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Agility instruments in Badminton: Validity and Reliability

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ABSTRACT

The test is a data collection tool that is very important to assess the abilities possessed by an athlete, the agility test in badminton is not yet available so that coaches and athletes can not evaluate the performance of their athletes. This study aims to find out the validity and reliability of the agility instrument in badminton. The stages that will be carried out in this research are that the researcher will design the test, after the test is successfully made, the next step is to check the validity and reliability of the test. The population in this study were all advance table tennis students, while the sampling technique used was total sampling so that the entire population of 25 people was used as a sample. The result of the study is the agility instrument is valid and reliable.

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Introduction

Sport is a useful activity to improve physical fitness. Sport is not only used as a means for recreation but also aims at an achievement, which is carried out individually or in groups. The development of sports today is more directed to improving the performance of athletes and encouraging the growth of a deep understanding of the sport (Lees, 2003).

Badminton is a sport that is quite well known by the public (Deka et al., 2017; Li et al., 2016). Badminton is increasingly developing and more and more people are playing it today (Sakurai & Ohtsuki, 2000). Badminton is a racket sport that has fast characteristics, the smash speed in this game can reach 111 m/s (Ramasamy et al., 2021). Badminton is carried out with demands for fast muscle performance, in competitive conditions the performance of the heart muscle in supplying nutrients throughout the body and providing oxygen for the body is needed, the pulse rate of the players in competitive situations can reach approximately 169 beats/minute (Alklate et al., 2009). In order to play badminton well, you need good physical and motor skills. The speed of the shuttle in badminton games is indeed classified as fast so that the reaction speed possessed by players is needed to support performance when playing badminton (Van De Water et al., 2017). The characteristics of badminton games require athletes to move very quickly and agilely, this is stimulated by the direction of the shuttle provided by the opponent when playing which varies greatly from one direction to another so that agility in chasing the ball so as not to die and become points for the opponent must be trained. . Agility is the main capital and key to success in winning during the match (De França Bahia Loureiro et al., 2017). Badminton is a highly demanding sport characterized by intermittent efforts with energy being provided by both the aerobic and anaerobic systems (Chint et al., 1995). The player must have a good physical fitness to meet this requirement in this sport (Faude et al., 2007). There is no incremental badminton field test has been developed that can be easily used by badminton coaches that requires accessible material for anyone (Ablan et al., 2021: Kuntze et al., 2010)

A test is said to be valid if it measures exactly what it is supposed to test. Furthermore, the degree of validity of a test is called validity. So, a test has validity if it measures what it is supposed to measure with full

accuracy. While a test is said to be reliable if the test can measure exactly what it is supposed to measure. Therefore, to see the level of validity and ridicule of a test, it is necessary to look at the degree of coefficient of a test.

Based on observations and interviews conducted by researchers with coaching lecturers as lecturers of basic badminton courses, FIK UNP confirmed that in the lecture process there were still many basic badminton students who did not have the agility of foot movements in playing badminton. If this is allowed then the ultimate goal of achieving maximum value and improving badminton playing skills will not be achieved. Therefore, this matter needs to be considered seriously for the achievement of goals. and to see the improvement in footwork ability, a test needs to be carried out, but based on interviews with subject lecturers, it turns out that there are still few lecturers/coaches who use tests to measure the level of footwork ability. that meet the requirements of a good test, one of which is the level of validity and reliability of the test. Therefore, the researcher wanted to see the level of validity and reliability of the agility test in the badminton game.

Arsil and Adnan (2010) suggest that the test is one of the tools or procedures needed to collect data on a person, object or object through certain measurements and rules. When taking the test it is called testing, while the person who does the test is called the testee and the person who is entrusted to carry out the test on the respondent to be tested is called the tester.

In the opinion of Sodikoen (2001) suggests that a good test, a careful way of measuring, reading and recording the right measuring results will produce correct data. Correct (accurate) data, followed by proper analysis and accurate interpretation, will result in steady results or decisions and adequate follow-up.

So, it can be argued that the test is a measuring tool to obtain information through measurements and certain rules in achieving goals so that it can produce appropriate and correct evaluations and follow-ups. The test intended in this study is a test of sports skills.

Method

This study uses a quantitative approach and descriptive method. Researchers want to find out how much validity and reliability of digital-based badminton specific agility test instruments are. This research will be conducted on Monday, September 18, 2021, which is located at GOR Badminton FIK UNP, Padang City.

The population in this study were all 25 students who were taking in-depth badminton courses, while the samples were all of these students, because the population was small, so the sampling technique was census or saturated sampling.

This study aims to find the validity and reliability of the instruments made. Data collection of instrument validity will be carried out by means of content validity and empirical validity. Content validity is carried out by giving instruments that have been designed to three experts, including test and measurement experts, badminton trainers, and badminton lecturers. After the validity of the contents of the instrument was met, it was continued by carrying out tests on 25 samples conducted by two badminton coaches.

After collecting instrument validity data, the next step is to collect instrument reliability data by means of tests and retests. The sample was tested using a valid instrument on two different days.

