

# Research on the Correlation between Physical Activity and Subjective Well-being of Vocational College Students in COVID-19 Campus Closed Management Based on Computer Software Analysis

Hui Li<sup>1</sup>, Hu Zhou<sup>2</sup>, Xianfeng Huang<sup>2\*</sup>

182803358@qq.com, tyxzhouhu@163.com, \*Corresponding author: 29341408@qq.com

<sup>1</sup>Basic Section, Chenzhou Vocational Technical College, Chenzhou, Hunan Province, China

<sup>2</sup>College of Physical Education, Xiangnan University, Chenzhou, Hunan Province, China

**Abstract**— After the outbreak of COVID-19, the importance of health is more prominent. Living a good life can not only improve the physical quality of vocational students, but also enhance their subjective well-being, so that vocational students can gain more positive motivation in their study and life. Using cross-sectional study, based on 430 students of physical activity behavior and subjective well-being questionnaire investigation, using the computer software analysis software SPSS to outbreaks of higher vocational students school physical activity during the frequency analysis, described in five dimensions, analysis of the subjective well-being, and T test was carried out on the subjective well-being of gender differences, And the correlation analysis between physical activity and subjective well-being. The results showed that the physical activities of vocational college students during the epidemic period were mainly composed of aerobic and anaerobic mixed activities of low intensity and light exercise, which lasted from 31 to 60 minutes each time. Most students would do physical activities 1-5 times a week, and the activity frequency was improved. The subjective well-being of vocational college students was good, and there were significant differences between male and female in life satisfaction, negative emotion and positive emotion, while there was no difference in negative emotion and body satisfaction. The correlation analysis between physical activity and SWB shows that there is no significant correlation between physical activity and all dimensions and overall dimensions of SWB. The frequency of physical activity is significantly correlated with life satisfaction, learning satisfaction and positive emotions of SWB, and is correlated with negative emotions and overall happiness. In a word, the participation of high vocational students in extracurricular physical activities during the epidemic period is conducive to the improvement of subjective well-being. It is suggested to improve students' awareness of physical activity, cultivate 1-2 sports skills, and lay a foundation for lifelong sports. Higher vocational students should understand the influence of physical activity on subjective well-being and arrange appropriate physical activities reasonably, so as to improve their subjective well-being.

**Keywords**-Computer software analysis; Physical activity; Subjective Well-being

## 1. Introduction

Happiness is a goal that every society is striving to pursue and achieve [1]. Subjective well-being (SWB) refers to an individual's overall evaluation of his or her life quality according to the standards determined by himself [2]. Subjective well-being includes two components: cognitive evaluation (life satisfaction) and emotional experience (positive and negative emotions). Subjective well-being, as one of the important indicators to measure the degree of individual positive mental health [3], is of great significance to human development. Individuals with high SWB are more likely to have high quality of life, harmonious interpersonal relationship and good mental health [4].

The newly revised *Vocational Education Law of the People's Republic of China*, which takes effect on May 1, 2022, shows that vocational education is equally important as general education. With the expansion of higher vocational colleges, the number of higher vocational students is gradually increasing. Higher education at present, higher vocational school students accounted for nearly half of the students, but compared with common undergraduates, the students are mostly from the college exam achievement is low or the group, research has pointed out that higher vocational students generally there are all kinds of bad problems, such as psychological quality is poor, poor behavior, poor study habits[5], there is an upward trend in the detection rate of higher vocational students psychological problems also[6].The physical and mental health of higher vocational students has aroused social concern. In particular, due to the rebound of COVID-19, medium-high risk areas have emerged in many parts of the country. In order to prevent the spread of COVID-19, many colleges and universities have implemented closed management, which limits students' going out, affecting their life, study and psychological aspects. Practice has proved that regularly taking part in physical activities is the best way to prevent and treat bad physical conditions and improve physical quality, as well as promoting mental health. Therefore, higher vocational students' physical and mental health problems, understand the outbreak during school closure present physical exercise and subjective well-being level of higher vocational students, analysis of the relationship between physical exercise and subjective well-being of higher vocational students, encourage students to strengthen physical exercise, through physical exercise to adjust during the period of school closure bad mood and attitude, alleviate the pressure of the life and learning, promote students psychological and physical health, Enrich and enrich the after-school life during the school, improve the subjective well-being of higher vocational students, in order to better improve their mental health level and social adaptability, but also for the school and physical education teachers in guiding higher vocational students to provide certain reference.

