

Prototype of Basic Futsal Playing Skills Test for Students Faculty of Sports Science

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Abstract. Futsal is a sport that is quite popular and loved by people in Indonesia and also one of the elective courses in 3 study programs at Medan State University (Unimed), namely Sports Coaching Education, Sports Science, and Health, Physical and Recreation Education. However, the three study programs do not yet have standard tests and assessments to determine students' basic futsal playing skills. The aim of this research is to create a prototype of a basic futsal playing skills test for FIK Unimed students that is adapted to the needs of playing in real life on the field. This research was adapted from Lauff's prototype development steps which contain 5 steps. This prototype has been validated by 2 futsal experts and has been completed. The validation results of the two experts were at 93% (very good), with details of the first expert assessing 90% and the second expert scoring 96%.

Keywords: Futsal, Prototype, Skill, Test

1 Introduction

According to Cambridge Dictionary, prototype (n) is the first example of a machine or other industrial product. Beaudouin-Lafon & Mackay (2013)^[1] defines a prototype as a concrete representation of part or all of an interactive system. Meanwhile, according to Kristanti (2014)^[2], a prototype is an original type, shape or example of something that is used as a typical example, basis or standard for other things from the same category and is often called the word model.

Futsal is a sport that is quite popular and loved by people in Indonesia. This is because one sport, namely football, requires a large field, whereas in urban areas this area is rarely available, so futsal has become an alternative for people to do physical activity in their free time^[3]. There are quite a lot of official futsal matches in Indonesia, such as the Pro Futsal League or Indonesian Professional Futsal League, Women Pro Futsal League or Indonesian Women's Professional Futsal League, Putra-Putri Archipelago Futsal League, and so on^[4], so it is important to players master the basic skills of playing futsal.

The popularity of this type of sport has led many researchers to find the right test to measure players' skills in playing futsal. Khurrohman (2022)^[5], Kurniawan, et al., (2021)^[6] have developed a basic futsal playing skills test for players aged 16-19 years or for high school students. Meanwhile, Putra (2024)^[7] developed a test for students aged 10-12 years. Both elementary school students and high school students need appropriate tests according to their age, so a basic futsal playing skills test is needed that is adapted to the age of students at university level.

Students at the Faculty of Sports Science (FIK) have an elective course in futsal, which students choose according to their confidence in taking this course. Medan State University FIK has 3 study programs, namely Sports Coaching Education (PKO), Sports Science (IKOR), and Health, Physical and Recreation Education (PJKR) whose lecturers are different, so there are differences in the learning and teaching process of futsal courses. Therefore, it is important to develop a basic skills test for playing futsal, especially for FIK students.

2 Method

Prototyping Planning

According to Lauff, et al. (2018)^[8], before prototyping activities are carried out, planning needs to be carried out which is divided into 5 steps, namely as follows:

Step 1: Determine the purpose of making the prototype.

The needs analysis was carried out in 3 ways, namely distributing questionnaires, observation, and reviewing previous research. Questionnaires were distributed to lecturers teaching futsal courses and students at the Faculty of Sport Sciences who have taken or are taking the course. Direct observation is also carried out on the semester learning plan (RPS) that has been prepared by the lecturer teaching the course to ensure that the test is made based on the conclusions of the RPS. While the review of previous research is carried out aimed at finding out the shortcomings of the test model that has been developed, then refined based on the test that should be developed to determine the skills of students.

Step 2: Determine the level of prototype estimation.

The best prototype must be the simplest prototype that will use minimum resources to achieve the objectives of the prototyping activity^[8]. Defined based on analytical or physical models and based on the level of focus or understanding.

Step 3: Outline the experiment plan.

In this step, estimation of the value of the developed prototype, identification of the test protocol, identification of the measurements taken, and identification of how to analyze the resulting data are carried out. The value of the developed prototype is the basic skills test of playing futsal which is an update of the test adapted to the real game when a futsal game is played, as explained in the introduction. The goal is for the developed test to be an accurate test to measure students' basic skills, so that students' ability to play futsal can be measured. Measurements will be made with the prototype developed by means of expert validation in this study. So that then proceed to conduct trials in small and large groups.

Step 4: Create a procurement, construction and testing schedule.

Procurement of prototypes is carried out after analyzing the needs of students and lecturers teaching futsal elective courses. After the needs are known, it will be adjusted to the previously developed test.

