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Percentage of Appearance of Physical Condition Applications for Badminton Athletes Aged 10-12 Years Old Based on Android Smartphone

Titis Pambudi[1], Setya Rahayu[2], Siti Baitul Mukarromah[3]

[123]Sports Education Study Program, Faculty of Postgraduate, Universitas Negeri Semarang
Sekaran, Kec. Gn. Pati, Kota Semarang, Jawa Tengah 50229, Indonesia
Email : titispambudi435@gmail.com[1], setyarahayu@mail.unnes.ac.id[2], sitibaitul@mail.unnes.ac.id[3]
Orcid id : 0000-0003-4063-4852[1], 0000-0003-0908-3212[2], 0000-0001-7744-971X[3]

Abstract

Badminton games can run well, mastery of techniques or basic game skills is needed. Badminton players must also have good physical abilities. There needs to be an application that supports the performance of the coach. The purpose of creating a product is to realize an attractive design for coaches, especially badminton. The purpose of this study was to determine the percentage of physical condition application displays for badminton athletes aged 10-12 years based on android smartphones. This study uses a survey-based quantitative descriptive method. The population of this study consisted of coaches at badminton clubs in Boyolali District. The sample in this study amounted to 15 coaches at the badminton club in Boyolali Regency were taken using a purposive sampling technique. Data collection techniques in this study used a questionnaire instrument with a Likert scale. Data analysis used SPSS version 25. The results showed that the percentage of physical condition application displays for badminton athletes aged 10-12 years based on Android smartphones in the very good category obtained a percentage of 93.33% with a total of 14 coaches and a good percentage of 6.67 % with a total of 1 coach. So it can be concluded that this application has a very good appearance in the view of the badminton coach.

Keywords: Appearance, Application, Physical Conditions, Badminton

INTRODUCTION

Badminton is a very popular sport in Indonesia, both among children and adults, men and women with various purposes including recreation, maintaining fitness to achievement (Agung & Rasyid, 2018; Saputra et al., 2020). Badminton is a sport that has succeeded in making Indonesia proud in the world (Meiyanto et al., 2018). All of this was achieved thanks to good cooperation between athletes, coaches, administrators and other support teams (Aprilia et al., 2018). The achievements required a great struggle, between the government and clubs throughout Indonesia to capture the seeds of superior athletes (Nugroho et al., 2021). Achievements were achieved because training was carried out systematically and systematically (Ishak et al., 2020). Systematic means that training is carried out in a programmed manner that is carried out correctly according to training principles (Abián et al., 2016).

Badminton is one of the mainstay sports in Indonesia (Martila & Sulastio, 2019). Badminton is very popular with all ages, from an early age to adults and even veterans, both men and women (Saputra et al., 2020). This game uses rackets, shuttlecocks, nets, and courts (Kardani & Rustiawan, 2020). The racket is the bat and the shuttlecock is the object to be hit. Badminton is a sport that uses a racket as a hitting tool and a shuttlecock as a hitting object that requires basic to complex skills. The scoring system uses BWF guidelines, namely a rally point system and two winning sets, with the aim of finding two winning sets (Asbupel et al., 2020). Players are declared victorious when they reach 21 points in each set. If there are doubles in the game, then the player is declared victorious if the difference is two points, and the maximum double number is 30. The badminton strategy consists of placing the shuttlecock in the right place by crossing the net and falling within the boundaries of the opponent's court while minimizing the opponent's reaction time (Cohen et al., 2015).

Badminton athletes need a combination of energy systems, namely: using the aerobic system when playing for a long time and using the anerobic system when playing short relleys (Angelica Joanne Joummy, Pathmanathan K. Suppiah, and Md. Safwan Samsir, 2020). Strength is a component of a person's physical condition regarding the ability to use muscles to receive loads while working (Nurudin, 2015). The ability of muscles to generate tension (contract muscles) against resistance, the importance of strength for badminton athletes (Harsono, 2018). When making a definite shot, badminton athletes need tremendous strength and arm muscle power to hit the shuttlecock quickly and hard. Badminton players must also have the agility of the athlete's physical abilities that allow him to change his body position quickly and the position change is carried out in the right way and in the right direction (Wiguna, 2017). Training and mechanics when attacking or defending against opponents, so agility plays an important role in a match.

