

Screening for Sport Injuries Based on Android Application

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Abstract. Massage is a manual therapy that helps in the recovery process of injuries for athletes and non-athletes. A masseur must do a screening first. Treatment errors can be minimized by carrying out a screening process. The screening process is a process of looking at the injury criteria and the chronology of the injury. This study was conducted to assist the screening process so that the SOP for handling injuries remains in accordance with the rules for handling injuries with the conclusion that not all complaints that look the same will be given the same treatment, because it can be seen from the history of each individual who has a complaint. This study uses a research and development design from Borg and Gall, includes analyze the product to be developed; develop the initial product; expert validation; field trials; product revision; final result; and test the effectiveness of product development. Instruments used are questionnaire and interviews.

Keywords: Screening, sport injury massage, android, application.

1 Introduction

The development of news technology has developed very rapidly. Existing facilities provide convenience for users. applications are given for formal and non-formal activities to be used as support for work activities so that they can meet the needs of the organization using very fast, timely, relevant, and thorough work, one of the supporting work activities of an agency or company is to use the availability of supporting resources such as applications reliable benefits [1]. The positive consequences of the digital era have penetrated into mobile devices related to sports injuries in carrying out the screening process through applications on Android.

Stat Counter Android is an operating system that exists as the primary choice of citizens. The rapid development of Android indicates that there are interesting features and ease of operation. The number of android users in Indonesia for the July 2017 period was 84.09%, which has increased compared to 2016 as many as 73.80% [2]. Android is a very popular operating system used by the people, especially teachers. But in fact, the use of smartphones is not maximized to support learning [3]. Sharen (2015) smartphone use in Indonesia continues to increase every year, reaching the fifth largest global ranking in smartphone use. With the high use of smartphones and followed by the development of health services in the form of sports injury massage, it is hoped that it will help in the screening process [4].

The screening process helps to reduce consultation service time and is used as an indicator of criteria to state that an injury suffered by an athlete or non-athlete can be massaged. With these criteria, it is expected to minimize the occurrence of errors in handling sports injuries.

The development of android-based technology can help the screening process credible for athletes and non-athletes.

1.1 Objectives

Develop android-based application technology to help the performance of the team of the sports injury masase service center targeting athletes and non-athletes

2 Literature review

According to Pressman & Bruce (2014: 9) mobile apps or mobile applications are computer programs that are specifically made to run on mobile phone or tablet handheld devices [5]. Applications also have the meaning of problem solving that uses one of the application data processing techniques which usually races on a computing or data processing that is expected [6]. There are many types of applications on smartphones that function to serve activity needs, including communication between humans, seeking information or knowledge, for shopping, playing music or videos, conducting business activities and managing finances, utilities and productivity, reading news, the latest updates about sports, playing games. games and many more various types of applications are being developed to meet human needs [7].

According to Frazy [8], android studio is a developer software used to create an android application. Before there was Android Studio, Android applications were usually developed using Eclipse, which is an application development tool that was classified as an IDE (integrated development environment), because it provided various facilities for making applications [9]. This application has tools based on drag and drop and visual blocks programming. Drag and drop is a term used for coding which is done by dragging and dropping program code into the blocks editor. While visual blocks programming is a feature that can transform text-based programming language coding into visual language in the form of program codes [10].

3 Method

The type and design of this research is included in Research and Development (R&D). This research will produce a product in the form of an application prototype, namely Physical Screening for sports injuries. The stages carried out in this research include; a) Analysis; b) Planning and design; c) Development; d) Application; e) Evaluation.

4 Data collection

The population in this study were athletes and nonathletes. The sampling technique was carried out using a simple random sampling technique based on the needs of researchers in the field.

In general, the principles of handling and rehabilitation of knee injuries are divided into 3 goals, namely;

1. To achieve a normal and pain-free knee joint range of motion,
2. To achieve recovery of quadriceps and hamstrings muscle strength,
3. To achieve the normal proprioceptive function of the knee joint.

The duration of each target depends on the structure and onset of injury.

In conservative management, evaluation of individual risk factors should be carried out. The goals that must be achieved are reducing inflammation, maintaining joint range of motion, increasing and maintaining the muscles around the knee in terms of endurance and strength, getting normal gait, achieving knee proprioception as well as possible and keeping the body active.

The prototype is designed with features including:

- a. Name
 - b. Athletes/non athletes who will be scheduled for sports injury massage treatment
 - c. Activity history and chronology of injury
- with the initial design view

4. Results and discussions

the results of the first step of development research make the application display design. After being designed, it makes the existing menu display for the screening process and concludes that the injury suffered can be treated with massage or not. Applications that have been installed on the Playstore have been tested on a small scale and on a large scale. After being designed, it makes the existing menu display for the screening process and concludes that the injury suffered can be treated with massage or not. Applications that have been installed on the Playstore have been tested on a small scale and on a large scale

the results of small-scale trials there are evaluations from media expert validators, the evaluations given are in the form of applications that are less attractive in color display so that they are corrected for color display

for user satisfaction, getting a response of 80% from users on a small scale is reinforced by giving a star rating in the playstore.

