

Data Processing Physical Condition Test of Karate Athletes Based on Android

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Abstract: The purpose of this study was to create a formula for presenting data on the physical condition of karate athletes in the form of application software on android. This research uses Research and Development approach. The population and samples in this study are students of the Physical Education Health and Recreation (40 people) who are taking karate courses and PPLP athletes in North Sumatra (15 people). The results of the research obtained from the validation of expert tests and field expert tests (North Sumatra Student Education and Training Centerathletes and Faculty of Sports Sciences students) showed that the physical condition test application software of karate sports meets the criteria of acceptability in accordance with aspects of usability, feasibility, accuracy and propriety. The score obtained from the validation of media expert test (72.7%), validation of material expert test (81.5%) and field expert test (79.8%) fall into a good category and do not need revision. Thus, the application of physical condition tests of karate sports can be used as a medium in the service of implementation instructions, information and evaluation of tests and measurement of the physical condition of karate athletes.

Keywords: physical condition, test, android, data

1. Introduction

Success in any arena is usually the result of planning, hard work, commitment, and is no exception through physical training. All successful athletes are trained individuals who excel in certain physical activities and have typically participated in well-designed long-term training programs for several years. In sports, training is the process of carrying out repeated progressive exercises or work that increases the potential to achieve optimal performance. For athletes, this means a long-term training program that conditions the body and mind for specific competitions and leads to excellence in performance. Although many coaches and instructors are competent in designing training programs, it is important to look at the short-term approach and plan for the long-term development of athletes.

Physical training can begin in childhood so that athletes can progressively and systematically develop their bodies and minds to achieve long-term excellence rather than momentary success but produce fatigue. Physical training is also most important in the components of pulmonary rehabilitation (Kovelis et al., 2020). Physical exercise also has many benefits for people with obesity and cardiovascular health (Pazzianotto-Forti, E.M., Moreno, M. A., Plater, E., Baruki, S.B. S., Junior, I. R., & Reid, 2020). Exercise today is not just an exercise, but a very sophisticated process. The development of sports appearance is influenced by a variety of factors that require a lot of knowledge from the trainer. In addition to the consistent intensity of exercise, it is very important to pay attention to how to increase the child's motivation. The motivation to excel is the tendency to act towards achieving goals (Rutkowska&Gierczuk, 2020).

Aspects of exercise should now lead to more technology that facilitates the exercise process. Activities in sports are determined and guided by trainers on the one hand and sports sciences on the other. People are not always able to observe a successful cooperation and interaction between practice and sports theory. It requires certain acceptable psychological principles applied in order for athletes and players to be able to show their performance (Mankar, 2020). It should be noted that the characteristics of the sex in which men are able to show faster environmental adaptation and are able to set goals and how to achieve them (Cosma et al., 2020). Exercise theory, in many ways, tries to integrate and apply the link between practical experience and sports science that affects the exercise process in efficiency, in addition there needs to be motivation to support the continuity of

sports (Teixeira et al., 2012). However, donations from successful trainers are primarily subjective, personal nature based on experience.

In recent times the tendencies have been seen that some scientific research is carried out to generalize and prove the discoveries and experiences of the trainer can influence and support the practice of exercise and the ultimate goal of the purpose of the exercise itself (Achievement). In addition, the character of coaches is key to the success of coaching programs, such as individualization is key to the practice of coaching sports given the very dynamic environment (Pazzianotto-Forti, E.M., Moreno, M. A., Plater, E., Baruki, S.B. S., Junior, I. R., & Reid, 2020). But experience alone is not able to fully support an achievement. Coaches must also act as players (Cropley et al., 2020). Achievement must be accompanied by the application of science and then combined with existing experience. The application of science is the main role in building a better team framework. The framework is built on the needs and availability of existing human resources.

The reality in the field is still the low use of technology in helping the training process. Information in various fields today is increasingly complex. Technology and information systems management is a general strategy to deal with the complexity of information (Pashaie et al., 2020). But there are still many coaches who work conventionally have not utilized the technology. It was directly revealed that technology is able to cover the gap between what is needed and what is available (Luczak et al., 2020) but android technology also has a rapidly increasing amount of malware (Qiu et al., 2020). But not many coaches are aware to use the latest technology given the all-digital conditions. So there are still many trainers who have not been able to apply the standard physical condition test in a sport. Not a few coaches who do not yet understand about how the data processing in the Physical Condition Test karate as well as lack of understanding of the standard physical condition of athletes to be fostered to obtain achievements. Based on this, one of the problems can be identified, namely the low quality of coaches and the achievement of athletes who have the potential to achieve achievements.