Step 5: Design a prototype based on the results of the experimental plan.

The research framework for creating a prototype of the basic skills test for playing futsal for FIK students can be seen in Fig. 1.

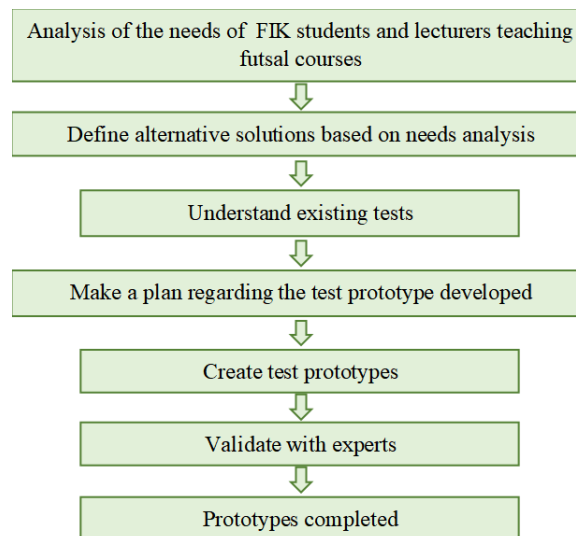


Fig. 1. Steps for developing a prototype test of basic skills to play futsal.

3 Results and Discussion

a. Analysis Needs and Alternative Solutions

The needs analysis was carried out in 3 ways, namely by distributing questionnaires, observation, and reviewing previous research.

1. Questionnaire Distributions

Questionnaires were given to 4 lecturers teaching futsal courses and 47 FIK students from 3 departments, namely Sports Coaching Education (PKO) 27 people, Physical Education, Health and Recreation (PJKR) 14 people, and Sports Science (IKOR) 10 people. Based on the needs analysis obtained from the questionnaire circulated to students, the average percentage score is 59%. This is emphasized by an important question that reads “Are the assessment norms in accordance with the characteristics of students?”, it was found that some students answered that the test was not in accordance with the characteristics of students. Another question asked “Do you

agree if a skill test and its assessment norms are developed”, 100% of respondents answered that test development was necessary.

2. Observation

The results of observations also show that the soccer course skill tests are still diverse and do not have a standard set on the tests carried out. Lecturers teaching futsal courses have different RPS (Semester Learning Plan) so it is difficult to measure students' basic skills in playing futsal. This will certainly lead to uneven abilities possessed by students for basic skills which are the most important thing in playing futsal as shown in table 1.

Table 1. Semester Learning Plan for Futsal Course.

IKOR	PJKR	PKO
Passing	Passing	Passing
Receiving	Dribbling	Dribbling
Dribbling	Heading	Heading
Shooting	Goalkeeping	Goalkeeping
Goalkeeping		

3. Review of Previous Research

The research gap in this study is the skill test from Khurrohman (2022)^[6] and the skill test book from Hulfian & Subakti (2022)^[9]. The results of the Khurrohman skill test (2022)^[6] show that the tests carried out do not describe the real skills, this is because the development results do not measure the time used to achieve the entire test and also in the research results do not explain the results of the research, namely the norms of the test development carried out, so these things are an improvement on the development carried out. Meanwhile, based on the skills test by Hulfian & Subakti (2022)^[9], it shows that the test is less relevant to the situation that will occur in the game such as tests that are carried out separately between one test and another with 3 main tests, namely passing-controlling, dribbling, and shooting. In the shooting test, the distance between the kicking point and the goal is not explained, in the dribbling technique, the testee grinds the ball from one cone to another cone only 50 cm away which is too short for the testee. In the dribbling test, it also does not describe the situation in the game, where there are various situations in the game, including dribbling straight ahead, and winding. Based on this, the researchers developed a more representative basic skills test.

b. Planning & Prototyping Basic Futsal Playing Skills

The test consists of 4 series that are not separated in its implementation starting at the starting point/place to the final point/place. The four (4) tests are passing, dribbling, receiving, and shooting tests.