The concept of sense of happiness first appeared in psychology and was gradually adopted by management, sociology, economics and other disciplines [7]. Jacobson (1938) studied psychological anxiety through gradual relaxation exercise[8]. Petruzzello (1991) studied the relationship between physical exercise and anxiety control, and the results showed that people who regularly participate in exercise are less prone to anxiety than those who do not exercise, and the effect of exercise is more effective than simple relaxation [9]. Zhou Hao and Zhou Qianyu (2022) believe that physical activity can not only improve college students' subjective well-being, but also directly affect it [10].

Throughout the previous studies, it is found that there are more studies on college students and the elderly, and fewer studies on vocational college students. It is a well-known fact that the subjective well-being of vocational college students in China is generally low. Although there are many factors influencing it, lack of enough physical exercise is one of the important reasons.

## **2. Materials and Methods**

### **2.1 Respondents**

The method of random cluster sampling was used to conduct a questionnaire survey on 436 students of Chenzhou Vocational and Technical College. With the help of the network questionnaire platform Jinxing, 430 valid questionnaires were obtained after eliminating the invalid ones such as short time and regular answers. The efficiency of the questionnaire was 98.6%. In order to ensure the quality of the study, as many subjects as possible were involved in each grade of each college in the process of questionnaire distribution. Among them, 264 men accounted for 61.4% and 166 women accounted for 38.6%.

### **2.2 Survey Tool**

The questionnaire on *Physical Activity and Subjective Well-being of Vocational College students during the Epidemic Closure period* in this study is compiled by screening and restructuring the survey items on the basis of referring to relevant research results, and by clustering statistics of small samples. The questionnaire is divided into three parts. The first part is the basic information of the respondents. The second part adopts the *parS-3 Physical Exercise Scale* revised by Liang Deqing et al. In the third part, there are 35 questions and five dimensions (life satisfaction, negative emotion, learning satisfaction, positive emotion and physical satisfaction) in the self-evaluation of subjective well-being during the epidemic closure period. In order to avoid the reaction set or measurement error of students, 12 reverse questions are set in the questionnaire. Reverse scoring requires a conversion in the scoring process, and all items are randomly arranged. The Alpha value of Cronbach is 0.914. Generally, when the internal consistency  $\alpha > 0.80$ , it indicates that the questionnaire has good reliability. The validity of the questionnaire was tested. KMO value was 0.948,  $df = 595$ ,  $P < 0.00$ , indicating very high validity.

### **2.3 Survey implementation**

The questionnaire was conducted in April 2022, and the investigated school is Chenzhou Vocational and Technical College, where the author teaches. Affected by the rebound of COVID-19, the school has implemented a closed campus management for nearly two months from the beginning of the semester to the time of the questionnaire issuance. With the consent of the college and the assistance of the physical education teacher, the physical education teacher will issue electronic questionnaires to the students in the form of two-dimensional code with the help of the online questionnaire platform Wenjuanxing.

### **2.4 Statistical analysis**

Import excel version of data downloaded from questionnaire into SPSS, edit and set it, delete useless content, add value label, and use software SPSS22.0 for statistical analysis. Statistical processing such as abnormal data elimination, descriptive statistics, T test and correlation

analysis were carried out on the valid questionnaire data collected to reveal the correlation of sample data.

### 3. Results

Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads-the template will do that for you.

Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar:

#### 3.1 Analysis of physical activity of vocational college students during COVID-19 lockdown

Physical activity not only helps to improve the physiological level of the body's various organ systems, but also helps to improve health, prevent diseases, reduce fat and build muscle, and build a perfect figure. In order to understand the general situation of extracurricular sports activities of students in Chenzhou Vocational and Technical College during the period of closed management, some students were investigated. The statistical results of the specific survey are as follows:

##### 3.1.1 Physical activities of vocational college students during school closed management

**Table 1** Physical activities of higher vocational students

Activity project	N	%
Badminton, table tennis and other aerobic anaerobic mixture	267	62.1
Indoor running (jogging), dancing, doing exercises and other aerobic exercises	127	29.5
Barbell, dumbbell, fast push-ups and other anaerobic exercises as the main category	36	8.4
Total	430	100

Table 1 shows that badminton, table tennis and other aerobic and anaerobic sports are the main sports for vocational college students, accounting for 62.1%, followed by indoor running (medium jogging), dancing, doing exercises and other aerobic sports accounting for 29.54%, barbell, dumbbell, fast push-ups and other anaerobic sports accounting for 8.4%. After the outbreak, the levels of most of people activity is conducted on campus, as a result, although the closed-end management, just out of college, or free activities on campus, so the impact on their sports project is relatively small, big change is indoor sports, outdoor sports into campus space equipment requirements is not high significantly increased the number of sports, For example, indoor sports activities such as rope skipping, yoga and freehand exercises have increased significantly.

### 3.1.2 Physical activity intensity of vocational college students during school closed management period

**Table 2** physical activity intensity of higher vocational students

Physical activity intensity	N	%
A slight movement	148	34.4
Light intensity exercise that is not too intense	160	37.2
Intense, prolonged exercise of moderate intensity	58	13.5
Intense, prolonged exercise of moderate intensity	53	12.3
Intense, prolonged exercise with shortness of breath and a lot of sweating	11	2.6
Total	430	100

Table 2 shows that the physical exercise intensity of vocational college students is mainly small intensity and light exercise, accounting for 37.2% and 34.4% respectively, reaching 71.6% of the total number of students. It shows that the after-school physical exercise of vocational college students prefer to take part in small intensity and light sports. Physical activity intensity is equal to the amount of exercise per session divided by the average exercise time [30]. Vocational college students are between 14 and 22 years old. They are in adolescence. They are lively and active. Take part in light intensity and light exercise to relax your mind and get rid of the boring time in school. The amount of exercise is too small and has no exercise effect, which is not conducive to the improvement of physical health. However, long-term and intense exercise will lead to physical dysfunction, decreased immune function and increased risk of sports injury. In order to promote physical and mental health, the outbreak during the period of school closure, in order to ensure the movement is safe and effective, should according to own actual conditions of higher vocational students reasonable moderately increase or reduce the intensity of exercise, do vary from person to person, step by step, follow the principle of security, scientific, moderate and diversification, with low intensity is given priority to, achieve the goal of exercise have fun.

### 3.1.3 Physical activity time of higher vocational students during closed school management

**Table 3** Physical activity time of higher vocational students

Activity time	N	%
Less than 20 minutes	53	12.3
21 to 30 minutes	116	27.0
31 to 60 minutes	139	32.3
More than 60 minutes	122	28.4
Total	430	100

