economics using the model as a base improved an efficiency with a value of 80.98/81.87, compared to 80/80 standard, and an index of effectiveness is 0.8357. Learners, who studied with the platform, had a statistically significantly higher after-school achievement at the 0.05 level compared to previously. Moreover, the results are correlated to study about the use of digital technology platforms in the administration of bilateral educational institutions, technical college under Institute of Vocational Education, Bangkok (IVEB) by Kesinee Chiwpreecha (2022). It was found that the assessments of using digital platform for managements were in high levels (X̅=3.91, SD=0.63) in many areas, i.e., (1) development of teachers in online teaching and learning management; (2) the provision of digital technology management systems, platforms, and information security systems; (3) determining the format of the learning management and vocational training plan as well as a plan of supervision through a digital technology platform; (4) evaluation and vocational training in actual conditions.
5 Suggestions

1 To study the factors affecting the use of digital platform technology in the administration of educational institutions.

2 To use digital platforms in teaching and learning in order to achieve learning achievements in the development of student potential in higher education.

References

Assessment for Learning in Physical Education and Sport: Practical Tools and Strategies

Dr. Lena Chng

{lena.chng@nie.edu.sg}

National Institute of Education, Singapore, Nanyang Technological University of Singapore. 1 Nanyang Walk. Singapore 637616

Abstract. Integrating assessments for learning in physical education and sport coaching lessons have positive impact in teaching and learning. Students perform better in terms of skills, are more on-task, and have higher response rates. The inclusion of assessment for learning tasks in physical education and sport coaching lessons provide structure and focus, thus helping teachers deliver lessons more effectively. This article aims to share some assessment for learning tools and strategies teachers and coaches can use when teaching and assessing game play: (1) Hit map for net-barrier games; (2) Heat map for territorial/invasion games; and (3) Statistical count tools for games. Such peer-assessment tools can be used to provide teachers and coaches with data evidence for student athletes’ learning, and at the same time, allow them to receive individual feedback on their game performance, thereby promoting ownership and self-direction. This article also shares some considerations to note when implementing peer-assessment tools.

Keywords: assessing game play performance, games concept assessment, physical education assessment

1 Introduction

Assessment for learning plays an integral role in assuring high quality teaching and learning in physical education. According to International Association for Physical Education in Higher Education, AIESEP’s position statement on assessment in physical education[1] assessment should (1) guide and support the learning process of students; (2) inform teachers about the effectiveness on their teaching; (3) determine whether students can progress to the next learning progression; and (4) provide evidence of student learning.

Several studies have shown positive impact of integrating assessment for learning in physical education lessons. Not only students performed better in terms of skills [2], [3], [4], [5], the inclusion of formative assessment in physical education lessons provides structure and focus, thus helping teachers deliver lessons more effectively [6], [7]. Students also tend to be more on task and have a higher response rate when formative assessment is incorporated into lessons [8]. Assessment for learning can be applied to coaching context too. Players can use data collected to analyse their own performance and take steps to improve their performance based on the evidence collected. This article aims to introduce 3 different peer assessment for learning tools that teachers and coaches can use to enhance teaching and learning.
2. Assessment for Learning Tools

Most assessments for team sports are conducted in closed skills environment. Assessment of game play are usually done using a games rubric. Games rubric are usually subjective and difficult to assess, and usually used for summative reporting. Thus, it does not really help player reflect on their performance for improvement. Thus, 3 assessment for learning tools that would help players and teachers/coaches in their teaching and learning will be introduced. They are: hitmap in a net-barrier game; dribbling heatmap in a territorial invasion game, and statistical count tools. These tools can be used to measure and evaluate game play during physical education lessons, and coaching sessions, for students and athletes to reflect on their game performance.

2.1 Hitmap for net-barrier games

Hitmaps are visual representation of where the players placed their shots / balls during a game. In a badminton game, it could show where the players placed the shuttle, and if the players can return the shuttle successfully. In a volleyball game, it could show where the players receive the volleyball and where the players send the volleyball to. In order to create a hitmap, the peer observer first needs to draw out the playing area of the sport. Examples of players’ badminton hitmaps and explanation of how to interpret them are shown in figure 1. During the game, the observe marks on the hitmap with an (O) on the spot where the player was able to return the shuttle, and (X) on the spot where the player was unable to return the shuttle. At the end of the game, the players would look at their own hitmap to reflect on the areas they managed to return the shuttle, and the areas they were unable to return the shuttle. Teachers and coaches would also be able to determine from the hitmap if the students have good space coverage.

Another use of the hitmap is for players to reflect on the placement of their shots. By looking at their opponent’s hitmap, players can reflect on whether they use a variety of shots during game play, and send the shuttle to the corners of the court. If players can send the shuttle to the back of the court, we can assume that players can execute an overhead clear or an underhand lift. If players can send the shuttle to the front of the court near the net, we can assume that players can execute a net shot or a drop shot.

Teachers can coaches can use this tool to be aware of students’ or players’ performance, and manage the class better. They can determine the types of shots students / players were using, by looking at the players’ hitmap, and give feedback, and make informed decisions about future instruction.
2.2 Dribbling heatmap for territorial-invasion games

Heatmaps are traditionally used as a data visualization technique to show a certain phenomenon over a geographical space. The heatmap can be used to record different data for different lessons, depending on the lesson focus. In territorial-invasion game, we can use heatmap to represent where players run or where the players managed to dribble the ball. In this example shown in figure 2, we will focus on where players dribble the ball in a floorball game.