1. Passing Test

a. Purpose

This test aims to measure the skill of passing the ball in reaching the right target.

b. Tools and Equipment

- 1) Ball 1 piece
- 2) Bounce wall (wall or board)
- 3) Paint or chalk or tape
- 4) 4 spare balls

c. Tester

The supervisor is also the scorekeeper for 1 person.

d. Test Implementation

The individual stands 4 m away from the wall/bounce board measuring 250 cm x 60 cm. After receiving the signal to start, the competitor kicks the ball to the wall/reflecting board in front of him/her 5 times. The test person is allowed to choose to kick using the right foot or left foot when kicking the ball into the wall. If the ball goes out of the test path, the competitor can take the spare ball provided 50 cm next to the line of the kick.

e. Test Form and Measurement

The bounce board is 250 cm wide and 60 cm high and is divided into 5 sections, each measuring 50 cm x 60 cm. The center section is given a score of 3, the left and right sides are given a score of 2, the outermost part is given a score of 1, and if the ball does not hit the bounce board, a score of 0 is given. To limit each kick, it is limited by a line using 5 cm thick paint. For more details see the following picture.

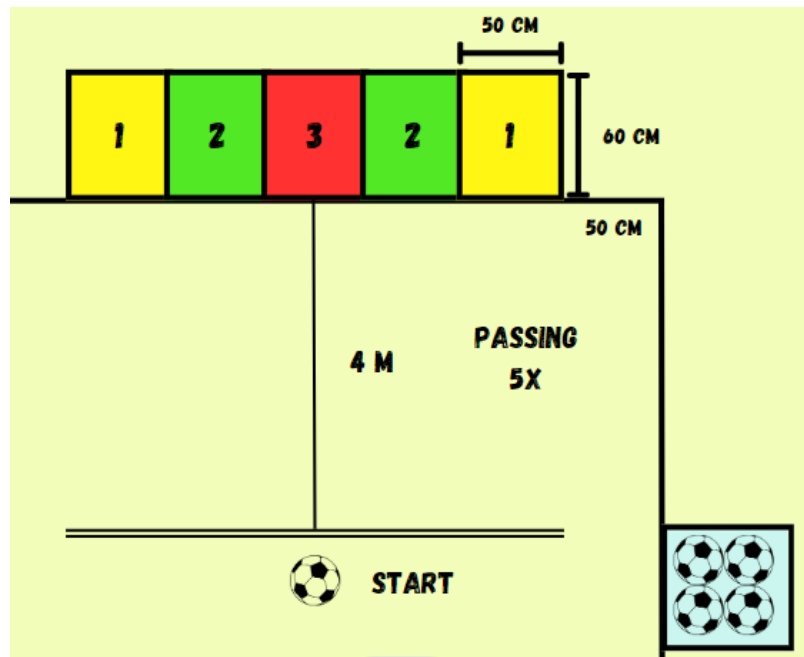


Fig. 2. Prototype of passing test.

2. Strike Dribbling Test

a. Purpose

The purpose of this test is to measure dribbling skills straight ahead.

b. Tools and Equipment

1) Ball 1 piece

c. Tester

Supervisor 1 person.

d. Test Implementation

After the person tries to do the passing test, the next step is to immediately dribble the ball for 7 m without obstacles (strike dribbling). If the ball is not available then the tryers take it from the ball reserve.

e. Test Form and Measurement

The straight dribbling test (strike dribbling) is carried out for 7 m.

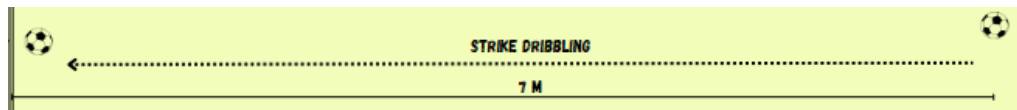


Fig. 3. Prototype of strike dirbbling test.

3. Receiving Ball Test

a. Purpose

This test aims to determine the ability to perform basic ball receiving techniques.

b. Tools and Equipment

- 1) Ball 1 piece
- 2) Bounce wall (wall or board)
- 3) Paint or chalk or tape

c. Tester

The supervisor is also the scorekeeper for 1 person.

d. Test Implementation

The individual then kicks the ball to the bouncing wall 4 m away 5 times. The trials person is allowed to choose to kick using the left foot or right foot including when receiving the bounce of the ball. If the ball is played out of the way, the trial person must pick it up and return to the starting position to perform the receiving test.

e. Test Form and Measurement

The bounce board measures 250 cm wide and 60 cm high and is 4 m away from the point where the ball is kicked. Take a look at the following picture for a clearer illustration.

