



# Preparation of Footwork Test Instruments on Table Tennis

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**Abstract.** This type of research is research and development or Research and Development (R&D). The research was conducted on March 15, 2019 by providing questionnaires to 2 media experts and 2 material experts. The first test of footwork on April 9, 2019 and the second test of footwork on April 11, 2019, a test for the reliability of this instrument. The Criteria Test uses the results of the jury assessment in the form of an assessment matrix conducted on April 10, 2019 to find the validity of the test. This study involved the first and second test samples totaling 24 athletes of PTM Telkom Padang. Small group trial sample of 10 UNP Table Tennis UKO athletes and large group trial sample of 20 PTM Telkom Padang athletes. Methods of data collection with questionnaires and tests. The results of the study were obtained from material experts 90.62% and 100% (very feasible), media experts 100% and 74.3% (very feasible). Validity of 0.95 and reliability of 0.90, indicating valid and reliable based on the Kirkendall category.

**Keywords:** Instruments · Tests · Footwork · Table Tennis

## 1 Introduction

Exercise is a physical activity can make a person's body become physically and spiritually healthy which will eventually form a qualified human being. Table tennis is a very fast ball game so to do exercises and matches in table tennis games we should know the things that the sport of table tennis has and the factors determining its success. According to the opinion of Carrasco in Danang Dwi Purwanto (2017) table tennis "Is a simple game by hitting the ball after bouncing to the table, the movement it does is to consistently hit, direct and place the ball to the opponent's table which the opponent hopes cannot return the ball".

In connection with this, good and correct basic skills are needed in addition to being supported by other factors. According to Damiri (1991) the basic techniques of table tennis skills include: "(1) Grip (Grip), (2) Attitude or playing position (Stance), (3) Types of punches (Stroke), (4) Footwork (Footwork)".

To get maximum results in training requires the guidance of a coach. One element that determines the success of a table tennis player is the movement of footsteps in pursuit of the ball (footwork) to launch an attack. According to Kertamanah (2003) "Footwork

is the ability to move footsteps to hit as well as launch one's skill techniques at the maximum extent". Footwork skills play an important role in learning for table tennis players. Footwork one of the techniques in table tennis and measuring instruments or table tennis footwork instruments has not existed until now, therefore the author has the idea of wanting to make footwork instruments in table tennis.

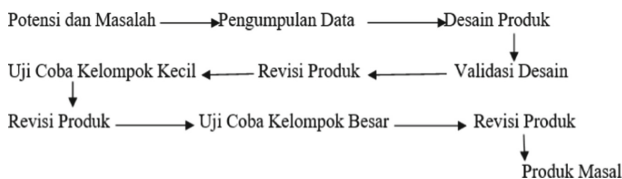
Footwork movements in Ketamanah (2015) "Footwork exercises should be given to players individually. For example, done using a lot of balls, students are fast and strong on the backhand but slow and weak on the forehand, must be given a pass in the form of punches directed at the forehand so that it can sharpen its reflex power, train the ability to read the properties of the ball, accelerate arm swings and footwork to launch a forehand attack" With the footwork instrument in table tennis, coaches and athletes are easier to see the extent of their athletes' footwork abilities in table tennis.

This condition is when the author makes observations and interviews ptm telkom padang coaches that the problems that occur when athletes compete in ball strokes that are done inappropriately because of improper body position and the coach does not have a footwork measuring instrument used to see the extent of the footwork ability of their respective athletes. Therefore, a solution is needed on how to make footwork instruments in table tennis. In addition, the formulation of the problem in this study (1) whether this test instrument is valid, (2) whether this test instrument is reliable.

## 2 Methods

This research uses research and development (R&D) methods. This method according to Sugiyono (2008) is "The research method used to produce a particular product is used for research that is a needs analysis and to test the effectiveness of the product in order to function in the wider community, then research is needed to test the effectiveness of the product".