Table 3 shows that the most physical activity time of vocational college students is 31 to 60 minutes, accounting for 32.3%, followed by 28.4% for more than 60 minutes, 27.1% for 21 to 20 minutes, and 12.3% for less than 20 minutes. During the closed management period of

epidemic schools, the number of students lasting less than 30 minutes increased significantly, indicating that the duration of each activity of some students is insufficient, and the persistence and motivation for physical activity of vocational students are not very sufficient. Due to the closure of schools due to COVID-19, the choice of sports venues for higher vocational students is limited to the campus, which leads to an increase in physical activities in the dormitory, and some indoor sports events that are popular on the Internet are popular in the dormitory. Activity duration is significantly reduced. The amount of exercise that lasts more than 30 minutes each time is more appropriate. It can not only promote the blood circulation of the human body, but also help people improve their heart and lung function, accelerate the metabolism of the body and improve the metabolism of the body. The duration of physical activity of higher vocational students is more than 60 minutes, accounting for 28.4%, indicating that the physical activity time of higher vocational students is too short, which is not conducive to the development of body organs and various functions. Therefore, in order to achieve more efficient activity effect, it is suggested that higher vocational students should increase the activity time appropriately during the exercise process.

### 3.1.4 Physical activity frequency of vocational students during school closed management period

**Table 4** Physical activity frequency of higher vocational students

Physical activity frequency	N	%
Less than once a month	36	8.4
Two to three times a month	75	17.4
Once or twice a week	163	37.9
Three to five times a week	94	21.9
About once a day	62	14.4
Total	430	100

Table 4 shows that during the period of school closed management, the physical activity of vocational college students is mainly 1-2 times per week, accounting for 37.9%, followed by 3 to 5 times per week, accounting for 21.9%. Since the outbreak of the epidemic, people's health awareness has been greatly improved, and physical exercise to enhance resistance has been deeply rooted in the hearts of the people. The health awareness of vocational college students has also been improved. Most students take physical activity 1-5 times a week, indicating that the epidemic closure of school exercise activities less than 3 times a month. It shows that this part of higher vocational students do not often take part in physical activities in a certain period of time consciousness is weak, so they do not understand the role of physical activities and positive benefits for the body. Interest is the best teacher, schools and parents should guide vocational students to develop the habit of persisting in physical activity, so as to independently cultivate their interest in sports learning, learn 1-2 sports skills during school, and stick to it for a long time, and develop the habit of lifelong exercise. that higher vocational students should increase the activity

### 3.2 Descriptive statistical analysis of subjective well-being of vocational college students during closed management of epidemic schools

**Table 5** Descriptive analysis of SWB of higher vocational students

	N	MIN	MAX	AVG	SD
Life satisfaction	430	1.00	5.00	3.87	0.74
Negative emotions	430	1.00	5.00	2.09	1.03
Learning satisfaction	430	1.00	5.00	3.59	0.93
Positive emotions	430	1.00	5.00	3.84	0.89
Body satisfaction	430	1.00	5.00	2.97	0.81
Overall well-being	430	1.00	5.00	3.26	0.52
N	430				

Table 5 shows that during the closed campus management period, the mean values of life satisfaction and positive emotions in subjective well-being of vocational college students are above 3.8, indicating that students have a good emotional state and high satisfaction with life. Higher vocational students are in adolescence children, between 14 and 21 in schools have their own friends, interpersonal is pure, now living condition is better, don't have to worry about food and clothing live line, although outbreaks school closure can't go out, but life, basic can guarantee their basic life to need, so their life satisfaction is higher. The mean value of student satisfaction is 3.59, indicating that students' evaluation of learning is between uncertain and basically satisfied. Did not take an examination of higher vocational students are high school or college students in vocational school, the students cultural base is uneven, study habits differences, enter vocational schools have no entrance pressure, suddenly lost direction and relaxed in their learning, so don't know about their learning condition, so the learning satisfaction between uncertainty. The mean value of negative emotions and physical satisfaction is low and lowest, between basic dissatisfaction. The increase of negative emotions is greatly affected by the epidemic. Active vocational students cannot go out of school, which limits their freedom to go out, and negative emotions also increase. The emergence of the Novel Coronavirus outbreak has raised their awareness of the importance of good health. Having a healthy body is the basis of resistance to the virus. They are willing to improve their health and have a general body satisfaction. Today's students are living in an era of relatively superior material conditions, especially when the epidemic is well controlled in China. Although there will be a rebound in early 2022, closed school management will affect their life and travel to some extent, and their overall happiness will be affected, so their overall happiness is average.