Being a high-achieving sportsman, it is felt to be a necessity to meet various requirements in training. In addition, it is also very important to pay attention to both social and psychological elements as a link to the motivation of achievement. (Blynova et al., 2020) Absolute training is conducted with various principles and needs according to the sport. Physical is the basic factor for developing other exercise variables. Exercises performed in a certain period without thinking about quality seem futile. The application of training theories and methodologies in the training process will greatly help trainers develop the potential of sportsmen to achieve the highest performance in a particular competition. The development of training science obtained through research is constantly changing and trainers must dare to experiment with scientific approaches to gain new knowledge in developing karisnya as a coach. Not only that, the trainer must master in depth about the various knowledge in coaching. Knowledgeable coaches become a necessity to be able to compete with other coaches in order to always be the best in helping sportsmen achieve success.

Exercise is one of the processes that are done systematically and continuously by increasing the amount of weight to improve the performance of sportsmen in achieving the goals that have been determined. Exercise is also an effort to improve the functional quality of the organs as well as the psychic perpetrators. From the description can be explained that exercise is a process is not an instant where it is done in stages and systematically that is done not only once or twice but repeatedly. Repetition is done by considering the gradual increase of the load to the optimal point. In other words, exercise is a systematic exercise process that is done repeatedly and increasingly the number of training loads is growing. Systematically interpreted as training that is carried out regularly, planning, according to schedule, according to certain patterns and systems, medical, continuous from simple to more complex.

Further discuss about this theory of exercise can contain several meanings in English, *namely practise, exercise, and training*. In other terms the words have the same meaning that is exercise and after application in the field does seem the same activity is physical activity. The definition of exercise comes from the word: *Practise*: activities to improve the skills (skills) of exercising by using various equipments in accordance with the purpose and needs of the sport. *Exercise*: The main device in the daily exercise process to improve the quality of function of the human organ system, thereby making it easier for sportsmen in improving their movements. *Training*: a process of refinement of exercise containing theoretical and practical materials, methods, and rules of implementation in accordance with the scientific approach using the principles of education that are planned and organized so that the objectives and objectives of the exercise can be achieved on time. The practice process is carried out regularly, planned over and over again and the longer the load increases, and starts from simple to more complex/ systematic and methodical (Sukadiyanto, 2009). Related to the factors that affect the quality of exercise is described as follows:

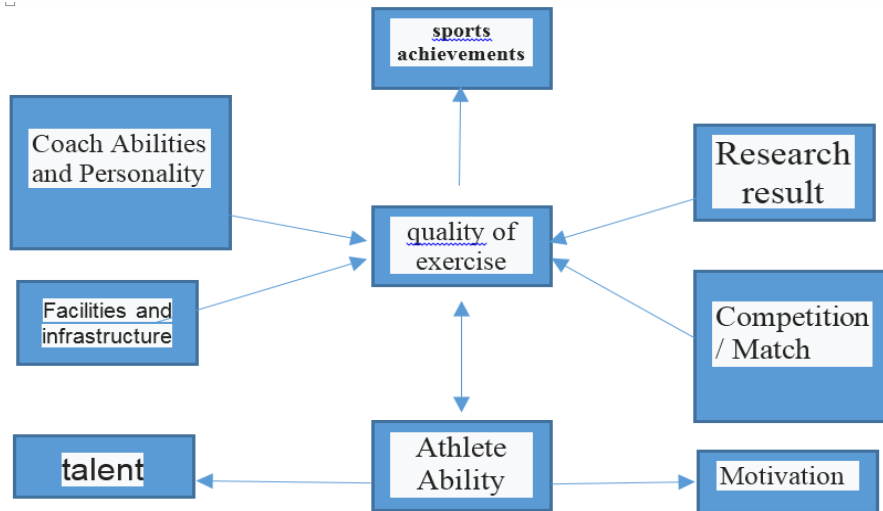


Figure 1. Factors Affecting Exercise Quality

Understanding Martial Arts Karate is a martial art that originated in Japan. Karate consists of two kanji, Kara which means empty, and te which means hand. Both kanji mean empty-handed (pinyin: kongshou). Gichin Funakoshi (Arief, 2007). Karate-do literally means "kara" which means empty, sky or horizon, while "te" means hand which is the main physical communication tool, can also be interpreted as people have certain technical abilities and "Do" means the road that is the mighty art road. Karate is one of the best known martial arts sports since prehistoric times (RantiRahayu, 2020), and demands a skill and techniques and high confidence, in order to be able to display a good and consistent game in performing a match.

In addition, karate is also a martial art that focuses on self-defense against opponents. Karate martial arts consists of two components namely Kumite (real fight) which is a fight between two people who fight each other techniques to get points. While Kata is an individual performance, an athlete performs art movements that exist in the sport of karate. Karate practice contains three parts: Kihon basic exercises, the 28 are mainly characterized by attention and repetition of certain movements or a combination of them. Kumite exercises with sparring partners, the main goal is to train "together with" and not "fight" partners; and Word, a detailed pattern of movement, in which different sequences of movement intersect (Jansen & Dahmen-Zimmer, 2012). Based on the above opinions, it can be concluded that the sport of karate is a martial arts sport that combines several techniques in it. Physical Characteristics of Karate Martial Arts Athletes The physical components required by karate athletes, among others, are speed, strength, explosive power, flexibility, agility, endurance, balance, coordination. In addition, the role of sports organizations is also very dominant especially in determining scoring methods, such as making appeals videos on Techniques that are not awarded points can improve fairness in matches (Carlsson et al., 2020).