To prepare the heatmap, observers first have to draw out the perimeter and the goalposts of the playing area. Then, the observer will observe his/her assigned player (note only observe 1 player) during the game and trace out the pathway of the player when the player has possession (dribbling) of the ball. At the end of the gameplay, the player can reflect on how well he/she has dribbled the ball. A long pathway (or line) would show that the player dribbles the ball successfully over some distance. If the pathway (or line) is crooked and long, we can assume that the player was dribbling past defenders. If the pathway was a straight line, we can assume that the player was dribbling down a clear path towards the goal with no defenders. If there were no lines, or the lines were very short, the player probably did not dribble the ball at all during the game. Such information gives teachers and coaches an idea about how their students / athletes were playing in the game, especially if the session objective was to demonstrate the ability to dribble the ball past defenders.

Fig. 1 Examples of players’ hitmaps and how to interpret them
2.3 Statistical count tool

Statistical count tools help players, coaches and teachers know how well the players played and contributed to the game. With a statistical count tool, observers can record the players’ performance during gameplay, thus providing teachers and coaches with a set of assessment data to make judgment about the players’ game performance. The type of statistical data collected depends on the objective of the lesson. Data could include the number of successful and unsuccessful passes, number of received passes, attempts at the goal, number of interceptions, number of different types of shots used (e.g. overhead clears, smashes, dropshot, etc). Such data document a player’s contribution to the team during gameplay. An example of a statistical count tool in a basketball game, is shown in Figure 3. Figure 3 also explains how to interpret the data collected.

Teachers and coaches can get the team to analyze and reflect on every player’s contribution to the team. For example, in the basketball game, Player A made ten successful passes, Player B made eleven successful passes, and Player C made only one. As a team, the players would look at the data and decide on their improvement goal. Player A and B would make sure in the next game, they would try to pass to Player C, and Player would have to level up his game. Such statistical count tool would allow students to take ownership of their own learning, and set their performance goals, thereby promoting self-directed learning. Teachers and coaches could use such tool to give evidence-based feedback which are less subjective and more meaningful.
What does this statistical score tell us about the player?

Observe your assigned player for 20 minutes of game play. Place a tally (X) every time the player makes the tell of the appropriate column.

<table>
<thead>
<tr>
<th>Category</th>
<th>Tally</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorder Ball (R)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dribble</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass Ball (P)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Ball (C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total attempt (A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wounded (W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (T)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Active contributors to the game. Good at attacking and defending.

Game: 3v3 basketball half court

Fig. 3. Example of statistical count and how to interpret the results

3. Discussion

There are some considerations for coaches and teachers to bear in mind when designing and implementing these assessment for learning tools [9]:

a) Recorders should observe only 1 player at a time. This is to provide accurate recording of the game play, and make the data reliable.

b) Recorders should record not more than 3 actions at a time. Teachers and coaches should decide the actions to record based on the lesson objectives.

c) Recorders should observe only actions that are quantifiable and easy to observed. Do not get observers to record quality of a skill, or unmeasurable outcomes like providing off-the-ball support during the game.

d) Ensure the safety of the observes by placing them at a spot that allows them to observe the game play safely, and at the same time not interfering with the game.

4. Conclusion

Teachers and coaches are often faced with large class sizes. In physical education and sport settings, students tend to be disengaged when the teacher or coach was not looking. By implementing assessment for learning tools, not only it helps teachers and coaches resolve the lack of space issues (since half the class would be assessing the game play), it helps also by allowing students to receive individual feedback on their game performance. Furthermore, teachers and coaches have a set of assessment data and evidence to decide if the students/players have achieved the learning outcomes and make informed decisions on their next progression. Students are also more engaged when assessment for learning tools are integrated...
into lessons [8]. With all these benefits, teachers and coaches are encouraged to try out some of these tools to enhance the quality of their physical education and coaching sessions.

References


Physical Activities, Sedentary Behaviour, and Screen Time Related to Nutritional Status of Elementary School Students in Urban Area

Wildan Alfia Nugroho, Pipit Pitriyani, Nur Auliya, Andi Suntoda, Agus Mahendra
{wildanalfian@upi.edu, pipitpitriyani020@upi.edu, nurauliya@upi.edu, andisuntoda@upi.edu, agus_mahendra@upi.edu}

Program Studi PGSD Pendidikan Jasmani, Fakultas Pendidikan Olahraga dan Kesehatan, Universitas Pendidikan Indonesia.

Abstract. The lifestyle of urban areas causes the high use of technology and digitalization. This impacts decreasing physical activity levels, increasing sedentary behavior, and high-screen viewing habits. The purpose of this study was to determine the relationship between physical activity, sedentary behavior, and screen time to the nutritional status of children. The research method uses a quantitative approach with a cross-sectional design. The research population was 418 students, and with purposive sampling obtained 105 samples. The research instrument used the PAQ-C and ASAQ questionnaires. Statistical test using spearman rank. All data were analyzed using the SPSS Version 21 program. The results showed no significant relationship between physical activity and sedentary behavior with the nutritional status of elementary school students in urban areas. with sig value. 0.738 > 0.05 and sig. 0.100>0.05. Meanwhile, there is a significant relationship between screen time and the nutritional status of children in urban areas, with a value of sig.0.001 <0.05. Screen time is an indicator that has the most significant relationship to the nutritional status of elementary school students in urban areas.

Keywords: Physical Activity, Sedentary Behaviour, Screen Time, Nutritional Status, Elementary Student, Urban Area

1 Introduction

The development of digital technology and the ease of internet access have positively impacted various fields, such as employment, health services, and the process of implementing education [1]. In addition to the positive impact, there are also negative impacts, such as a less active child’s lifestyle because they spend much time playing with gadgets. This kind of activity triggers sedentary behaviour [2]. An unhealthy lifestyle is one of the factors that increase the risk of cardiovascular disease [3].

