

Available online at: <http://journal.unj.ac.id/unj/index.php/gjik>
Gladi: Jurnal Ilmu Keolahragaan 15 (04) 2024, 568-577
Permalink/DOI: <https://doi.org/10.21009/GJIK.154.14>

DEVELOPMENT OF A FOOTBALL PASSING TEST TOOL

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(Submission Track: Received:29-07-2024, Final Revision: 29-12-2024, Available Online:31-12-2024)

Abstract This test tool can help coaches and players measure the level of accuracy, speed, and power of their passing. With this test tool, players can track the development of their passing skills over time, making it possible to make necessary training adjustments to improve their game performance. The purpose of the tool is to determine the quality of the accuracy of the player's passing, with a signal of lights on, sound and a timer that runs backwards from 90 seconds. From the results obtained and processed, in the validity test the significance level used 5% so that the r table used was 0.514. The comparison value of r count and r table can be seen in the table below. If r count > r table means the question is valid, then all 10 questions are stated to be valid. The main hypothesis is if the Cronch's Alpha value is > 0.801 then the questionnaire is reliable, and vice versa if Cronch's Alpha < 0.801 then the questionnaire is not reliable. The Cronch's Alpha value of the questionnaire for testing the effectiveness of the 4 (four) sides (front, back, right and left) football passing test tools in the reliability test was 0.960, so the questionnaire for testing the effectiveness of the 4 (four) sides (front, back, right and left) football passing test tools was declared reliable. The pre-test average was 12.73 and the post-test was 15.20 with a standard deviation of 2.017 and 2.077. It is found in the t-test table with a significance level of 0.05 having Sig. (2-tailed) 0.001. The p-value result Sig. (2 - Sided) <0.05, then the football passing test tools can significantly improve the results of the passing test accuracy. This proves that the football passing test tool created is an effective effort to improve the results of passing accuracy in the sport of football.

Keywords: Football; Passing; Sport Technology



INTRODUCTION

Football in Indonesia has grown, so that many qualified foreign coaches are recruited to become coaches of professional clubs in Liga 1 Indonesia to the Indonesian National Team, and many football academies in Indonesia use the services of foreign coaches to foster, educate, educate and train the basic techniques of football players in Indonesia. Basic techniques are very important for football players, if not taught early on it will affect the development of the game of football in the future when they become professional players.

Basic football techniques that are taught from an early age include dribbling, passing, holding the ball, blocking the opponent, taking the ball, heading the ball and kicking the ball, without realizing that these basic techniques are often done and these basic techniques usually determine the extent to which individual players can play football well and correctly. One of the basic techniques that must be mastered by a football player is passing because passing is done to start a game in football and passing can also determine a club's identity in the football

playing system, and through passing can attack the opponent's defense.

Passing skills in football and the need for objective measurement are very important to note, the development of a football passing test tool is expected to provide a positive contribution to the development of technical abilities of football players effectively and efficiently. This test tool can help coaches and players in measuring the level of accuracy, speed, and strength of their passing. With this test tool, players can track the development of their passing skills over time, making it possible to make necessary training adjustments to improve their game performance.

Based on the research background, several problems can be identified, including: players' understanding of basic passing techniques. Designing a more specific training program that suits the players' needs based on the data obtained.

Enriching existing research in the field of football as an additional insight into the treasury of sports science. As a new science for coaches and players where this research aims to develop basic passing techniques.

Research is a formulation that shows the existence of results, something that will be obtained after the research is completed, also something that will be achieved or handled in a research, it is important to know the purpose of the research and the benefits of the research, by knowing the purpose of the research, every effort made in the research is more structured and the results obtained can be seen.

Research is very necessary in science and development so that human civilization can advance. Research is the main activity or problem-solving process carried out using scientific methods (Maksum 2012). Research is part of an activity or effort to fill in gaps or deficiencies, explore further what already exists, develop and expand, and prove the truth of something whose truth is still doubtful (S. Hadi 2004). So, research activities are activities full of calculations in order to find the truth. Research cannot be arbitrary because it aims to scientifically prove a theory systematically, if there is a theory that is no longer relevant to current conditions, then through research we can prove the theory again. Research has a specific way of implementation, so it is very necessary for someone before

conducting research to understand the type of research that will be carried out. All research is related to the activities of searching, investigating, and experimenting, naturally in a particular field to obtain many new facts or principles, which will later give rise to new understandings that can improve science and technology.

Research is basically an activity or systematic process to solve problems carried out in the application of scientific methods. Research is an activity or effort to fill in gaps or deficiencies, dig deeper into what already exists, develop and expand, and prove the truth of something whose truth is still in doubt. So, research activities are activities full of calculations to find the truth. Research cannot be careless because it aims to scientifically prove a theory systematically, if there is a theory that is no longer relevant to current conditions, then through research we can prove the theory again.