### 3.3 Gender differences of subjective well-being of vocational college students during closed school management

**Table 6** Analysis of T test results of gender differences in SWB

	Gender ( $\bar{x} \pm \text{sd}$ )		t	p
	Men	female		

Life satisfaction	3.94±0.71	3.76±0.77	2.36	0.01
Negative emotions	2.20±1.04	2.02±1.02	-1.73	0.08
Learning satisfaction	3.73±0.91	3.35±0.92	4.18	0.00
Positive emotions	3.93±0.87	3.70±0.93	2.49	0.01
Body satisfaction	3.02±0.73	2.88±0.71	1.85	0.64
Overall well-being	3.30±0.52	3.18±0.56	2.29	0.22

\*P < 0.05\*\*P < 0.01

Table 6 shows that there are significant differences between male and female in life satisfaction, negative emotions and positive emotions of various dimensions of subjective well-being of vocational college students (P & LT; 0.05), while there was no significant difference in negative emotional and physical satisfaction. Boys reported greater overall happiness than girls. Due to gender differences, the emotion control level of males is higher than that of females, and the average positive emotion and average negative emotion of males are higher than that of females. Girls love beauty more than boys and pursue the perfect figure, but they don't like sports. Therefore, the average body satisfaction of girls is significantly lower than that of boys.

### 3.4 Correlation analysis between physical activity and subjective well-being of vocational college students during closed management of epidemic schools

**Table 7** Correlation analysis of various dimensions between physical activity and SWB

	Activity project	Activities of mild	Activity time	Activity frequency
Life satisfaction	-.030	0.56	.083	-.131**
Negative emotions	-.007	-0.126**	-.120*	-.110*
Learning satisfaction	-.016	.116*	.120*	.181**
Positive emotions	.016	.140**	.102*	.148**
Body satisfaction	.027	.049	.013	.082
Overall well-being	-.013	.047	0.47	.113*

\*. The correlation was significant at 0.01 confidence (double test).

\*. At a confidence level of 0.05, the correlation was significant.

Spearman's correlation statistical method was selected in this paper mainly because the above independent variables are applicable to the test of ordination or categorization correlation, which belongs to the category of non-parametric test. The items, intensity, time and frequency of physical activity are all suitable for the correlation test of ordered independent variables, so Spearman method was selected to analyze them in this paper.

Table 7 that there are no significant correlation between physical activity items and all dimensions and overall dimensions of SWB (P>0.05). Activity frequency was significantly correlated with life satisfaction, learning satisfaction and positive emotions of subjective well-being (P<0.01), and was significantly correlated with negative emotions and overall well-being (P<0.05). Secondly, activity intensity was significantly correlated with negative emotions and positive emotions (P< 0.01), and activity time was significantly correlated with negative emotions, learning satisfaction and physical satisfaction (P < 0.05). Nothing else is relevant.



It can be seen that what kind of sports they engage in has little influence on the subjective well-being of vocational college students, because most of them are residential students who have been living on campus and most of their activities are carried out on campus. Even though the campus is closed and managed, it has little influence on the projects and activities they participate in. There is a significant correlation between activity frequency and life satisfaction, learning satisfaction and positive emotion, among which the correlation coefficient of learning satisfaction is the most significant with a correlation coefficient of 0.181. It shows that the more the number of activities, the higher vocational students are more and more satisfied with their study satisfaction, more satisfied in life, better mood, subjective happiness is also improved.