Urban areas are settlements, centralization, and distribution of government services, social services, and economic activities. Lifestyles in urban areas do not always cause positive health
trends but often have implications for health problems such as obesity and hypertension [4].

Urban areas have adequate technological and complete facilities and infrastructure, making it easier to carry out various activities. The factor that causes the high level of sedentary behaviour in urban areas is accessible facilities. The better facilities cause a person to be lazy in doing physically active activities [5]. Physical activity in urban areas decreases and causes an increase in sedentary behaviour and a high level of screen time [6]. The COVID-19 pandemic factor has also impacted this increase [7].

An inactive lifestyle will cause obesity in children and increase the risk of degenerative diseases [8]. This is undoubtedly dangerous, considering that the growth and development phase determines the quality of life in the future for children. The low level of physical activity, high sedentary behaviour, and screen time in children also impact the low level of physical fitness and basic movement abilities in children [9]. Hence, there is a need for a systematic study that analyzes the relationship between physical activity, sedentary behaviour, and screen time on the nutritional status of children in urban areas.

2 Method

This study is a quantitative study with a cross-sectional design. A cross-sectional design was chosen because it can collect data at one particular point. The population in this study were upper-class students at SDN 222 Pasir Pogor, Bandung City, with a total sample of 418 students. The sampling technique used is purposive sampling. Purposive sampling is a sampling technique with specific considerations [10]. This purposive sampling technique is not random, but there are criteria that the researcher has determined. This research was conducted on upper-grade elementary school students with the characteristics of students in the age range of 11-15 years, totaling 105 students.

The research instrument used the Adolescent Sedentary Activity Questionnaire (ASAQ) instrument for students aged 11-15 years to measure sedentary behavior and screen time [11]. Meanwhile, measure students' physical activity levels using the Physical Activity Questionnaire for Children (PAQ-C). Physical Activity Questionnaire for Children (PAQ-C), which is adapted for elementary school-aged children aged 8-14 years [12]. BMI is used to measure nutritional status. Researchers calculated the Body Mass Index according to age (BMI/age) [13]. The data obtained were analyzed using SPSS software version 21. The analysis prerequisite test used the normality and linearity tests [14]. Normality test using Kolmogorov-Smirnov, and linearity test using the Anova test. The statistical analysis technique of the data used the Spearman Rank correlation test with a significance level of p < 0.05 [15].

3 Result

The results of the study are the results of data collection by researchers to respondents through the ASAQ and IPAQ-C questionnaires to measure the level of physical activity, sedentary behaviour, and screen time in children. Data on the nutritional status of children was obtained through measurements of height and weight, which were categorized according to the BMI/Age. The data obtained were then analyzed using SPSS version 21. The following is the analysis data.
In Table 3.1, it can be seen that the number of students who filled out the questionnaire was 105 students. 35 students from 4th grade, consisting of 16 girls and 19 boys. 34 students from 5th grade, consisting of 21 girls and 13 boys. And 36 students from 6th grade, consisting of 19 girls and 17 boys. After comprehending the description of the research sample, the results of measuring children's physical activity in the following frequency distribution.

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 3,984</td>
<td>Very high</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>3,223 – 3,984</td>
<td>High</td>
<td>27</td>
<td>25%</td>
</tr>
<tr>
<td>2,463 – 3,223</td>
<td>Normal</td>
<td>39</td>
<td>37%</td>
</tr>
<tr>
<td>1,702 – 2,463</td>
<td>Low</td>
<td>33</td>
<td>31%</td>
</tr>
<tr>
<td>&lt; 1,702</td>
<td>Very low</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>105</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

According to Table 3.2, the physical activity of elementary school students in urban areas that are in the "very high" category is 3% (4 people), "high" is 25% (27 people), "enough" is 37% (39 people), “low” by 31% (33 people) and “very low” by 2% (2 people). Generally, the level of physical activity is in the “enough” category. Next is the sedentary behaviour data.

<table>
<thead>
<tr>
<th>No</th>
<th>Day</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Weekday</td>
<td>2:57</td>
<td>3:48</td>
<td>2:57</td>
<td>3:14</td>
</tr>
<tr>
<td>2</td>
<td>Weekend</td>
<td>2:58</td>
<td>3:59</td>
<td>3:48</td>
<td>3:35</td>
</tr>
<tr>
<td><strong>Total average</strong></td>
<td></td>
<td>2:57</td>
<td>3:53</td>
<td>3:22</td>
<td>3:24</td>
</tr>
</tbody>
</table>

According to Table 3.3, the average sedentary behaviour of 4th-grade students on weekdays is 2 hours 57 minutes and on holidays 2 hours 58 minutes. The average of 5th-grade sedentary behaviour on weekdays is 3 hours 48 minutes, and on holidays, 3 hours 59 minutes. The average sedentary behaviour for 6th grade on weekdays is 2 hours 57 minutes, and on holidays, 3 hours 48 minutes. The following table shows the frequency distribution of sedentary behaviour on weekdays and weekends.

<table>
<thead>
<tr>
<th>Time</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
<th>Time</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 5 Jam</td>
<td>High</td>
<td>4</td>
<td>4%</td>
<td>&gt; 5 Jam</td>
<td>High</td>
<td>8</td>
<td>8%</td>
</tr>
<tr>
<td>2-5 Jam</td>
<td>Moderate</td>
<td>96</td>
<td>91%</td>
<td>2-5 Jam</td>
<td>Moderate</td>
<td>92</td>
<td>88%</td>
</tr>
</tbody>
</table>
According to the data in table 3.4, the categories of sedentary behaviour of elementary school students in grades 4, 5, and 6 at SDN 222 Pasir Pogor on weekdays are "very high" 4% (4 students), "moderate" 91% (96 students) and "low" by 5% (5 students). While on weekends, the category of "very high" was 8% (8 students), "moderate" was 88% (92 students), and "low" was 5% (5 students) of the total sample of 105 students. The conclusion is that the sedentary behaviour of students is in the moderate category and has increased sedentary behaviour on weekends. Next is the screen time level for students.

