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Construction of the Discus Throw Test for Physical Education Students

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ABSTRACT

The aim of this research is to make improvements in the discus throwing test. Components that are improved in the throwing process start from the discus handle, the rotating stage, the throwing stage until returning to the original movement stage. Usually, the discus throwing test uses the furthest distance taken by the meter. To find out the discus throwing quality of physical education students at Riau Islamic University, of course there must be test instruments and test norms for these students. The method in this research uses research and development methods. This research uses development with the Borg and Gall model which includes ten activities, namely: (1) research and information collecting, (2) planning, (3) develop preliminary form of product, (4) preliminary field testing, (5) main product revision, (6) main field testing, (7) operational product revision, (8) operational field testing, (9) final product revision, (10) dissemination and implementation. The targets achieved in this research were physical education athletic students at Riau Islamic University. The population in this study was 40 people and the sample using a total sampling technique was 40 people. The instrument of this research is the discus throwing test. The data analysis technique in this research is (a) validity test using content validity and construct validity. The construct validity test was carried out by analyzing data from the discus throwing test results. The data obtained from the test was tested for validity using the SPSS computer program. (b) reliability test to describe the consistency of measurement results. The results of the discus throwing test instrument developed were correlated with the total score and had a validity of 0.790 and 0.790 which was greater than the r table (0.361). Meanwhile, the reliability result is 0.701, which is greater than the r table (0.361). The results of the validity of large group trials using the SPSS application with results obtained were 0.749, including the medium category. Based on data analysis, discus throwing skills were the lowest with a score of 87.91 and discus throwing skills were the highest with a score of 164.06.

Keywords: Construction; Test; Discus Throw

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INTRODUCTION

Athletics is the oldest sport, which has been played by humans since ancient times until today. Basically, almost all sports that are games contain athletic elements such as running, throwing, pushing, jumping and so on. So, it is not wrong if athletics is said to be the parent of all sports. Athletics has several events including walking, running, throwing and jumping (Alamiri & Ameen, 2023; Halawa et al., 2021; Wang et al., 2022). Throwing numbers consist of the discus throw, javelin throw, shot put and hammer throw (Sastaman, 2023; Wulandari, 2022).

Discus throw is a throwing sport consisting of two words, namely throw and discus. Throwing means an effort to throw as far as possible, and a disc is a disc/plate shaped device that is thrown as far as possible. Thus, to produce the furthest throw, the things that need to be considered are: the attitude of the discus handle, the position of the body when rotating, then when throwing and returning to the original position (Afidah et al., 2022; Musran et al., 2023; Nurdiansyah & Umar, 2020).

The discus throw is one of the athletic competition events that uses a wooden object in the shape of a plate with an iron belt, or other flat, round material which is thrown, to get a long throw with the correct technique, basic training in discus sports is required (Bagia, 2020; Buhari, 2021; Buton et al., 2021; Iribarne et al., 2022; Lumbantoruan, 2021; Nurdiansyah & Umar, 2020; Romi Oktaria et al., 2020).

The discus throw is one of the athletic events in the throwing event (Ali & Hasibuan, 2020), the method of throwing which initially imitates the style of a fisherman who throws a net over and over again. Then, a throw was found with a special angled body posture with the body leaning slightly forward. The discus throwing style with a rotating start and also called a backward start with one and a half rotations is stated to be the most effective style. The way to throw a discus with a rotating start is not much different from throwing a discus with a sideways start (Chen et al., 2021; Sahri, 2022). Discus throwing is a maximal rotating movement, where muscles are the main component of movement while the movement of the whole body is the result of muscle contractions. In the physiology of the discus throw, to produce a long throw requires the assistance of a sideways flexion movement of the stick. (Efendi et al., 2024).

In the process of developing a good and correct discus throwing technique, it does not only rely on cursory observations that cannot be captured by the eye, it requires the support of science and technology, so that there are no visible errors in throwing the discus (Musran et al., 2023; Wulandari, 2022). Movement analysis in sports really needs to be done by coaches and biomechanics experts to correct wrong movements. It is important to remember that all human movements cannot be separated from the principles of physics, thus coaches also need to pay attention to the mechanical factors that influence the athlete's performance. One of the functions of mastering the principles of mechanics by coaches is being able to develop athletes' skills in designing training techniques that are suitable and efficient for athletes to achieve achievements (Lamusu & Lamusu, 2021; Wulandari, 2022).