2. Methods

Research & development (R&D) can be efficient as a research method that is deliberately, systematically, aimed at finding, formulating, improving, developing, producing, testing the effectiveness of products, models, methods / strategies / ways / services, certain procedures that are superior, new effective, efficient, productive, and meaningful.

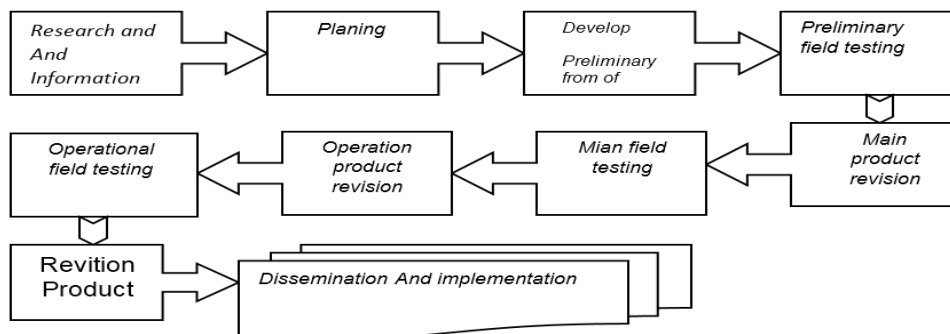


Figure 2. The Research & Development (R&D) chart presented

Development research is research that is not used to test the theory. The resulting product, tested in the field is then revised until the results are satisfactory. Thus, it can be concluded that development research is a fundamental research on the manufacture of an effective product, starting with the analysis of needs, product development, and product trials. This research is a development research using qualitative and quantitative approach methods and using *research methods of Research & Development (R&D)* development issued by *Borg and Gall*

This research at the Faculty of Sports Sciences Medan State University and Student Education and Training Center North Sumatera. The time of this research was conducted is one semester, namely in the range between August - December 2020. This study only took a test of the physical condition of karate athletes

3. Population and sample

The population of this study is students of the Physical Education Health and Recreation who are taking karate courses (40 people) and Student Education and Training Center North Sumatera karate athletes (15 people) where data is taken to create the norms of physical condition tests of karate athletes as well as for the testing of applications made.

4. Data Retrieval Techniques and Data Analysis Techniques

The research instruments used are using standardized tests of physical condition skills of karate athletes, and expert observation tests, interviews, documentation and observation sheets. There are several data analysis techniques used including descriptive analysis and inferential analysis. Data analysis in this development research Formulation of quality documents is carried out through Focus Group Discussion by experts who include; academics, sports practitioners, and experts in the field of aquatic sports and the results of small and wide trials. The final results of the product test will be narrated in the form of triangulation from three data sources including literacy data, experts and field test data.

5. Results

Implementation of the application model for the Android-based physical condition test application for the sport of karate to the research object, namely Student Education and Training Center North Sumatra athletes, students and fostered karate sports associations. The output of this research is in the form of Android-based physical condition test data processing application software and manual books.

The results of the research obtained from the validation results of expert tests and field expert tests (Student Education and Training Center North Sumatra athletes and Faculty of Sport Science students) showed that the application software for the physical condition test for the sport of karate met the acceptability criteria in accordance with the aspects of usability, feasibility, accuracy and appropriateness. The scores obtained from the results of the media expert test validation (72.7%), the material expert test validation (81.5%) and the field expert test (79.8%) fall into the good category and do not need revision. Thus, the application of the physical condition test in the sport of karate can be used as a medium in service implementation instructions, information and evaluation of tests and measurement of the physical condition of athletes in the sport of karate.

6. Discussion

The existence of applications that have been tested through scientific stages provides an overview of the physical condition profile of karate athletes. This is very useful in an effort to improve the evaluation process and determine a more targeted training program. It is hoped that the trainer will be assisted in seeing the profile of the athlete's physical condition and this information will have an impact on a more targeted and targeted training process.

7. Conclusions

An accurate evaluation of physical conditions is needed in the coaching process, because without a record of the athlete's physical condition, it is very difficult to predict the athlete's progress in the physical training process. The purpose of this research is to create a formula for presenting athletes' physical condition data in the form of application software on Android. The target to be achieved is to produce a standard application model for presenting physical condition data that is easy to use, model procedure manuals and work instructions that can be used as targets or references for each variable of karate sports coaching for all sports stakeholders.

Competing interests

The existence of norms that are arranged and presented in an application that directly provides profile information on the physical condition of the athlete illustrates that the results of this product development research have contributed to the coaching of karate sports in Student Education and Training Center North Sumatra.

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