**Table 3.5 Average Student’s Screen Time**

<table>
<thead>
<tr>
<th>No</th>
<th>Day</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Weekday</td>
<td>4:03</td>
<td>1:47</td>
<td>1:26</td>
<td>2:25</td>
</tr>
<tr>
<td>2</td>
<td>Weekend</td>
<td>1:31</td>
<td>1:38</td>
<td>1:50</td>
<td>1:39</td>
</tr>
<tr>
<td></td>
<td>Total average</td>
<td>2:57</td>
<td>2:47</td>
<td>1:42</td>
<td>1:38</td>
</tr>
</tbody>
</table>

According to table 3.5, the average screen time of 4th graders on weekdays is 4 hours 3 minutes and on holidays, 1 hour 31 minutes. The average screen time for class 5 on weekdays is 1 hour 47 minutes, and on holidays 1 hour 38 minutes. The average screen time for grade 6 on weekdays is 1 hour 26 minutes, and on holidays 1 hour 50 minutes. The following table shows the screen time-frequency distribution on weekdays and weekends.

**Table 3.6 Frequency Distribution Table for Student’s Screen Time Category**

<table>
<thead>
<tr>
<th>Time</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
<th>Time</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;2:22</td>
<td>Very high</td>
<td>36</td>
<td>34%</td>
<td>&gt;2:22</td>
<td>Very high</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>1:52 - 2:22</td>
<td>High</td>
<td>7</td>
<td>7%</td>
<td>1:52 - 2:22</td>
<td>High</td>
<td>17</td>
<td>16%</td>
</tr>
<tr>
<td>1:22 - 1:52</td>
<td>Normal</td>
<td>43</td>
<td>41%</td>
<td>1:22-1:52</td>
<td>Enough</td>
<td>52</td>
<td>50%</td>
</tr>
<tr>
<td>0:52 - 1:22</td>
<td>Low</td>
<td>18</td>
<td>18%</td>
<td>0:52 - 1:22</td>
<td>Low</td>
<td>19</td>
<td>17%</td>
</tr>
<tr>
<td>&lt; 0:52</td>
<td>Very low</td>
<td>0</td>
<td>0%</td>
<td>&lt; 0:52</td>
<td>Very Low</td>
<td>8</td>
<td>8%</td>
</tr>
<tr>
<td>N</td>
<td>105</td>
<td>100%</td>
<td></td>
<td>N</td>
<td>105</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

According to the data in table 3.6, the screen time category of elementary school students in grades 4, 5, and 6 at SDN 222 Pasir Pogor on weekdays with the "very high" category of 34% (36 students), "high" 7% (7 students) "enough" at 41% (43 students), "low" at 18% (18 students), and very low at 0%. While on weekends the category "very high" by 10% (10 students), "high" by 16% (17 students), "enough" by 50% (52 students), "low" by 17% (19 students), and "very low" by 8% (8 students). It can be concluded that the screen time level of students on weekdays is higher than on weekends. Next is the result of research data on the level of nutritional status in children.

**Table 3.7 Student Nutritional Status**

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Student Nutritional Status</th>
<th>Frequency</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3 SD sd &lt; -2 SD</td>
<td>Thinness</td>
<td>11</td>
<td>10%</td>
</tr>
<tr>
<td>-2 SD sd +1 SD</td>
<td>Normal</td>
<td>76</td>
<td>72%</td>
</tr>
</tbody>
</table>
According to table 3.7, it can be seen that students whose nutritional status is "Thinness" by 10% (11 students), "normal" by 72% (72 students), "overweight" by 8% (8 students), and "Obese" by 10% (10 students). The average nutritional status of children in this study was normal, as much as 72%.

Normality test

The normality test results using the SPSS version 21 for the variables of physical activity, screen time, sedentary behaviour, and body mass index are as follows.

**Table 3.8 Normality Test Result using *Kolmogorov-Smirnov***

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Kolmogorov-Smirnov</th>
<th>p</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity</td>
<td>0,011</td>
<td>0,05</td>
<td></td>
</tr>
<tr>
<td>Sedentary Behaviour</td>
<td>0,000</td>
<td>0,05</td>
<td></td>
</tr>
<tr>
<td>Screen Time</td>
<td>0,000</td>
<td>0,05</td>
<td></td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>0,000</td>
<td>0,05</td>
<td></td>
</tr>
</tbody>
</table>

According to table 3.8, the normality test results of all research variables show that the data is not normally distributed because p < Sig. 0.05.

Linearity Test

The results of the linearity test of data using SPSS version 21 for the variables of physical activity, sedentary behaviour screen time, and body mass index are as follows.

**Table 3.9 Linearity Test Results**

<table>
<thead>
<tr>
<th>Variable</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deviation Of Linearity</td>
</tr>
<tr>
<td>X1.Y</td>
<td>0,987</td>
</tr>
<tr>
<td>X2.Y</td>
<td>0,767</td>
</tr>
<tr>
<td>X3.Y</td>
<td>0,511</td>
</tr>
</tbody>
</table>

Keterangan:

- X : Physical activity
- X2 : Sedentary behaviour
- X3 : Screen Time
- Y : Nutritional health status

Table 3.9 shows that all deviation of linearity values (p > Sig. 0.05) means all data is linear.
Statistic test
The results of the linearity test using SPSS version 21 can be seen in the following table:

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Spearman's rho</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1.Y</td>
<td>105</td>
<td>0.738</td>
<td>-0.024</td>
</tr>
<tr>
<td>X2.Y</td>
<td>105</td>
<td>0.100</td>
<td>0.161</td>
</tr>
<tr>
<td>X3.Y</td>
<td>105</td>
<td>0.001</td>
<td>0.331</td>
</tr>
</tbody>
</table>

Table 3.10 shows no significant relationship between physical activity and sedentary behaviour with the nutritional status of elementary school students in urban areas. With sig value. 0.738 > 0.05 and sig. 0.100>0.05. Meanwhile, there is a significant relationship between screen time and the nutritional status of children in urban areas, with a value of sig.0.001 <0.05.

