

CONSTRUCTION OF 100 METERS SHORT DISTANCE TEST IN PENJASKESREK STUDENTS ISLAMIC UNIVERSITY OF RIAU

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Abstract

This study aims to develop or modify the form of a test kit for short distance running 100 meters. The components that are repaired are only in the process of running from the start to the finish line. Usually a test run uses only the best time taken by the timer, then makes minor improvements according to the latest IAAF regulations. This research method uses research and development methods or research and development. The validation of the research and development instrument used content validation by several experts (expert judgment) which made one test and measurement expert and two athletic sports experts. Based on the results of the analysis of the expert test evaluation of the 100 meter short distance running instrument, it is declared valid and reliable, so that it can be used as research material for students of Penjaskesrek, Riau Islamic University.

Keywords: Construction, Test, Short Distance, Sprint 100 Meter.

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INTRODUCTION

Branch of athletics is the oldest sport, which has been done by humans since ancient times until today. Basically, almost all sports that are games contain athletic elements such as running, throwing, refusing, jumping and so on. So, it is not wrong if athletics is said to be the parent of all sports. Athletics has several numbers including walking, running, throwing and jumping. Running numbers consist of short distance running, medium distance running, long distance running and marathon. Short distance running has a running number including running 60 meters, 100 meters, 200 meters and 400 meters.

Short distance running is an ability characterized by the process of rapidly moving the body from one place to another. Thus, to produce a fast run, the things that need to be considered are: the posture of the body is leaning forward, the

footsteps must be longer, the swing of the hand must be in accordance with the movement of the leg and the movement of the arm where the fingers are clenched or opened tightly and relaxed. This is so that the maximum speed can be achieved up to the line *finish*.

The success of the implementation of the 100-meter short distance running technique can be seen from three phases, namely at the *start* (willing, ready, yes), the movement *sprint* (when running, namely swinging hands, footsteps and togok position), *finish*. As stated by (Mackala et al., 2015) Sprint 100 Meters can be divided into 3 different phases: The block starts with acceleration, velocity maximum, and maintain speed until the line finish.

So that to determine the ability to run a short distance of 100 meters, a standard test instrument is also needed. The current 100 meter short sprint test instrument is that when the starter raises the sign start, the *stopwatch* is turned on by the timer and the runner runs as fast as possible to the line *finish*. Measurements are made, namely the travel time of the runners from *start* to *finish*. When the limb crosses the line finish the stopwatch is turned off. The value of the teste is that the teste does the movement 2 times, the best result is taken which is the data. Values are measured in seconds.

The aim of this research is to make improvements in the 100 meter short sprint test. The components that are repaired are only in the process of running from the of the *start* to the line *finish*. Usually the run test uses only the best time taken by the *timer*. To find out the quality of the 100-meter short distance running students of the Riau Islamic University Penjaskesrek, of course there must be a test instrument and test norms for these athletes. Based on the above background, it is important for this research to be carried out in order to create a standard 100 meter sprint test instrument that complies with the latest IAAF regulations.

Short distance running is a running number that is in great demand by runners, but not all runners can do a short distance run, because it requires high speed from the *start* to the line *finish*. According to Dimiyati (2017) saying that running is a movement of moving forward or moving forward that is done

quickly, because of the thrust of the hind legs on the ground which is done by scavenging, so that both feet can float in the air while running.

Running is a forward motion to move the body as quickly as possible, both feet are present when floating and not attached to the ground or floor (Sukirno, 2012). According to Schmidt et al., (2016) running leads to shorter contact times and increases peak acceleration and strength. Athletes must be able to produce high strength in a very short time. Running a short distance or *sprinting* is a run that really requires good reaction speed, coordination and acceleration. Sprinting is *an* number *explosive*, therefore a runner must warm up sufficiently before doing a training session (Sahadi, 2011). Likewise, according to Teguh (2016) stating that short distance running is often called a *sprint*, the distance covered can vary, ranging from 100 meters and 200 meters to 400 meters.

Based on the above opinion, it can be concluded that short distance running is the ability to move the limbs, legs, arms and the static parts of the body and even the entire body with the greatest speed so that it can move the body as quickly as possible and both legs are when floating and not sticking to the ground. or the floor reaches the line *finish*.

According to Mero et al., (2012) Efficient sprinting requires an optimal combination of the biomechanical variables examined and external factors such as footwear, ground and air resistance. Further research work is needed particularly in the areas of the nervous system, muscles and strength and power production during sprints. Combining this with measures of sprint economy and efficiency, more knowledge can be achieved in the near future.