Tabel 1. User Statisfication

Linguistic expressions	5 levels of satisfaction	7 levels of satisfaction
Extremely Unsatisfied	-	1
Very Unsatisfied	1	2
Unsatisfied	2	3
Neutral	3	4
Satisfied	4	5

Tabel 2. Categories

No.	Level of Needed	Scores (%)
1	Very Unimportant	< 20%
2	Not Important	21 % - 40 %
3	Doubt	41 % - 60%
4	Important	61% - 80%
5	Very Important	81% - 100%

(Ampa, 2013)

After evaluating from the small-scale trial stage, large-scale trials were carried out and the results of user satisfaction increased to 82%, meaning that the applications made were acceptable for athletes and non-athletes alike.

From the data used, it was found that the threshold value was inappropriate for 1 item in the questionnaire which meant "good for use". This is done by reducing the choice of answers. the optimal scores in the response categories 2,3, and 4 are combined into 1 category. These data were also subjected to random threshold tests resulting in a 3-step scale being used in the remaining analyses. the same thing was done for the other 14 items.

There was no significant DIF for the athlete or non-athlete categories. The demographic description of the respondents includes the intervention group, age group or gender. For the entire data, 16 of the remaining 91 relationships failed to meet the relative value threshold (r) of 0.14. The three components examined clearly indicate that each individual experiences negative experiences, positive experiences, and lifestyle consequences and the use of application solutions. The results of the t test indicate that as many as 20 out of 112 respondents or 19.9% are outside the desired estimate, namely -1.96 to 1.96.

The narrowed selection of responses from 2,3,4 provides three categories. after eliminating the two items that do not fit according to the scale used, the residuals are recalculated and get points close to the recommended estimate of + 2.5. these results did not differentiate the function of the items between the intervention group, age group or gender. The separation index obtained was 0.79. these results indicate that the scale's ability to differentiate people's leniency is acceptable for groups but not applicable to individual categories. In addition, some of the items show local dependability and three fundamental dimensions emerge: negative experiences, positive experiences, and lifestyle consequences of using an application solution..

5. Conclusions

In times where apps and digital solutions are given more attention, the application Satisfaction Questionnaire provides a new possibility to measure user satisfaction to ensure usability and improve development of new apps. Our study is one of only a few cases where application has been used to evaluate the usability of such an instrument. There is, though, a need for further development of the application Satisfaction Questionnaire, including the addition of more items

and consideration of further response options. The application Satisfaction Questionnaire should also be evaluated in a larger sample and with other apps and in other contexts.

References

- [1] Suryadia LE. Identification of Sport Talents with the Sport Search Methods. *J Phys Conf Ser.* 2020;1539(1):2–6.
- [2] Fauzi A. Aplikasi Pengenalan Ragam Cabang Olahraga Berbasis Android. *J Ris dan Apl Mhs Inform.* 2020;
- [3] Hambali S, Sundara C, Meirizal Y. KONDISI FISIK ATLET PENCAK SILAT PPLP JAWA BARAT. *Multilater J Pendidik Jasm dan Olahraga.* 2020;
- [4] Forenza, D., Alnedral, A., Masrun, M., & Sari D. PROFIL TINGKAT KONDISI FISIK ATLET BELADIRI TARUNG DERAJAT KOTA SUNGAI PENUH. *J Patriot* 2(4), 1104-1117 <https://doi.org/1024036/patriot.v2i4720>. 2020;
- [5] Gunartha IW, Sulaiman T, Suardiman SP, Kartowagiran B. Developing instruments for measuring the level of early childhood development. *Res Eval Educ.* 2020;6(1):1–9.
- [6] Rasid SMM, Abdullah MR, Juahir H, Maliki ABHM, Kosni NA, Musa RM, et al. Applied multidimensional analysis for assessing youth performance in sports talent identification program. *Int J Recent Technol Eng.* 2019;
- [7] Setiawan I, Kurniawan W, Wijayanti DG, Billiandri B. Developing Mobile Apps Technology to Improve Student Performance in Physical Education. 2020;
- [8] Liu K, Xu S, Xu G, Zhang M, Sun D, Liu H. A Review of Android Malware Detection Approaches Based on Machine Learning. *IEEE Access.* 2020;
- [9] Antoni MS, Suharjana S. Aplikasi kebugaran dan kesehatan berbasis android: Bagaimana persepsi dan minat masyarakat? *J Keolahragaan.* 2019;
- [10] Listiandi AD, Kusuma MNH, Budi DR, Hidayat R, Bakhri RS, Abdurahman I. Pemanfaatan Aplikasi Smartphone untuk Meningkatkan Daya Tahan. *Jendela Olahraga.* 2020;05(2):9–17