Badminton athletes must have good endurance as a basis for training. Muscles are used continuously when carrying out training activities or in competition without any significant pain or fatigue Athletes have good muscular endurance. In addition, endurance can also be interpreted as the ability to deliver oxygen to the muscles and lungs to support during physical activity (Armstrong & Barker, 2010; Hughes et al., 2017). From a physiological point of view, endurance is exercise performed at maximum intensity, with the main goal of progressively moving the anaerobic threshold, namely the beginning of anaerobic metabolism and lactate production, towards higher exercise intensity, formed through complex modifications in muscle metabolism with increased density. mitochondria and oxidative enzymes, shifts in fiber types and increased muscle fiber capillary (Morici et al., 2016).

Muscle flexibility in the game of badminton is very dominant, namely: in the movement including movements, namely blows to footwork technique movements (when chasing the shuttlecock) (Bintara et al., 2021; Legeayem & Wiriawan, 2017; Wijaya, 2017). Having high flexibility will help less energy while moving. Therefore, flexibility is an important part of playing badminton both in competition and in practice.

Based on this description, it is necessary to have an application that supports the trainer's

performance. The purpose of creating a product is to realize an attractive design for coaches, especially badminton. After product manufacture and testing by experts is complete, the next implementation of this research is the display form of an android smartphone-based application used in badminton clubs in Boyolali Regency. It is expected to have an attractive and good application display for badminton coaches. The purpose of the implementation carried out is to improve the ability of physical conditions as well as innovation to break boredom during training and increase the trainer's knowledge when providing physical condition training material to athletes. Therefore this research is to measure how attractive the appearance of learning media applications for physical condition training for badminton athletes aged 10-12 years based on Android smartphones.

METHOD

This study uses a survey-based quantitative descriptive method. According to (Sugiyono, 2016) population is a generalized area consisting of things or people who have certain qualities and characteristics. The population of this study consisted of coaches at badminton clubs in Boyolali District. According to (Suharsimi, 2013) the sample is part of the population that is adapted to the conditions or characteristics under study. The sample in this study amounted to 15 coaches at the badminton club in Boyolali Regency were taken using a purposive sampling technique. Data collection techniques in this study used a questionnaire instrument with a Likert scale as follows:

$$P = \frac{\Sigma R}{N} \times 100$$

Information:
P = Score
Σ R = Total Score
N = Max Score

Table 1. Questionnaire Score Table

Question	Score
Very good	5
Well	4
Enough	3
Not enough	2
Very less	1

The Likert scale, which has four or more questions and scores representing individual characteristics, is used in the assessment of the questionnaire (Much et al., 2016). A questionnaire was used as a research instrument. According to (Sugiyono, 2011)the research instrument with a questionnaire is collecting data and recording it on paper. A valid questionnaire can be used as a research instrument (Ramadhani, 2021). In this study, descriptive analysis using SPSS version 25 was used to analyze the data.

RESULTS AND DISCUSSION

1. Validity Test

Validity is an action to show the validity or validity of an instrument. A research instrument is said to be valid if it discloses data from the variables studied correctly to measure the researcher's goals and if it discloses the variables studied in the way intended.

Table 2. Results of Testing the Validity of Application Display Instruments

Number	Pearson Correlation R Count	R Table	Significance Value	Information
1	0,833	0,482	15	Valid
2	0,634	0,482	15	Valid
3	0,798	0,482	15	Valid
4	0,924	0,482	15	Valid
5	0,735	0,482	15	Valid
6	0,764	0,482	15	Valid

Based on the results of the analysis, the value of R count > R table shows that all items of the benefit questionnaire are valid according to formula calculations with the SPSS software application.

2. Reliability Test

In a research procedure, reliability is the precision and accuracy of a measuring instrument. If Alpha > R table then it is said to be Reliable.

Table 3. Reliability Test Results for Application Display Instruments

Variable	Rxy	R Table	Information
Application View	0,874	0,482	Reliable

Based on these calculations, it was found that all research instruments were reliable.