There are many types of research including development research, evaluation research, basic research and urgent research. From several types of research, researchers choose one to use in their research, namely development research. ADDIE is one of the

systematic learning designs that is structured, in the book "Instructional Design: The ADDIE Approach" according to Branch (2009) "ADDIE is an acronym for Analyze, Design, Develop, Implement, and Evaluate. ADDIE is a product develop concept. The ADDIE concept is being applied here for constructing performance-based learning. The educational philosophy for this application of ADDIE is that intention learning should be student centered, innovative, authentic, and inspiring". It can be interpreted that ADDIE is an abbreviation of Analyze, Design, Develop, Implement, and Evaluate. ADDIE is a product development concept, this concept is applied to build performance-based learning. The educational philosophy for ADDIE design is that learning can be student-oriented, innovative, authentic, and inspiring. Researchers choose the development method because this method can be used to produce certain products, and can test the effectiveness of the product. The products that have been created by researchers will be used for analytical research in order to test how effective the products that have been produced are in order to get

maximum results and can function in the wider community.

Research and development, if interpreted in general, is research to conduct research to obtain information, from the information obtained can be developed according to the needs of researchers. The purpose of development research in addition to formulating theories, evaluating theories and concepts, can also aim to formulate, improve, develop and produce certain products that are superior, effective, efficient and meaningful.

Football is a team sport that requires each player to have good basic passing skills, so that the team can play the ball in a fast and precise circulation. So if the players already have adequate basic techniques, then good teamwork will be created too. One of the basic techniques that supports teamwork and must be mastered by the players is the basic passing technique.

Effective passing is the key to maintaining the flow of the ball and building a successful attack in the game, it is important for players to have solid basic technical skills, including basic passing techniques. Passing is a way to transfer the momentum of the ball from one player to another (Mielke 2007), in

addition, in the study (Adriwansa and Rahayu 2023) explained Passing is moving the ball accurately, powerfully, and done with good control. So passing in football is being able to flow the ball faster so that it speeds up the circulation of the game by controlling the weight of the pass. Good defense can be done by making the right pass because it will make it difficult for opposing players to take the ball (Sudrajad 2016). Passing is done so often in a match, and a good coach will start his job by improving the passing of his players (Scheunemann 2008). From some of the opinions above, it can be concluded that football players must be trained in passing skills by the coach in order to have good passing quality, so that in the match players can pass with (accuracy) good precision so that the ball is not taken by the opponent.

Effective passing is the key to maintaining the flow of the ball and building a successful attack in the game, it is important for players to have solid basic technical skills, including basic passing techniques. Passing is a way to transfer the momentum of the ball from one player to another, in addition, the study explains that passing is moving the ball accurately, powerfully, and done with good control. So passing in football

is being able to flow the ball faster so that it speeds up the circulation of the game by controlling the weight of the pass.

The pass must also reach the target in such a way that the recipient can easily control it (Anam 2013). Accuracy is a person's ability to direct something according to the desired target (R. Hadi 2007). From the definition above, it can be concluded that accuracy is a person's ability to move an object or thing towards a predetermined target without encountering obstacles.

Nowadays, football does not only rely on physical strength, but modern football games are required to always pass and move into empty spaces to receive the ball back from friends or to open up space for other players. In this situation, it is known as ball possession, where the team can control the ball as long as possible by making many passes between players on the team. The Instep passing technique is used to pass the ball at a distance of 25 meters or more. The instep or toe is the part of the foot that is covered with shoelaces that provide a hard and flat surface for kicking the ball. The measurement results of the measurement are quantities that accurately reflect the facts or real

conditions of what is being measured (Matondang and Pendahuluan 2009). This means that a test is said to have high validity if the tool carries out the measurement function correctly or provides measurement results that are in accordance with the purpose of the measurement. Reliability is the correlation coefficient between two observation scores obtained from measurement results using parallel tests, the test is reliable if the measurement results are close to the actual conditions (Retnawati 2010).

METHOD

The characteristics of this study are development, where the development developed by the researcher is a soccer passing tool. The research method used in this study is the research and development method (Research and Development). The research and development method is a research method used to produce certain products, and test certain products, and test the effectiveness of certain products (Sugiyono 2015). Research and development is a process or step in developing a new product, to perfect existing products, which can be accounted for (Pratama and Fudin 2020).

All electronic devices that have been set with Arduino will be connected to the touch sensor and will be stored behind the steel plate. For the imposition of the score will automatically appear on the website on the laptop display when the ball touches the steel plate and the sound of the buzzer sounds.

The purpose of the tool is to determine the quality of the accuracy of the player's passing, with a signal of the light on, a timer that runs backwards from 90 seconds and the score and buzzer also turns on automatically when the target is touched by the ball and the ball can bounce back to the player. The purpose is to get the results of the accuracy of passing with the help of stimuli in the form of lights and sounds, has a sensor to count the number of accuracy passes and measures the pressure of the player's passing kick to the backboard with a duration that can be set. Researchers involve several experts/specialists in the field of football sports who come from practitioners. The evaluation of these experts is used to input the initial product that has been made.

Validation aims to determine the suitability of the manufacture of passing instruments to be produced and made by

researchers. The revised product depends on input and assessment from experts.