4 Discussion
The Correlation between Physical Activity and Nutritional Status
The results of the Spearman rank correlation test analysis showed no correlation between physical activity and the nutritional status of students. The value of the correlation coefficient is negative, i.e., -0.024. Thus, the conclusion is that physical activity is not a factor affecting nutritional status. Further factors that affect body mass index are genetic, environmental, and socio-economic.

The low level of physical activity carried out by adolescents can affect adolescent weight gain. Obese adolescents have low activity levels because they have an inactive habit of just sitting at home after school without doing any activities [16]. Someone who is less active in activities or has a sedentary lifestyle tends to be obese, affecting the condition of a person's body. Physical activity is one of the factors that affect nutritional status. The lighter the intensity of physical activity, the more it can affect nutritional status and even cause obesity [17].

Physical activity is when the muscles and the body's movement activities are carried out to produce energy [18]. Most of the energy expended depends on how strenuous the activity is. The low physical activity of students because of the high sedentary activity carried out by students affects obesity [19]. The school environment is one of the factors that affect physical activity. Physical activity is promoted by various games that can be found in schools [20]. Physical activity will increase if the facilities and teacher assistance to students are also good [21].

One factor in increasing students' physical activity is the facilities and infrastructure every school must own. The factors for low physical activity are lack of knowledge, motivation and availability of supporting facilities to conduct activities [22]. Increased physical activity can reduce the risk of degenerative diseases.

The Correlation between Sedentary Behaviour and Nutritional Status
According to the Spearman rank test analysis, there is no correlation between sedentary behaviour and body mass index. Low activity can cause a high risk to the child's health [23]. Sedentary behaviour and lack of physical activity become one health problem in one-third of adolescents to adulthood. A sedentary lifestyle can only spend more than 4 hours sitting [24]. This lifestyle tends to expend less energy. Hence there is no balance between energy intake and energy output, resulting in obesity [25].

Sedentary activity is formed from a person's habits and lifestyle related to the activities he does in daily life. Several factors that increase sedentary behaviour, such as technological advances, age, and gender, affect sedentary behaviour because children prefer to spend their time watching television, adequate social and economic status and long working hours [26]. The increase in sedentary activity is due to more time for sedentary behaviour than other activities [27]. One of them is technological advances that provide comforts such as watching television and videos, using cell phones for lifestyle, and socio-cultural background [28]. The impact of COVID-19 is one of the factors for lifestyle changes, especially in Indonesia. Large-scale lockdowns have increased sedentary behaviour among Indonesian youth [29]. COVID-19 disrupts daily activities, especially during the lockdown, including lifestyle changes in food consumption and physical activity [30].

The effects of the COVID-19 pandemic have led to unhealthy activities, such as lack of physical activity, increased consumption of alcohol and cigarettes, as well as causing sleep disturbances and high screen time. The high duration of television viewing in sedentary behaviour can affect body mass index, resulting in social problems with the surrounding environment [31].

The Correlation between Screen Time and Nutritional Status

Based on the analysis of the Spearman rank test, there is a significant relationship between screen time and the nutritional status of students. This means that the higher the screen time, the higher the effect on the nutritional status of students. Increased screen time is caused by sitting, standing or lying while screen time, which affects the imbalance of incoming energy and causes unbalanced nutritional status [32]. High screen time viewing caused by consuming high-energy snacks such as biscuits, crackers, and isotonic drinks can cause obesity [33].

Several factors influence the high screen time activity in adolescents, i.e., parents' social and economic factors, parental education and location of residence because the ratio of students who live in urban areas spends more time in front of the television, computer or playing PlayStation [34]. This high screen time is one of the new phenomena that impact the emergence of more nutritional status [35]. Screen time belongs to the category of light sedentary activity [36]. The screen time viewing done by students limits the recommended exposure limit to one day, which is < 2 hours [37].

Excessive screen time causes health problems such as reduced sleep time. The cause of reduced sleep time is the light from the screen and an increase in energy intake [38]. Adolescents who sleep less than 8 hours per day tend to have a high fat intake, consuming high-calorie foods that impact obesity. One of the effects of increased screen time is ignoring the surrounding environment, neglecting sleep time and decreasing student achievement [39]. Prolonged screen time exposure has a detrimental effect on sleep quality, leading to the risk of academic decline, obesity and depression [40].

The high activity of screen time here shows that the influence of electronic media on students' daily habits is enormous. If the screen time is not carried out following the recommendation, which is < 2 hours a day, it can cause changes in eating habits [41]. Another impact of excessive
screen time is addiction, believing that screen time is an activity that must be done so that children do not have time to interact with the environment [42].

5 Conclusion

The study results show no correlation between physical activity and nutritional status because the direction of the correlation is opposite. The correlation value between physical activity and the nutritional status of students is negative. In contrast, for the variable of sedentary behaviour and the nutritional status of students, there is no significant correlation, but the correlation between variables is positive. Meanwhile, for the screen time results with the nutritional status of students, there is a significant correlation, and the direction of the correlation is positive, and the strength of the correlation is sufficient to affect the nutritional status of students. The conclusion is that the increase in the nutritional status of students is much influenced by the duration of the high screen time of students.