After the outbreak of the epidemic, people have a deeper understanding of health, the awareness that physical activity can enhance physical fitness has gradually increased, and more and more people take an active part in physical exercise. The research on physical exercise and physical health and happiness has been paid more and more attention by the academic circle. Through the study found that the outbreak during closed management, has a great influence on people's physical exercise project, but had been living on the campus of higher vocational students, influence on their physical activity refining project is relatively small, big change is indoor sports, outdoor sports into campus space equipment requirements is not high significantly increased the number of sports, Such as indoor physical exercise skipping, yoga, freehand exercises and other significant increase. In terms of the selection of sports items, badminton, table tennis and other aerobic and anaerobic mixed types are the main, and the main activities are light intensity and light exercise. The maximum physical activity time of vocational college students is 31 to 60 minutes, but there are still a considerable number of students each activity duration is insufficient. Most students do physical activity 1-5 times a week, with an increased frequency.

#### **4. Conclusion**

Epidemic through the study found that during the period of school, has a great influence on people's physical activity programs, but have been living on the campus of higher vocational students, influence on their physical activity program is relatively small, big change is indoor sports, outdoor sports into campus space equipment requirements is not high a marked increase of physical activity programs, Such as indoor physical exercise skipping, yoga, freehand exercises and other significant increase. In terms of the selection of sports items, badminton, table tennis and other aerobic and anaerobic mixed types are the main, and the main activities are light intensity and light exercise. The maximum physical activity time of vocational college students is 31 to 60 minutes, but there are still a considerable number of students who do not have enough time for each exercise. Most students do physical activity 1-5 times a week, with an increased frequency.

Schools and teachers should popularize the relevant knowledge of physical activity to high school students, so that students can fully understand the role and significance of physical exercise. Teach the students to master 1-2 sports skills, cultivate their active participation in the ideological awareness of physical exercise and fitness habits. Parents and teachers should fully understand the overall situation of students' subjective well-being, physical condition and psychological health level, and pay attention to students' emotional fluctuations and inner

feelings for happiness. To consider gender differences and other uncertain factors, reasonable arrangement of the right amount of physical activity. Students to understand the effects of physical activity for SWB, to know their physical quality, adopt the method of scientific and reasonable, targeted exercise, and insist on more than two or three times a week in the intensity of exercise, at the same time, to clear what kind of physical activity way for subjective well-being has a positive effect and promoting role. Schools, teachers and parents should encourage and support students to actively participate in physical activities and sports when time is sufficient.

### **Acknowledgment**

Thanks to the questionnaire surveyors and reference authors

### **References**

- [1] Layard,R.,Happiness:Lessons from a New Science,London:Penguin Books,2005,p.5.
- [2] DIENER E. Subjective well-being.Psychological bulletin,1984, p.542-575.
- [3] Yang Huai, ZHANG Hao, GONG Shaoying. Effects of social and economic status on subjective well-being of nursing Students: A multi-mediating model ,Chinese Journal of Clinical Psychology, 2021,pp.608-613.
- [4] DIENER E, RYAN K. Subjective Well-Being: A General Overview]. South African Journal of Psychology, 2009,p.391-406.
- [5] Ma Guofeng, ZHANG Stance, Tang Baoguo. Education and Career,2019,p.103-106.
- [6] Liang Xiaohua. The Relationship between Personality traits and Subjective Well-being of Vocational College Students: The Mediating role of crisis handling style.China Vocational and Technical Education,2020,pp. 92-96.
- [7] Yang Yinan.The Senses of Gain, Fairness and the Improvement of National Happiness----Analysis of Micro Survey Data Based on CGSS. Social Science Journal,2022,p.1-10.
- [8] Jacobson E.Progressive Relaxation.Oxford,England:Univ Chicago press:1938.133-158.
- [9] Kahneman, D & Krueger, A. B., "Developments in the Measurement of Subjective Well-Being, " Journal of Economic Perspective, vol.20, no. 1, pp.3-24,2006 .
- [10] Zhou Hao, ZHOU Qian-yu. Physical Exercise Empowers College Students' Subjective Well-being: The Chain Mediating Effect of Cognitive Reappraisal and Mental Toughness.Journal of Shandong Sport University. 2022,p.105-111.