The discus throwing technique, namely the discus throwing stance, must begin with a standing posture in balance with the throwing circle without stepping on the circle line. A thrower may not abandon the throw before the judge determines his standing position through the inner half of the circle. The throw will be measured by throwing the disc from where the disc fell closest to the edge of the beam. The following is the technique for throwing the disc, namely how to grip the disc, namely placing the disc on the palm of your left hand, that is, if you throw with your right hand (if not left). From the side of the

body the disc is swung back and forth straight beside the body, the movement is almost the same as the hands of a wall clock.

There are two postures when throwing the discus when throwing the discus, namely the first is a sideways stance, standing straight sideways towards the throw, both legs wide open, left leg forward straight towards the throw. Second, Back Stance, Stand straight with your back to the direction of the throw, left leg straight back towards the direction of the throw, knee of the right leg bent forward.

Discus throwing can be done in this way, namely when the discus is behind as fast as the body is turned forward (in the direction of the throw) and when the whole body is facing the throwing sector as fast as possible the discus throw is thrown backwards through the side, forward and up as hard as possible with the arm straight and the back of the hand must remain facing upwards. Final stance, when the disc is released from the hand, the right leg is pushed back and the body is thrown forward, then both legs and body must be able to maintain body balance (Hatase & Takanashi, 2022; Lestari & Jafaruddin, 2022).

The test instrument for developing the discus throw is based on relevant research from (Gazali & Cendra, 2019; Henjilito et al., 2023) which states that the results of expert judgment measurements and tests carried out are valid and reliable so that they can be used as research guidelines for the subjects that will be studied. The current discus throwing test instrument is when throwing it as far as possible.

Tests are a form of evaluation tool to measure how far the teaching objectives have been achieved. Tests as data collection are a series of questions/exercises used to measure knowledge skills, intelligence, abilities or talents possessed by individuals (Narlan & Juniar, 2020; Pasaribu, 2020). Based on the opinion above, it can be concluded that the definition of a test as a measuring tool has various meanings, one of which is that a test is a measuring tool for measuring a person's abilities. Likewise, in this research, in making the test instrument, the aim was to measure psychomotor abilities, especially measuring the psychomotor abilities of the discus throwing skill which was slightly modified. A good test must meet several requirements, namely; must be efficient, must be standard, have norms, be objective, valid and reliable. (Pasaribu, 2020).

Measurement is a collection of information, usually this activity is carried out by comparing something with a certain size and is quantitative. Measurement is the process of collecting data or information carried out objectively. Thus, it can be said that measurements can be carried out if an instrument has been implemented and then scores are given with raw scores. Measurements must be carried out in accordance with program objectives and carried out in the context of developing or refining objectives (Narlan & Juniar, 2020).

Evaluation is always carried out with reference to the goals to be achieved in an activity. Evaluation is a process or activity of selecting, collecting, analyzing and presenting information that can be used as a basis for decision making and the preparation of subsequent programs. Evaluation is the process of giving consideration or meaning regarding the value and significance of something being considered. Something to be considered can be a person, object, activity or a particular entity. (Narlan & Juniar, 2020)

The purpose of evaluation is to obtain accurate and objective information about a program. This information can be in the form of the program implementation process, impacts/results achieved, efficiency, as well as the use of evaluation results which are focused on the program itself, namely to make decisions about whether to continue, improve or stop. Apart from that, it is also used for the purposes of preparing the next program and preparing policies related to the program.

METHODS

This research method uses research and development methods. Research and development methods are research methods used to produce certain products and test the effectiveness of these products. This research aims to develop or modify the existing discus throwing test instrument and then make slight improvements to the throwing process from start to finish. There are many development research models that can be used, but this research uses development using the Borg and Gall model. The Borg and Gall version of the development research model includes ten activities, namely: (1) research and information collecting, (2) planning, (3) develop preliminary form of product,
(4) preliminary field testing, (5) main product revision, (6) main field testing, (7) operational product revision, (8) operational field testing, (9) final product revision, (10) dissemination and implementation. The flow of this research is taken from the development of the Borg and Gall model.

The targets achieved in this research were physical education athletic students at Riau Islamic University. This research is located in Marpoyan, Pekanbaru City and will be carried out after the research proposal is received. The population in this study was 40 athletic physical education students at Riau Islamic University and a sample of 40 people using total sampling techniques. The instrument of this research is the discus throwing test.