Acknowledgements

This research would not have been possible without the support of various supporting parties. The research sample was SDN 222 Pasir Pogor, Bandung City students, teachers, and my students who helped return research data, as well as support from senior lecturers and the Head of Study Programs. Thank you for all the support ranging from moral to financial support, so that this research can be carried out correctly. This research is certainly not perfect. Thus, criticism is highly expected to provide feedback for improvement in future research.
References


Hitting The Bull’s Eye Through An Evaluation Of Special Program For Sports (SPS)

Jhovelyne Acosta-Espiritu1, Rebecca M. Alcuizar2

{jhovelyneacostal2@gmail.com1, rebecca.alcuizar@msu-iit.edu.ph2}

Mindanao State University- Iligan Institute of Technology (MSU-IIT) Iligan City, Philippines1, MSU-Iligan Institute of Technology, Iligan City, Philippines2

Abstract. This study aimed to know the status of implementation of the Special Program for Sports (SPS) as evaluated by SPS specialists and SPS in terms of admission to the program, retention in the program, recognition, teacher/coach qualifications, and incentives/benefits. Sports participation plays a pivotal role in the makeup of young athlete; it gives health benefits, enhance one’s personality, improve physical and mental well-being, ameliorate social skills, and develop positive spirit through teamwork. The study utilized descriptive-research design. The study indicates that there is a significant difference on the evaluation of specialists and students in terms of incentives/benefits while admission to the program and retention in the program found to be not significant. On the other hand, the study also sought to test the significant difference of the students’ SPS evaluation when grouped according to age, gender, year level and sport specialization. The result shows no significant difference in terms of these students’ profiles. Based on the findings, the researcher prepared a strategic plan for the enhancement of the program which focuses on infrastructure and capacity building.

Keywords: Hitting, Evaluation, Special Program For Sport
1 Introduction

Sports participation plays a pivotal role in the makeup of young athletes; it gives health benefits, enhance one’s personality, improve physical and mental well-being, ameliorate social skills, and develop positive spirit through teamwork. Researches show that physical activity helps maintain a healthy body weight and minimize the adverse effects of a modern, high-tech lifestyle by reducing stress and improving mental health. Those who play sports have better bearing, positive and appealing body image than those who do not participate in sports at all (McEntegart and Werthein, 2010).

A sport is also considered competitions which involve winning and losing. This exposes the players to both successes and failures. Sports build a competitive spirit in children and teach them to be participative irrespective of whether the participation concludes in a victory or a defeat. Playing sports educate a person to accept both successes and failures in a positive spirit and one of the most important benefits of playing sports is the spirit of sportsmanship.

Being one of the favorite activities of Filipinos, sports become part of the Philippine culture. In schools, sports program is anchored through physical education which is a regular component of primary and secondary school curriculums throughout the Philippines. The importance of sports is invaluable and goes much further than the basic answer that “it keeps kids off the street”. Cooperwood (2009), pointed out that it does in fact keep kids off the streets, but it also instills lessons that are essential in the life of a student athlete.

Because of the ample benefits of sports, the Philippine Sports Commission (PSC) encourage, promote, and sustain physical education, sports programs, league competitions, and amateur sports, including training for international competitions to foster self-discipline, teamwork, and excellent of a healthy and alert citizenry in coordination with the various government departments, agencies and private entities. Consequently, the Department of Education (DepEd) formerly known as Department of Education, Culture and Sports (DECS) implemented the Special Program for Sports (SPS) at the Secondary Level, DECS Memorandum No. 242 s 2000. This program has been piloted in fifteen (15) public secondary schools nationwide, which include Iligan City National High School (ICNHS) since June 2000. This sports program development of DepEd aims to produce highly competitive athletes and has envisioned to strengthen its talent and thereby harnessing the full potential of the young Filipino athletes.
The implementation of the school-based SPS on the year 2000 developed a sound and remarkable learning experience in ICNHS. It has brought about a higher increase of achievements and admirable performances in the field of sports. There are success stories among athletes who are now enjoying scholarship from different universities in the country. However, in spite of the commendable performances of the SPS athletes the sports program still experiencing a lot of challenges and problems. It has encountered difficulty in the implementation as well as in the sustainability. In the field of sports, the program is in dire need of financial support to provide athletes training venues, complete facilities and equipment, and to send trainers and coaches to seminars and enhancement training.

Reflecting in the implementing guidelines DepEd order No. 26 series of 2004 for the institutionalization of SPS, the amount of 500,000.00 PhP will be allotted every pilot school. ICNHS did not receive any amount until the year 2010 possibly because it was also stated in the order that budget will be given according to the availability of funds. At present the program in ICNHS is developing and in progress however there are still many areas to be improved and developed.

The researcher as Physical Education (PE) teacher observed personally the prevailing scenario, difficulties and problems of the sports program. Thus, she will take the challenge to acquaint herself in the SPS implementation to be evaluated by SPS students and SPS specialists at ICNHS and to add literature of studies since this research work is not commonly studied in Iligan City.

2 Data Collection and Participants

The descriptive-research design will be used in the study. Manuel and Medel (1976, as cited by Calderon and Gonzales, 2004) descriptive methods of research describes what is. It involves the description, recording, analyses, and interpretation of the present nature, composition or process of phenomena. The focus is on prevailing conditions, that is, examining what actually is existing based on conditions, practices, and situations of the sports program. Since the study is on the evaluation of Special Program for Sports (SPS) of Iligan City National High School (ICNHS), the descriptive method of research is the most appropriate method to use.