At this stage, there are models that are considered feasible and some can be continued to the next stage with a few notes. After the product form of the development of the football passing test tool has been validated and then revised by the researcher, the next step is to conduct a product trial. Product trials are carried out by conducting trials on all products that have been revised and are considered final.

The pre-test and post-test are in the form of questionnaires developed as pre-test and post-test of the research. This pre-test is conducted using a questionnaire that has been developed and validated by experts to test participants' knowledge before the product is implemented. Education to participants regarding techniques in passing. Post-test to test participants' abilities after education and provision of passing practice materials.

The research hypothesis regarding the effectiveness of the developed model states that it is estimated that there will be a significant influence on the application of the

development of football passing test tools.

RESULT AND DISCUSSION

Based on data collected from each expert, consisting of 1 expert lecturer in the field of football, 1 expert lecturer in testing and construction, and 1 football Head Coach who has a football coaching license.

The percentage of product feasibility test results through experts obtained the values listed in the table below:

Table 1 Pretest and Posttest Results of Effectiveness Test Research

No	Aspek	Presentase	Keterangan
1	Efektivitas Produk	95%	Dapat digunakan tanpa revisi
2	Fungsi Produk	90%	Dapat digunakan tanpa revisi
3	Desain Produk	85%	Dapat digunakan tanpa revisi

The results of the validity and reliability tests of data on the development of passing test tools using multiple choice questionnaires, the reliability of the instrument using Kuder and Richardson 21 (KR 21) formula, while the validity test for multiple choice using biserial point correlation, where all data calculation processes use SPSS. From the results obtained and processed, in the validity test the significance level uses 5% so that the rtable used is 0.514. The comparative value of rcount and

rtable can be seen in the table below. If rcount> rtable means the question is valid, then all 10 questions are stated to be valid.

Table 2 Results of Expert Questionnaire Validation Statistical Test

		N	%
Cases	Valid	15	100.0
	Excluded ^a	0	.0
	Total	15	100.0

In the reliability test using SPSS, the main hypothesis is if the Cronch's Alpha value is > 0.801 then the questionnaire is reliable, and vice versa if the Cronch's Alpha < 0.801 then the questionnaire is not reliable. The Cronch's Alpha value of the questionnaire for the effectiveness test of the 4 (four) sides (front, back, right and left) football passing test tools in the reliability test is 0.960, so the questionnaire for the effectiveness test of the 4 (four) sides (front, back, right and left) football passing test tools is declared reliable.

Table 3 Results of Questionnaire Reliability Statistical Test

Cronbach's Alpha	N of Items
.960	10

Table 4 Interpretasi Cronbach's Alpha

Cronbach's Alpha	Tingkat Reabilitas
0,00 - 0,20	Kurang Reabilitas
0,201 - 0,40	Sedikit Reabilitas
0,401 - 0,60	Cukup Reabilitas
0,601 - 0,80	Reabilitas
0,801 - 1,00	Sangat Reabilitas

The difference in the pre-test and post-test averages is not enough to conclude that the passing accuracy results have increased significantly. Therefore, it is necessary to conduct a test of the average difference using a paired sample test using SPSS. The test is used to see a significant increase in the results of the development of a 4 (four) side football passing test tool (front, back, right and left). Analysis of the data for the two average difference test using an independent t-test with a significance level of 0.05. The following are the results of the independent t-test presented in the table below:

Table 5 Results of Independent T Test

Significance One-Sided p	Mean Difference	Std. Error Difference
<.001	-2,467	,747
<.001	-2,467	,747

	Test	N	Mean	Std. Deviation	Std. Error Mean
Hasil Uji Efektifitas tes passing	Pre Test	15	12.73	2.017	.521
	Post Test	15	15.20	2.077	.536

The average pre-test was 12.73 and the post-test was 15.20 with a

standard deviation of 2.017 and 2.077. It is found in the t-test table with a significance level of 0.05 having Sig. (2-tailed) 0.001. The p-value result Sig. (2 – Sided) < 0.05, then the soccer passing test tool can significantly improve the accuracy of the passing test. This proves that the soccer passing test tool created is an effective effort to improve the results of passing accuracy in the sport of soccer.

CONCLUSION

Based on the data obtained from expert validation and field trial results and discussion of research results, it can be concluded that: The development of a 4 (four) side (front, back, right and left) football passing test tool with the name is suitable for use in determining the quality of the accuracy of football players' passing combined with technology and can increase insight into technology in football sports.

The researcher provides several recommendations related to the products that have been designed and developed, as an effort by the researcher to develop research to provide benefits for related elements and improve it for further research.

1. Researcher's Suggestion
 - a. This product is a development of a football passing test tool that can later be used as a reference for coaches and players in applying passing in training and matches.
 - b. The importance of using good training media to increase stimulus or stimulation to be more focused in carrying out the instructions given by the trainer.
 - c. The test instrument in this study can be used as an assessment to determine the quality of passing accuracy and also the pressure of passing strength.
2. Suggestions for Further Research
 - a. Develop more innovative Passing Test Tools and improve the quality of passing.
 - b. Simplifying the passing test instrument.
 - c. Expanding the types of research population samples.

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