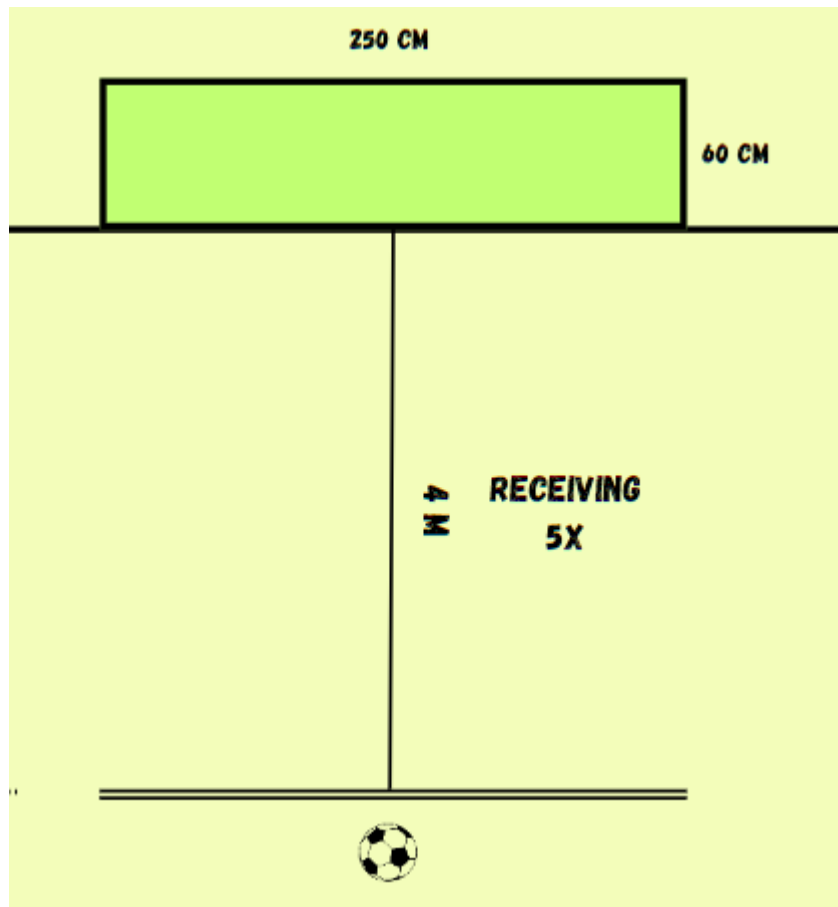


Fig. 4. Prototype of receiving test.

4. Zig Zag Dribbling Test

a. Purpose

The purpose of this test is to measure dribbling skills over obstacles.

b. Tools and Equipment

- 1) Ball 1 piece
- 2) Traffic cones 6 pieces

c. Tester

Supervisor 1 person.

d. Test Implementation

After the trial person receives the 5th bounce, the trial person then goes to the dribbling position which is 4 m away from the original position. Next, the trials person dribbles through the traffic cones (zig zag dribbling) that have been arranged and follows a predetermined route.

e. Test Form and Measurement

Zig zag dribbling is done through 6 traffic cones which are placed 3 cones in each row. Each cone is 1.5 m away from the previous point, for example, the second cone is 1.5 m from the first cone, the third cone is 1.5 cm from the second cone and 3 m from the first cone, etc. Try to stop dribbling at the sixth cone by stopping the ball. Note the picture below.

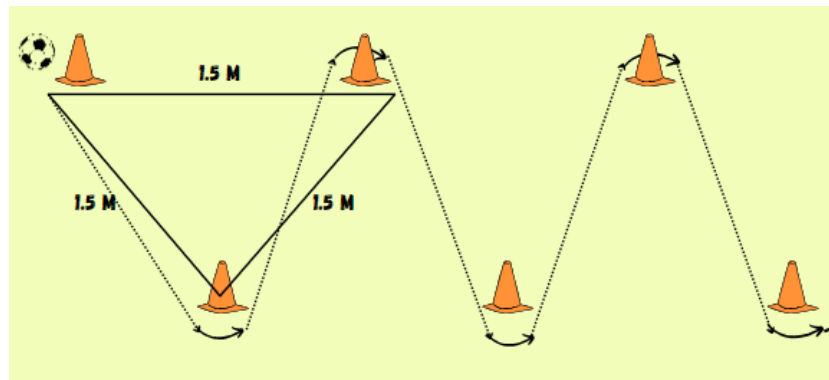


Fig. 5. Prototype of zig zag dribbling.