This study was conducted at Iligan City National High School (ICNHS) main campus. The school was established on July 1, 1963 and has an area of 3.5 hectares. The school site is located in General Wood Street, Barangay Mahayahay, Iligan City near the Public Library and situated in front of Iligan City Central School.

ICNHS is one of the schools chosen to become a pilot school of Region X since record shows that the school has major and significant contribution in division, regional, and national meet. Athletes in the different sport events are competitive enough to compete even up to national meet or Palarong Pambansa. This is therefore the main reason why the researcher is interested to have the locale of the study at ICNHS.
The respondents of this study were all SPS specialists and sample SPS students from first to fourth year who were officially enrolled at ICNHS SY 2013-2014.

For the SPS students questionnaire, the researcher approached the teacher and asks permission to enter the class for a short period of time. The researcher then explained first what the study all about and gave further instructions to the students. The researcher answered the questions from the respondents for some items that they could hardly answer.

For the SPS Specialists questionnaire, the researcher handed over the paper during their vacant time in school. They were given five days to complete and fill in all the data reflected on the questionnaire. After the retrieval of the questionnaire, the researcher was reading through their responses and meeting each specialist for deeper information, depending on their availability and preferred schedule.

More so, FGD was also used in gathering data to deepen the facts and information about SPS. There were 8 SPS specialists and 8 athletes who participated in the discussion. Separate schedule set for the specialist and for athletes. The MAPEH office was the venue for the FGD where the researcher serves as the facilitator and a MAPEH teacher for taking down notes. The gathering was somewhat informal that everybody was free to voice out their insights and experiences. A focus group discussion (FGD) is a good way to gather together people from similar backgrounds or experiences to discuss a specific topic of interest. FGDs can be used to explore the meanings of survey findings that cannot be explained statistically, the range of opinions/views on a topic of interest and to collect a wide variety of local terms. In bridging research and policy, FGD can be useful in providing an insight into different opinions among different parties involved in the change process, thus enabling the process to be managed more smoothly and efficiently (http://www.odi.org/publications/5695-focus-group-discussion).

3 Results and Discussions

<table>
<thead>
<tr>
<th>Point</th>
<th>Scale</th>
<th>Response</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4.20-5.0</td>
<td>Strongly Agree</td>
<td>Highly Implemented</td>
</tr>
<tr>
<td>4</td>
<td>3.40-4.19</td>
<td>Agree</td>
<td>Moderately Implemented</td>
</tr>
<tr>
<td>3</td>
<td>2.00-3.39</td>
<td>Neutral</td>
<td>Implemented</td>
</tr>
<tr>
<td>2</td>
<td>1.80-2.59</td>
<td>Disagree</td>
<td>Slightly Implemented</td>
</tr>
<tr>
<td>1</td>
<td>1.00-1.79</td>
<td>Strongly Disagree</td>
<td>Not Implemented</td>
</tr>
</tbody>
</table>

3.1 Statistical Tools

1. Mode – is the value that occurs the most frequently in a data set.

2. Percentage (%) – This is used to determine the percentage of the respondents with the quality of interest. The formula is given by:
\[
\% = \left( \frac{NR}{TR} \right) \times 100\%
\]

where:
- NR- is the total number respondents with the quality of interest.
- TR- is the overall total of respondents.

3. Mean – this is used to determine the value intermediate between the extreme members of the set. The mean denotes the sum of the numbers divided by n.

4. T-test. T Test is often called Student's T test in the name of its founder "Student". T test is used to compare two different set of values. It is generally performed on a small set of data. T test is generally applied to normal distribution which has a small set of values. This test compares the mean of two samples. T test uses means and standard deviations of two samples to make a comparison. The formula for T test is given below:

where:
- \( x_1^- \) = Mean of first set of values
- \( x_2^- \) = Mean of second set of values
- \( S_1 \) = Standard deviation of first set of values
- \( S_2 \) = Standard deviation of second set of values
- \( n_1 \) = Total number of values in first set
- \( n_2 \) = Total number of values in second set.

where:
- \( x \) = Values given
- \( x^- \) = Mean
- \( n \) = Total number of values

**Findings**


Based on the data analysed according to the ten (10) problems, the following findings are presented below:

1. It was found that there were more female students than male students with 51.3%. It was also found out that majority of the students belong to ages fourteen (14) to fifteen (15). More so, it was found out that majority of the SPS students belong in Grade 7 formerly known as First Year. And enormous number of the students enrolled in the program specialized volleyball.
2. It was found that most of the SPS specialists fall into ages 44-52 which comprise 50%. It was also found out that most of the specialists fall into 0-5 years of experience and there is an equal number of female and male specialists and 55.5% of them attended seminars in National level.
3. It was found out that the status of SPS implementations as evaluated by the specialists based on admission of the program is Highly Implemented with the mean of 4.85. Also the retention of the program is Highly Implemented with the mean of 4.35. Furthermore recognition and teacher/coach qualifications are Highly Implemented with mean of 4.77 and 4.23. However the status of SPS implementations based on incentive/benefits was Moderately Implemented with the mean of 4.11.
4. It was found out that the status of SPS implementations as evaluated by the SPS students based on admission of the program is Moderately Implemented with the mean of 4.04, also the retention of the program is Moderately Implemented with the mean of 4.09. It was also found out that incentives/benefits is Implemented with the mean of 2.65.

5. It was found out that there is no significant difference between specialists and students evaluation on the status of SPS implementation based on admission of the program and retention in the program. However, in the incentives/benefits it was found out that there significant difference.

6. It was found out that there is no significant difference of the students’ SPS evaluation when grouped according to age, gender, year level, and sport specialization.