3. Results of Descriptive Analysis

Table 4. Descriptive Analysis Results

		Total	Average
N	Valid	15	15
	Missing	0	0
Mean		27,40	4,5667
Median		28,00	4,6667
Std. Deviation		3,312	0,5520
Minimum		16	2,67
Maximum		30	5,00

From the above analysis it can be explained that from the 15 respondents the mean value was 27.40, the median was 28.00 Std. Deviation 3,312 minimum 16 maximum 30

Table 5. Application View Percentage

Classification	Frequency	P (%)
Very good	14	93,33%
Well	1	6,67%

Total	15	100%

Based on the table above, it shows the percentage of physical condition application displays for badminton athletes aged 10-12 years based on Android smartphones in the very good category, obtaining a percentage of 93.33% with 14 coaches and a good percentage of 6.67% with 1 trainer.

The game of badminton is a short duration sport with high intensity athletes are required to have good physical condition (Abian-vicen et al., 2017; Bhandari & Koley, 2019; Fuchs et al., 2014; Pardiwala et al., 2020; Paterson et al., 2016). In a competitive badminton game athletes will approach 100% of their maximum pulse rate, the average in one match is around 169 beats/minute and lactate in the blood released during competitive play reaches 3 to 6 mmo.L (Abdullah, 2014; Pallav et al., 2017). Specific endurance when performing badminton game movements is responsible for the athlete quickly stopping the ability to move the body, forming aerobic energy for the stroke and returning to position to prepare for the next stroke (Kuntze et al., 2010). Effective playing of badminton is around 40-60% of the total playing time (Heller, 2010; Rojas-valverde et al., 2020) meaning that the ratio between playing effectively with resting is around 1:2 on average in one match (Phomsoupha. et al., 2017). Of course this can be knowledge by Indonesian trainers, researchers and sports practitioners about the characteristics of endurance abilities for badminton athletes with other endurance sports. Specialized by physical trainers as initial knowledge (reference) in making endurance training programs for badminton athletes. The ability of muscle strength in the game of badminton as a motor forms components of other physical conditions such as: agility, flexibility, and cardiovascular endurance, which runs to catch the shuttlecock (Ferreira et al., 2020) therefore the game of badminton requires maximum muscle strength as a basis for meet the components of physical condition according to the characteristics of a badminton match then strength is the most important element for all sports (Genc & Ali, 2019).

Badminton is a racquet sport characterized by high-speed movement and changing the direction of movement required to have technical capacity, high psychological tactics and good physical condition (Abdullahi & Coetzee, 2017; Fu et al., 2017) agility functions to chase the ball (shuttlecock) then returns to the starting position and chases the ball to return the ball to the opponent and agility movements are dominant in the lower body (ankles and legs) (Ahmet & Ridvan Ergin, 2017; Wong et al., 2019). So agility is very vital in badminton as chasing shuttlecocks in matches and training in anticipating opponent's movements, making decisions in responding to movements or reading target movements muscle strength as the foundation of agility to achieve one's ability to perform physical activities and break down fatal injuries (fractures, tears in muscles, sprains). Muscle flexibility in the game of badminton is very dominant, namely: in movements including movements, namely punches to footwork techniques (when chasing the shuttlecock) (Bintara et al., 2021; Legeayem & Wiriawan, 2017; Wijaya, 2017). Having high flexibility will help you use less energy when moving. Therefore, flexibility is an important part of playing badminton both in competition and in practice.

The game of badminton is a type of stop and go sport with an aerobic and anaerobic system with a pulse intensity reaching more than 70% at an early age or at an elite age of more than 90% at one match, the branch of badminton requires a movement that changes direction as quickly as possible, jumping, step is also a sensitive stroke movement from various directions. Based on the description above, the physical domain of badminton players must have the capacity for physical conditions which include cardiovascular endurance, muscle strength, muscular endurance, agility and body flexibility, meaning that physical ability is a factor that has a major influence on winning a match or completing a match.

Construction of athlete performance in sports training has several components that form the basis or prescription of exercise doses. Of course the trainer must own and understand the components of the exercise. Volume, intensity, sets, repetitions, duration or distance, and rest

form the training components (Ilham & Rifki, 2020; Kuswary & Gifari, 2020; Mubarrok & Adi, 2017). Therefore the function of the training components is to make it easier for a trainer to make a training program with these guidelines.

CONCLUSION

The results showed that the percentage of physical condition application displays for badminton athletes aged 10-12 years based on Android smartphones in the very good category obtained a percentage of 93.33% with 14 trainers and a good percentage of 6.67% with 1 trainer. So it can be concluded that this application has a very good appearance in the view of the badminton coach.

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