The procedure for preparing footwork instruments now adapts the steps written by Sugiyono (2008). Here is an image of the research design flow (Fig. 1).



The population in this study of PTM Telkom Padang athletes amounted to 30 people consisting of 26 men and 4 women and the sample on this retest test amounted to 24 men, which was carried out for the first footwork test and the second footwork test. The first test was conducted on April 9, 2019 and the second test was conducted on April 11, 2019. For a small group trial conducted at the UKO (Sports Activity Unit) of UNP Table Tennis on April 18, 2019, which took place at GOR UNP with a sample number of 10 people. For a large group trial conducted at PTM Telkom Padang on April 23, 2019, which was held at telkom padang building on the 3rd floor with a sample number of 20

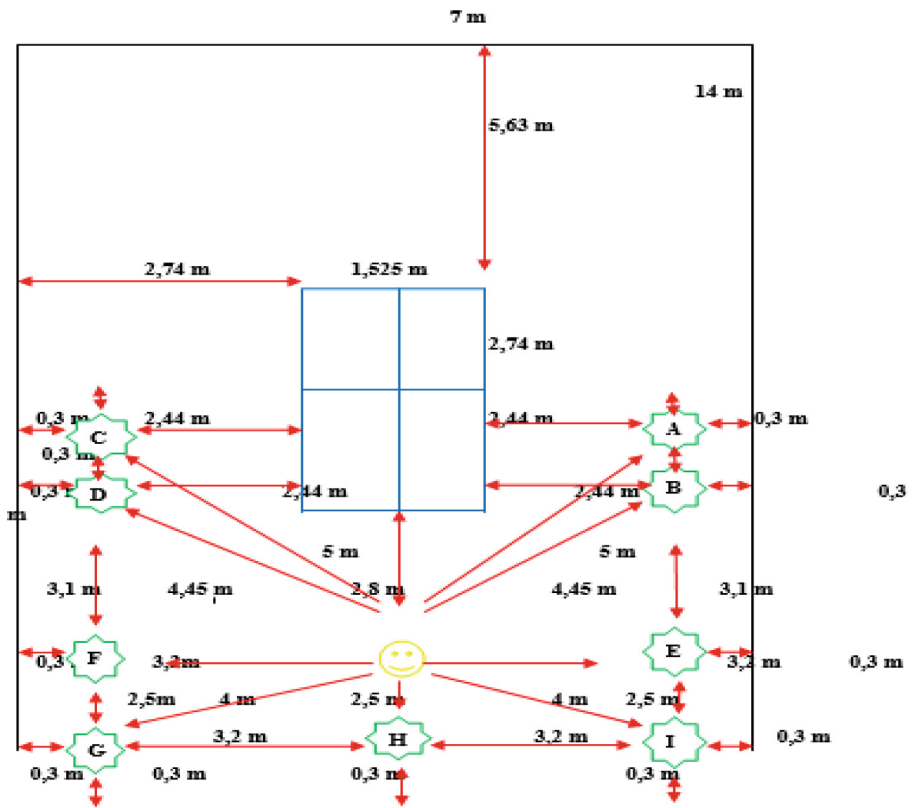


Fig. 1. Footwork Test Instrument Design On Table Tennis

people. The technique of determining test samples in this study is to use the Purposive Sampling method. According to Arikunto (2014) "Purposive sampling is a sampling teknik with predetermined criteria".

The data collection techniques in this study used questionnaires and measurement tests. Questionnaires are given to material experts and media experts to validate whether the footwork test instruments on table tennis are fully feasible or not. While the test is done for data collection to obtain whether the footwork test instrument in table tennis is valid and reliable. To obtain test reliability by correlating the results of the first footwork test with the results of the second footwork test, and to find the validity of this instrument by correlating the results of the first footwork test with the test results of the criteria. The criteria test referred to here is a test using the Judges' assessment of spaciousness by using the footwork assessment matrix.