5. Shooting Test

a. Purpose

This test aims to measure the skill of shooting the ball into the target.

b. Tools and Equipment

- 1) Ball 1 piece
- 2) Target wall
- 3) Paint or chalk or tape

c. Tester

The supervisor is also the scorekeeper for 1 person.

d. Test Implementation

After doing zig zag dribbling, the next try is shooting. Try to shoot the ball into the target wall (goal) which is 6 m away 5 times and try to choose to use the right foot or left foot.

e. Test Form and Measurement

The target is a wall (wall / goal) with a size of 300 cm wide and 200 cm high which has been divided into 5 parts. Each section has a width of 60 cm and a height of 200 cm. If the person tries to hit the target in the center of the target, a score of 1 will be given, a score of 2 is given on both left and right sides next to the center point of the target, a score of 3 is given to the person trying if the ball hits the target on both the left and right most edges, and a score of 0 if the target does not hit the target board. If it hits the dividing line between the scores, the highest score is taken. Take a look at the following picture for more clarity.

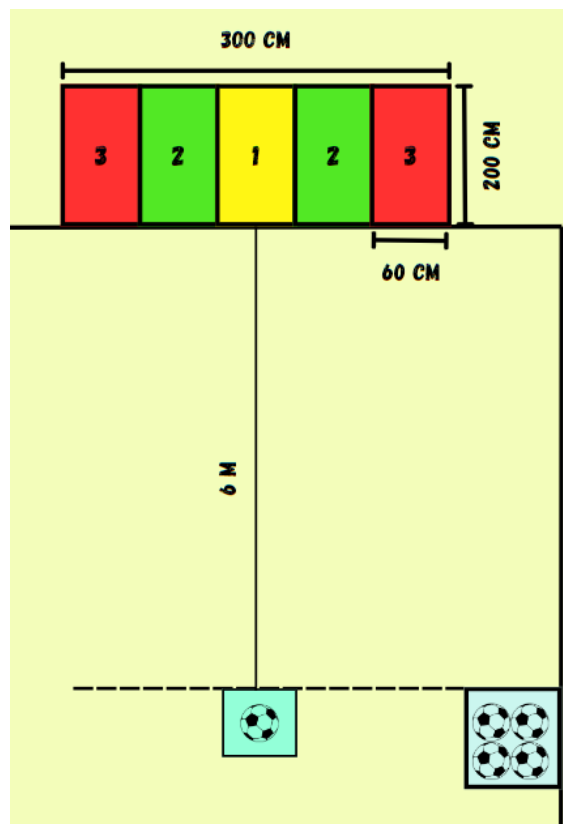


Fig. 6. Prototype of shooting test.

The test is carried out as a whole by calculating the time and score previously described, so that it can be obtained as a whole test of basic skills playing futsal in Fig. 7.