To analyze the data that has been obtained, a simple correlation test will be carried out. The agility test data conducted by the sample will be correlated with the results of the shuttle run test. If the correlation value is high, then the results will determine the validity of the instrument made. After that, the researcher will analyze the level of instrument reliability by looking at the correlation between the results of the agility test on the first day and the test on the second day. Statistical analysis used to determine how high the level of reliability of this instrument is Pearson product moment correlation.

Results and Discussions

Based on data analysis, the agility test of the coaching department students who took the badminton course in the semester of July – December 2021, by correlating the specific Agility test scores of Badminton with the Shuttle Run Test. The results of the analysis show that the correlation number shows $r = 0.78$, so it can be said that the Badminton specific Agility test for students in the Department of Coaching who takes badminton courses is valid. So the level of validity of the Badminton specific Agility test for the students of the Coaching Department is included in the very good category. Arsil and Adnan (2010) stated, "The number that indicates whether a test is valid or not is called the validity coefficient whose magnitude ranges from 0 to +1. The statistical validity coefficient can range from -1 to +1. So, the higher the validity of the test, the more precise the test is to use, conversely, the lower the test validity coefficient, the more questionable the accuracy of the test is in measuring.

Based on the results of r obtained of 0.78, the agility test can be used to measure the level of agility of foot movements in badminton. Donald K, Mathews in Aziz (2008) put forward the limits for validity as follows: 0.00 - 0.37 = Useless, 0.38 - 0.57 = Clearly Related, 0.58 - 0.67 = Acceptable, 0 .68 - 0.77 = Good, 0.78 - 0.82 = Very Good, and 0.83 - 1.00 = Excellent.

Determining the validity of a test as a measuring tool can be expressed as a degree of consistency which is known as a reliability coefficient. The index ranges from -1 to +1. The higher the reliability of a test, the higher the confidence to use the test, and vice versa, the lower the reliability of a test, the lower the determination in measuring.

Based on data analysis after correlating the agility test results in the badminton game with the 'Agility Test in Badminton Game' retest, the correlation number is r = 0.79, so it can be said that the agility test of coaching students taking badminton courses in the July – December semester 2021, by correlating Badminton specific Agility test scores with Badminton specific Agility test retests. The results of the analysis showed that the correlation number showed r = 0.79, so it can be said that the badminton specific Agility test for students in the Department of Coaching who took badminton courses was reliable. So the level of badminton specific agility reliability for students of the Department of Coaching is included in the acceptable category. This is in accordance with the opinion of several experts such as K. Mathews in Aziz (2008) who stated the limits for reliability as follows: 0.00 - 0.67 = Not Valuable, 0 .68 - 0.77 = Weak to Fair, 0.78 - 0.87 = Acceptable, 0.88 - 1.00 = Very Good.

This sensor-based agility test can detect the time taken by the athlete during the test, the start and end times will be automatically recorded by the tool and the results can be seen via cellphone. The device used is also quite simple and easy to carry everywhere because this test kit is small and light enough to carry. Agility tests are very much needed considering that a player must immediately return to the center position after hitting the shuttle so as not to be too behind in chasing the shuttle on the next stroke (De França Bahia Loureiro & De Freitas, 2016). The speed test has also been designed to collect data about the speed of athletes in playing badminton, the test is designed to see the speed of athletes in running on a badminton court with a shuttle thrown by a random device, the results of this study show elite athletes have better speed than athletes beginners (Adsen & Arlsen, 2015).

Agility tests in badminton are very much needed considering the lack of literature that discusses this. The importance of the role of agility in a badinton match causes this test to be developed immediately so that data related to the agility of the players can be obtained and analyzed by the coaches. A good badminton player is required to have good core strength to be agile in exploring a fairly wide badminton playing field. The agility of an athlete is strongly influenced by the strength of the core possessed by the athlete, so this has implications for the very good practice of this core exercise being carried out by coaches for their athletes (Ozmen & Aydogmus, 2016: Mcerlain-naylor et al., 2020). Athletes who excel in addition to having a good level of agility also have other supporting factors such as a good level of thinking skills so that they are able to create good strategies and tactics when competing, mental readiness to compete is also a determining factor to win a match (Ooi et al., 2009).). Agility in the game of badminton is very necessary because very high intensity is a feature and characteristic of this game. Agility tests are very necessary considering the characteristics of the game are the many fast and agile movements in changing directions, moving forward and backward in pursuit of the shuttle in order to win point by point (Phomsoupha & Laffaye, 2015; Kwan & Rasmussen, 2010). When the game takes place, agility in jumping, chasing the ball towards the front, back, right side, and left side and doing many types of punches is very important to be able to win the match. The high intensity of the game requires athletes to be able to move as agilely as possible (Phomsoupha et al., 2018). Lack of slack will make the athlete unable to catch the shuttle, this can be caused by fatigue because the athlete has played for a long time and has optimal energy. Strength endurance and agility must also be trained so that this does not happen to the athletes being trained (Huang et al., 2019).

Conclusions

Based on the results of the research described in the previous chapter, it can be concluded that the level of validity of the specific badminton agility test was obtained at 0.78 (very good). The reliability level of the badminton specific agility test was obtained at 0.79 (acceptable). Based on the conclusion above, the writer can give advice to the trainers, in order to be able to determine the appropriate test to measure the level of agility ability by using the specific Badminton Agility Test.

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