The data analysis technique in this study uses the product moment correlation formula from Ismaryati (2008) and the feasibility formula from Arikunto in Erliyanto Dwi Nugroho (2014):

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{\{n \sum x^2 - (\sum x)^2\} \{n \sum y^2 - (\sum y)^2\}}}$$

Formula:  $\frac{SH}{SK}$

Information:

SH: Count Score

SK: Criteria Score

### 3 Result

#### 1. Expert Validation

In validation in the first material expert, the percentage obtained is 90.62% of the maximum score. It can be stated that according to experts of this material the footwork test instrument on table tennis validated the content gets the category “Very Feasible”. In validation in the second material expert, the percentage obtained is 100.00% of the maximum score. It can be stated that according to experts of this material the footwork test instrument on table tennis validated the content gets the category “Very Feasible”.

In validation in the first media expert the percentage obtained is 100% of the maximum score. It can be stated that according to this media expert the footwork test instrument on table tennis validated the content gets the category “Very Feasible”. In validation in the first media expert, the percentage obtained was 74.3% of the maximum score. It can be stated that according to this media expert the footwork test instrument on table tennis validated the content gets the category “Worthy”.

#### 2. *Validity and Reliability of Footwork Test Instruments*

Validation of tests in this study was done by correlating between the first footwork test and the criteria test. Based on the data obtained, the validity on this footwork test instrument is 0.95. So the footwork test instrument on table tennis is declared valid based on the Kirkendall validity coefficient interval which states 0.95 belongs to the category “Very High”. Reliability tests in this study were conducted by correlating the results of the first footwork test and the results of the second footwork test. Based on the results of the data above, reliability can be calculated on this test by 0.90. So the footwork test instrument on table tennis is reliably based on kirkendall coefficient intervals of 0.90 belonging to the category “Very High”.

#### 3. Footwork Test Norms on Table Tennis

At first the preparation of footwork test instruments in table tennis was designed and produced into a measuring tool for the footwork ability of table tennis athletes. The process of drafting through research and development procedures. Through some planning, production and evaluation. This product is prepared on various parties who support in the preparation of footwork test instruments on this table tennis, this initial product received a lot of advice from coaches, material experts and media

**Table 1.** Footwork Test Norm after on T-Score

Value	Category
$\geq 65$	Excellent
55–64	Good
45–54	Keep
35–44	Less
$\leq 35$	Very Lacking

experts. After this product is validated by experts, a retest is carried out to find the reliability of this test and for its validity, namely by correlating the results of the first test with the test results criteria. Once valid and reliable, small group trials and large group trials will be conducted (Table 1).

The process of validating material experts and media experts produces data that can be used as the validity of the contents of the footwork test instruments on this table tennis. While empirical validity is the validity obtained from the first test of footwork with criteria tests. The quality of this “Preparation of footwork test instruments on table tennis” in terms of the validity of the contents includes le category “Very Feasible”. Coaches and athletes feel happy and enthusiastic about the existence of footwork test instruments in table tennis and this instrument can be disseminated for measuring instruments in seeing the ability of footwork in table tennis. The advantages of this product and the weaknesses in this product, including the area used in this instrument requires a large area. From these weaknesses, the hope is to get attention and further development efforts to obtain better product results.

## 4 Conclusion

The results of the study “Preparation of Footwork Test Instruments on Table Tennis” are categorized as valid and reliable as a gauge of footwork tests in table tennis. This can be seen from the results of research that has a test validity of 0.95 and test reliability of 0.90, that the footwork test instrument in table tennis is valid and reliable based on the coefficient from Kirkendall. While in the validity of the content, in the first material expert 90.62% and the second material expert 100% this indicates that the content according to the material expert this test instrument is “Very Feasible”. In the first media expert 100% and the second media expert 74.3% this indicates that in the content according to the media expert this test instrument is “Very Feasible”.

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