According to Nyoman & Made (2015) the parts and stages in running 100 meters are *start*, run and *finish*, all stages and parts receive serious attention as a supporting factor for achievement. Each stage and part of the run requires different techniques, such as: 1) the stage *Start*, which specifies, among others, the rapid reaction to a cue / gun and the active application of the explosive power of the athlete's muscles to initiate a running motion. 2) Running Stages, has technical specifications including maximizing the horizontal speed of the two

movements, namely the support movement and the gliding movement. 3) The stage *finish*, running 100 meters has specifications including the speed of movement of the upper body and the coordination of upper and lower body movements. As explained by (Harrison, 2010) says biomechanics *sprint* and exercises *sprint* of various biomechanical models considered in connection with the initial phase, acceleration and speed maintenance *sprint* 100 meters to enter the finish line. In line with (Sulastio, 2016) said that in order to achieve the right running results, of course there are also several things that must be supported by: good running speed, leg movements, arm movements, posture and strength as well as methods taught by trainers for endurance training. and speed.

The role of physical ability in supporting the achievement of 100 meters is very important, so that athletes who have good physical abilities will certainly have more opportunities to excel. Lactic acid levels also play a big role. (Harliawan and Darminto, 2020).

According to Eddy (2011) states that *starting* is an initial preparation for a runner to perform a running motion. At the *start*, it is marked with a line *starting* *starting* for the position before the run starts. *Start* by its usefulness is divided into three kinds of *start* in *start* standing /*standing start*, *start* floating/*flying start*, and *start* squatting /*crouching start* which is used for short-distance running(*sprints*).The techniques for *starting* short distance running are a) Cue "willing", b) Cue "ready", c) Cue "yak" or the sound of a gun (Sahadi, 2011). Then also explained by Anggara & Saudi (2017) that a good start has several characteristics: 1. Has full concentration, does not think about anything else when the signal is "ready" 2. Puts oneself on the "ready" signal 3. Both feet make explosive movements on the block at an optimal angle at start.

When running fast, the runner is on the toes with the body leaning forward. Bend your arms 90 degrees at the elbows and swing in the direction of running. The hands and facial muscles are relaxed, each leg is fully straightened out and the thighs of the leading leg are lifted horizontally, the hips remain at the same height.

Entering the line *finish* is the most important thing in running and determines whether a runner loses or wins. There are several techniques to enter the line *finish* that can be used by runners, namely: running continuously without changing the running attitude, chest forward or head lowered, both hands straight back and one shoulder advancing forward.

Running a short distance of 100 meters is part of the anaerobic energy system. The anaerobic metabolic system is a series of chemical reactions that do not require oxygen. The anaerobic energy metabolism system is divided into two systems, namely (1) *alactic anaerobes* and (2) *lactic anaerobes* (Sukadiyanto & Dangsina, 2011).

The difference between the two energy systems is the presence or absence of oxygen (O₂) during the process of meeting energy needs. The anaerobic system, during its energy fulfillment process, does not require the help of oxygen (O₂), but uses the energy stored in the muscles, namely ATP and PC. As stated by (Ross & Leveritt 2012) that sprint training adaptation clearly depends on sprint duration, recovery between repetitions, total volume and frequency during training.

Kadir (2010) states that the test is a form of evaluation tool to measure how far the teaching objectives have been achieved. Based on the above opinion, it can be concluded that the notion of a test is a measuring tool that has various meanings, one of which is a test that is a measuring tool to measure a person's ability. Likewise in the case of this study, in making the test instrument, it was meant to measure psychomotor ability, especially measuring the psychomotor ability of the slightly modified 100 meter short sprint skill. A good test must meet several requirements, namely; it must be efficient, it must be standard, have norms, be objective, valid (valid), and reliable (reliable).

According to the opinion Fenanlampir, A., & Faruq (2015) Measurement is the process of collecting data or information objectively. Thus it can be said that the measurement can be carried out if an instrument has been implemented then the scores are given with the raw score. Measurements must be carried out in

accordance with program objectives and carried out in the context of developing or refining objectives.

Evaluation is always carried out by referring to the objectives to be achieved in an activity. According to Widoyo (2012) defines that "evaluation is a process or activity of selecting, collecting, analyzing and presenting information that can be used as a basis for decision making and for the preparation of further programs".

METHOD

This research method using the method of research and development, or *research and development*. According to Sugiyono (2010) research and development methods are research methods used to produce certain products and test the effectiveness of these products. In this study, the aim of this research is to develop or modify the existing form of the 100 meter short distance running test instrument and then make a few improvements regarding the running process from *start to finish*. There are many development research models that can be used, but in this study using the Borg and Gall model development (Haryati, 2012). This Borg and Gall version development research model includes ten activities, namely: (1) *research and information collecting*, (2) *planning*, (3) *developing preliminary forms 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 study were students of the Riau Islamic University Penjaskesrek. This research is located in Marpoyan, Pekanbaru City and will be carried out after the research proposal is received. The population in this study amounted to 50 students of Pendidikan Jasmani Kesehatan Rekreasi Riau Islamic University and a sample of 50 people using *purposive sampling technique* date september 2020.