7. It was found out that the dominant competencies of the SPS students under Knowledge and Understanding, are the following: “Describe the nature and background of the sport”; Practice athletic training in legally competent manner”; “Understand the consequences of violating the laws”; “Recognize that proper conditioning and good health are vital as an athlete”; “Undertake physical activity and physical fitness”; “Focus on the key points of the game”; and “Explain the need to select food based on the nutritional needs during training”. Furthermore, under Essential Skills in Sport, the following dominant competencies were found out: “Execute the skills involved in the sport”; and “Recognize that proper conditioning and good health are vital to the prevention of athletic injuries”.

8. It was found out that the problems encountered by SPS specialists are insufficiency of financial support, no suitable training venue for some events, no swimming pool in the school, athletes cannot afford the materials and equipments, athletes experience difficulty in sustaining due to economic status of parents, some athletes exhibit poor character, lack of equipments, lack of discipline, athletes do not know how to balance time, they do not have time management, absenteeism during training, and athletes don’t have the dedication. Furthermore, it was found out that the problems encountered by the SPS students are their parents can hardly support the expenses, cannot afford to provide own sports equipments, lack of equipments, the gym is so crowded, too many athletes during training, no proper venue for training, no fee uniform, no allowance given, do not have enough budget for the fare going to the swimming pool, can hardly afford for the entrance fee in the swimming pool, no training shoes, no extra allowance given from parents, feeling very hungry after training, can hardly balance academic and SPS, training is exhausting, very thirsty after training, late in coming home, parents will question, the coach is not dedicated to train appropriately, and forced to attend SPS curriculum. It was then found out that among the several problems it is the crowded gym and no proper venue got the highest number of responses from 8 participants in FGD. It was also found out that the recommendations of the SPS specialists for SPS improvement in terms of the admission to the program are: athletes during elementary grades should be given priority to enrol in SPS program, the height of the students must be considered, physical exam must be conducted to the prospective students, orientation must be given to both students and their parents to understand the purpose of the sports program, and skill test must be conducted to determine the students’ sports inclination; in terms of retention in the program the recommendations are: assessment at the end of the school year, maintain the grade as stated in the SPS guidelines with good moral character, maintain the grade of 85% or above, be a disciplined students, and SPS students must comply to all the requirements of the program; in terms of recognition the recommendations are: deserving athletes should be given medals, deserving athletes should be given certificates,
winners’ name must be announced, and winners’ name must be published in the school bulletin and school paper; in terms of teacher/coach qualifications the recommendations are: must undergo national accredited training, Bachelor Degree with special skills in sports, should have playing experience and background, yearly training with financial support from the DepEd, must be committed and dedicated to the program, and diligent and knowledgeable of the sports assigned; in terms of incentives/benefits the recommendations are: grant cash, uniforms, recognition, players and teachers should have medical/accident insurance, provide vitamins, provide additional equipments, monthly training allowance for deserving athletes, and guidelines for teachers'/coaches’ incentives/benefits stated from the DepEd must be implemented. Furthermore, it was found out that the recommendations of the athletes for the SPS implementation improvement are: big improved training center, receive monthly allowance, there should be lockers for athletes, scholarship grant for athletes in college years, to receive complete set of uniform including footwear, good and well trained coach, free insurance paid by the school, watch and give attention to those athletes who are undisciplined and bullying other athletes, free meal for athletes, maintenance personnel for the gym and comfort room so that we will not clean anymore, more financial support, complete facilities and equipments per sport specialization, provide fare in going to the venue for swimming athletes and sponsorship for the pool entrance, and free refreshments after training.

4 Recommendations

In the light of the findings and conclusions, the following recommendations are offered; to wit:

1. Eligibility of the SPS teachers and coaches must be taken into consideration when handling the SPS program.
2. Infrastructures for the playing venue must be improved considering the safety of the athletes and coaches while training.
3. Allotment of budget for the erection of new building for SPS training venue must be prioritized.
4. Allotment of budget to build a swimming inside the school.
5. Allotment of budget to send specialists every year for National trainings.
6. Allotment of budget for SPS students for their regular monthly allowance.
7. Provision of adequate physical resources including facilities, equipment and maintenance must be given priority.
8. SPS coordinator and school principal must collaborate with the City Government officials, private entities, and stakeholders to back up with financial support and to suffice the necessary funding needed to provide the deficient areas in SPS.

References

Proceedings of the 8th ACPES (ASEAN Council of Physical Education and Sport) International Conference

October 28th – 30th, 2022, Medan, North Sumatera, Indonesia

ACPES 2022

Copyright © 2023 EAI, European Alliance for Innovation

www.eai.eu

acpes.stokbinaguna.id

ISBN: 978-1-63190-399-1
EAI Computing and Communication in Emerging Regions - CCER

The EAI Computing and Communication in Emerging Regions Series have already published proceedings from more than 20 conferences of various scopes. In line with EAI’s values of equality and openness, their mission is to give greater visibility to research and innovation from emerging regions and share the knowledge worldwide. The audience for the proceedings consists of researchers, industry professionals, graduate students as well as practitioners in various fields. CCER harnesses the Open Access platform to simultaneously guarantee free exposure and distribution, under the Creative Commons license. In addition to being available in European Union Digital Library, the proceedings are disseminated to an even wider audience by being indexed in ProQuest, CNKI, Google Scholar and EBSCO.

European Alliance for Innovation

EAI is a non-profit organization with free membership and the largest open professional society for advancing research careers through community collaboration and fair recognition. Members benefit from finding feedback and mentorship for their work and they are guaranteed to be evaluated fairly, transparently, and objectively through community.

ISBN: 978-1-63190-399-1
ISSN: 2593-7650

http://eudl.eu/series/CCER | www.eai.eu