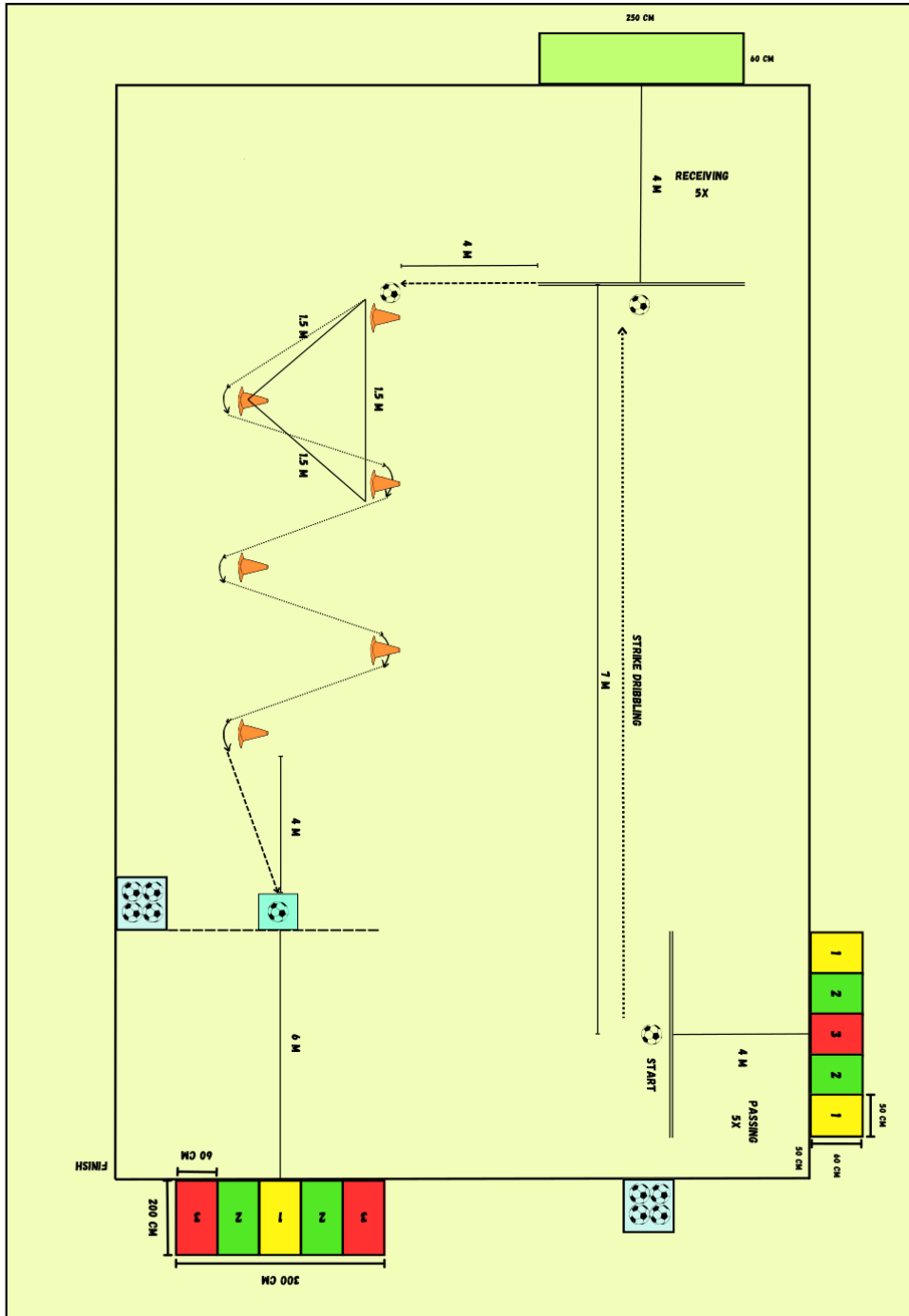


Fig. 7. Prototype of futsal basic skills test.

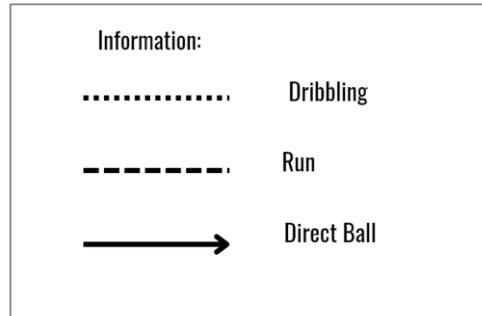


Fig. 8. Instruction of prototype of futsal basic skills test.

c. Validation of Basic Futsal Playing Skills Prototype

Expert validation was carried out on two futsal experts who had a license to train futsal with a completed questionnaire. Based on the results of the first expert and second expert questionnaires, namely 96% and 90%, the prototype can be continued with several suggestions for improvement. The first expert suggested combining passing and receiving into 1 part and calculating the time per test item and the overall test. Meanwhile, for the second expert, for the passing part, a 2-way backboard is added, so that students don't just pass in one direction but in two directions. The test consists of 4 series that are not separated in its implementation starting at the starting point/place to the final point/place. The four (4) tests are passing, dribbling, receiving, and shooting tests.

4 Conclusion

The prototype of the basic futsal playing skills test for FIK students has been designed and validated by futsal experts with the improvement of combining 2 tests, namely passing and receiving, so that in the future small and large trials can be carried out on FIK students.

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