The data analysis techniques in this study were as follows: (a) validity test using content validity and construct validity. The construct validity test was carried out by analyzing the results of the 100 meter sprint test result. The data obtained from the test were tested for validity using the help of the SPSS computer program. (b) reliability test to describe the consistency of measurement results with the help of the SPSS computer program.

RESULTS AND DISCUSSION

The short distance running test is a measuring tool used to determine and measure the ability to run well in a short distance race, especially in the 100 meter number. Based on the results of observations, the running ability of the students of the Physical Education and Research Center, Riau Islamic University is quite good. But when running a distance of 100 meters, the sample only focuses on running speed using the time from the *start* to the position crossing the line *finish*. Therefore, it is deemed necessary to make a test instrument for a short distance run of 100 meters, which focuses more on the running process starting at the *start*, while running, and at the *finish*. So that it will be more accurate when doing the 100 meter run test.

The 100 meter run test only uses the best time taken by the *timer*, the repair of components in the 100 meter short run test is only in the process of running from the of the *start start* to the line *finish* the test instruments are made of. The 100 meter short run test produced in small group trials is the first step before conducting research in large group trials, for that the data generated is the validation of one test and measurement expert and two athletic sports experts. Based on the test and measurement of the ability to run a short distance of 100 meters on a small-scale trial on the physical health education students, totaling 25 people.

The test is carried out based on the criteria of the item, Score 0 (zero) if the sample fails to perform all movement points, Score 1 (one) if the sample makes 1 (one) point movement that is done correctly, Score 2 (two) if the sample does 2 (two) point movements that were done correctly, score 3 (three) if the sample made

all movement points that were done all correctly.

The calculation method is that each point of the test item is searched for its validity first, after all the test items are valid, then the reliability is sought using SPSS. If the reliability r value is more than the r table value, then the test item data is reliability.

The results of the validity of small group trials using the SPSS application with the results obtained were 0.55 including the moderate category. the validity results that have been known are then compared with the r table value according to the number of samples used in the study. if the calculated r value is greater than the r table price then the instrument test results are valid and can be used to retrieve data in research.

The calculation of the reliability of small group trials was carried out using the SPSS application with the results of 0.63 including the moderate category. The known reliability results are then compared with the r table value according to the number of samples used in the study. if the calculated r value is greater than the r table price, the test results of the instrument are reliable and can be used to retrieve data in the study.

Based on the data above, the 100 meter sprint test instrument developed was correlated with the total score having a validity of 0.55 and 0.55 which was greater than the r table (0.396). While the reliability result is 0.63 greater than r table (0.396). This means that the expert judgment and the measurement of the 100 meter sprint test are valid and reliable, so they can be used as research.

The results of the validity of large group trials using the SPSS application with the results obtained were 0.68, including the medium category. the validity results that have been known are then compared with the r table value according to the number of samples used in the study. The measurement results of the 100-meter short-distance running test that developed the large group trial had a reliability value of 0.71. Based on the data analysis, the short distance running skill of 100 meters is the lowest with a score of 84 and the skill of running the short distance is 100 meters which is the highest with a score of 127.

Table 1. Frequency Distribution of 100 Meter Short Distance Tests

Interval	Category	Frequency	Percent
84 – 92	Not Good	7	14 .00
93 – 101	Pretty Good	9	18.00
102 – 110	Passably Good	8	16.00
111 – 119	Good	12	24.00
120 – 129	Very Good	14	28.00
Total		50	100

In accordance with the relevant research, Muhammad Rizwan, et.al. (2019) Producing research consisting of expert validation, small group trials and large group trials as well as discussion of the research results, the researchers can draw the following conclusions: 1. A game-based sprint learning model aged 10-12 years can be developed and applied in educational learning body and improve basic movement skills for sprinting. 2. The sprint learning model that has been developed, obtained data on the effectiveness and results of the game-based sprint learning model aged 10-12 years.

While the results of the research by Henjilito, R. (2017) showed that there was a positive influence between the explosive power of the leg muscles, reaction speed and motivation on the speed of running a short distance of 100 meters in athletic athletes in PPLP Pekanbaru. leg muscle explosion, reaction speed and motivation.

The research results were analyzed by (Harliawan and Darminto, 2020) using descriptive and inferential technique, Based on the results of the analysis of the data obtained, the following conclusions are obtained, among others, that the speed of movement, leg reaction, and leg explosive power contribute significantly to the running speed of 100 meters.

Based on the research and development steps to produce a product that has been carried out, the final product is obtained in the form of a 100 meter sprint test

instrument. After the production of this 100 meter short distance running test instrument, students had no more trouble finding a test instrument that was feasible and in accordance 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 short distance running numbers, the validity is 0.68 and the reliability is 0.71, including the high category. This means that the expert judgment and measurement of the 100-meter short-distance run test are valid and reliable, so they can be used as research for students of Penjaskesrek, Riau Islamic University.

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