The data analysis technique in this research is as follows: (a) validity test using content validity and construct validity. The construct validity test was carried out by analyzing data from the discus throwing test results. The data obtained from the test was tested for validity using the SPSS computer program. (b) reliability test to describe the consistency of measurement results. The reliability test was carried out twice using Conbrach's Alpha test-retest with the help of the SPSS computer program.

RESULTS AND DISCUSSION

The discus throw test is a measuring tool used to determine and measure throwing ability properly in throwing competitions, especially in the discus throw event. Based on the results of observations, the throwing ability of athletic students can be said to be good. However, when throwing, especially when throwing and throwing, students are still hesitant in making decisions when turning the body and swinging the arm to throw and also pay attention to the throwing process accompanied by the swing of the hand when throwing. For this reason, it is deemed necessary to create a discus throwing test instrument, which focuses more on the throwing process starting from the start, body rotation and arm swing when throwing the discus and returning to the original position. So, it will be more accurate when carrying out the discus throwing test.

The discus throw only focuses on the furthest distance of the throw which is measured by the distance measured by a meter. The component improvement in the discus throw test is only on the process of executing the discus throw from the start, body rotation, when throwing and returning to the original position.

The discus throwing test produced in small group trials is an initial step before conducting research in large group trials, therefore the data produced is validation from one test and measurement expert and two athletic sports experts. Based on tests and measurements of discus throwing ability in small-scale trials on 30 athletic students.

The test is carried out based on the item criteria, score 0 (zero) if the sample fails to carry out all movement points, score 1 (one) if the sample performs 1 (one) movement

point correctly, score 2 (two) if the sample performs 2 (two) movement points that are carried out correctly, score 3 (three) if the sample carries out all the movement points correctly. The calculation method is that each point of the test item is first searched for its validity, after all the test items are valid, then the reliability is looked for using SPSS. If the r value of reliability is more than the r value of the table, then the test item data is reliable.

The results of the validity of small group trials using the SPSS application with results obtained were 0.790, including the medium category. The known validity results are then compared with the r table values according to the number of samples used in the research. If the calculated r value is greater than the table r value then the test results of the instrument are valid and can be used to collect data in research.

Calculation of the reliability of small group trials was carried out using the SPSS application with a result of 0.701, which is in the medium category. The known reliability results are then compared with the r table values according to the number of samples used in the research. If the calculated r value is greater than the table r value, then the test results of the instrument are reliable and can be used to collect data in research.

Based on the data above, the discus throwing test instrument developed is correlated with the total score and has a validity of 0.790 and 0.790 which is greater than the r table (0.361). Meanwhile, the reliability result is 0.701, which is greater than the r table (0.361). This means that the expert assessment and measurements of the discus throwing test are valid and reliable, so they can be used for research.

The results of the validity of large group trials using the SPSS application with validity results of 0.710 and reliability obtained 0.749 are in the medium category. The known validity results are then compared with the r table values according to the number of samples used in the research. The measurement results of the large group trial discus throwing test that was developed had a reliability value of 0.749. Based on data analysis, discus throwing skills were the lowest with a score of 87.91 and discus throwing skills were the highest with a score of 164.06.

Table 1. Frequency Distribution of Discus Throw Tests

Intervals	Category	Frequency	Presentation
87.91 – 100.05	Not Good	5	12 .50
100,6 – 113,28	Pretty Good	7	17.50
113,29 – 125,97	Passably Good	11	27.50
125,98 – 138,98	Good	10	25
138,67 – 151,35	Very well	3	7.50
151,36 – 164,06	Very Good	4	10
Total		40	100

Based on the development research steps to produce the product that have been carried out, the final product is obtained in the form of a discus throwing instrument. After making this discus throwing test instrument, students will no longer have difficulty finding test instruments that are suitable and comply with the latest PASI regulations.

CONCLUSION

Based on the results of the analysis from the evaluation of three experts, namely one test and measurement expert and two athletic sports experts, especially in the discus throw, the validity was 0.710 and the reliability was 0.749, including the medium category. This means that the expert assessments and measurements of the discus throwing test are valid and reliable, so they can be used as research for athletic students.

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CONFLICT OF INTEREST

There are no conflicts of interest in this article.

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