

A Construction of Futsal Skills Tests for Undergraduate Students of Rajamangala University of Technology Thanyaburi, Thailand

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Abstract

The purposes of this research were to construct futsal skills tests and to establish norms of futsal skills for undergraduate students of Rajamangala University Technology Thanyaburi (RMUTT), Thailand. 260 samples of RMUTT students were used to study in 2 areas: 60 RMUTT students for studying on the quality of the futsal skills tests, and 200 RMUTT students for establishing norms of futsal skills. The data were analyzed by percentage, mean, standard deviation, and the quality of the tests was analyzed by Pearson's product moment correlation coefficient. The research results showed that the instruments for the futsal skills tests constructed in this research comprised 3 tests: 1) dribbling test, 2) wall test, and 3) shooting test. The objectivity and reliability were at a very high level ($r = .908 - .995$) with the statistically significant level of .05. Further, the scores of 3 tests were positively related at a very high level ($r = .907 - .985$) with the statistically significant level of .05. These could be indicated that the content validity of the futsal skills tests constructed in this research was at a very high level. Considering the test results of dribbling test, wall test, and shooting test, the average test scores of male students were 17.76, 15.85, and 7.77 respectively; and the average test scores of female students were 29.99, 10.60, and 6.93 respectively. Also, the norms of futsal skills in this research were divided into very good, good, average, acceptable, and weak.

Keywords—Futsal, Skills Test, Norm, Higher Education

I. INTRODUCTION

Thailand has been affected by critical global issues and changes. Advances in science and technology play an important role in daily life, especially for the sake of convenience, so most people lack movement. In addition, health risky behaviors like a lack of exercises, eating unhealthy food, stress at work, not getting enough sleep, smoking, drinking alcohol, lead to serious health conditions, for example, declining in muscle mass and strength, a circulatory disorder, etc. These can cause diabetes, hypertension, heart disease, obesity as well as the cause of death. Physical activities and playing sports can promote health and physical performance and prevent illness and

diseases. Futsal is a kind of sport that is similar to football (soccer) and gains widespread popularity among students and young people, and futsal is also taught in schools. Futsal is a physical activity to promote and develop athletic skills, body movement in order to improve physical and mental health.[1] said that the purposes of physical education were physical, mental, emotional, and social development. That is important for physical performance promotion. Students should practice how to play futsal correctly, such as passing, dribbling, and shooting. Learning measurement and evaluation is important for physical education to stimulate students' development, while teachers can use them to

improve teachers' teaching. The measurement and evaluation should reflect the real performance of students, so the good test is needed. A construction of tests has to be considered about the skills of each sport and based on reliability, validity, and objectivity [2] [3]. As a teacher, the researchers realized the importance of physical activities, especially futsal that the researchers are responsible to teach. However, there were no futsal skills tests for the students at Rajamangala University of Technology Thanyaburi (RMUTT), so this research aimed to construct the futsal skills tests to support students' physical, mental, emotional, and social development as well as teaching and learning physical education.

II. Research Objectives

The purposes of this research were to construct futsal skills tests and to establish norms of futsal skills for undergraduate students of Rajamangala University Technology Thanyaburi (RMUTT), Thailand.

III. Research Methods

A. Research Design

This research was conducted on 260 RMUTT students: 60 RMUTT students who used to study Team Sports were purposively selected for studying on the quality of the futsal skills tests; and other 200 RMUTT students who studied Team Sports in the academic year 2019 were chosen by simple random sampling for establishing norms of futsal skills. The research instruments were 3 futsal skills tests consisting of a dribbling test (IOC = 0.90), a wall test (IOC = 0.90), and a shooting test (IOC = 0.80) that were approved by 5 experts. Test-retest method was applied to this research. Firstly, the futsal skills tests were tested with 60 RMUTT students (30 males and 30 females) and were administered by 3 scorers. The reliability of the tests was between 0.908 - 0.995. Then a week later, the futsal skills tests were retested with the same samples and were administered by the same scorers to assess the reliability between test and retest scores by using Pearson Product-Moment Correlation Coefficient ($r = .907 - .985$). After that, all 3 futsal skills tests were

tested with 200 RMUTT students (100 males and 100 females). The collected data were analyzed by mean, average, standard deviation, maximum, minimum, mode, median, and Pearson's Product-Moment Correlation Coefficient. And the scores of the futsal skills tests were ranked into 5 levels: very good, good, average, acceptable, and weak.

B Research Process

This research was divided into 5 steps as shown in Fig. 1.

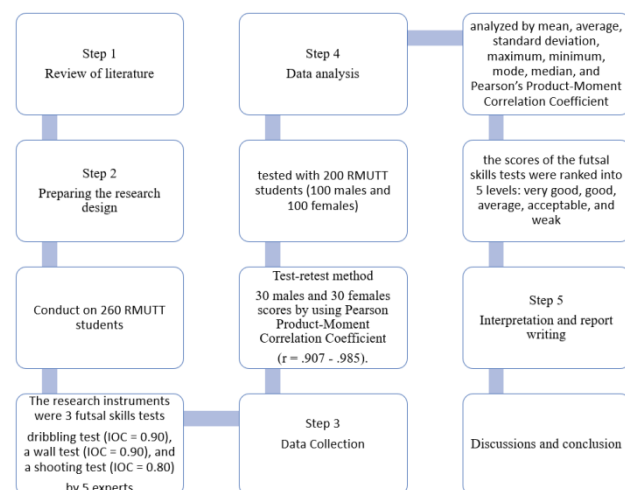


Fig. 1 Research process

IV. RESEARCH Results

1. The objectivity of the futsal skills tests was analyzed for Pearson Product-Moment Correlation Coefficient and the research results revealed that the objectivity of futsal dribbling test was positive in a very high level at the statistical significance of .05 ($r = .990 - .995$); the objectivity of a wall test by kicking a ball against the wall for 30 seconds was positive in a very high level at the statistical significance of .05 ($r = .909 - .953$); and the objectivity of a shooting test by was also positive in a very high level at the statistical significance of .05 ($r = .908 - .957$) as shown in Table 1.

Table 1 The objectivity of the futsal skills tests from analysis of correlation coefficient by 3 scorers

Futsal Skills Tests	PE1:PE2	PE2:PE3	PE1:PE3
A dribbling test	.990*	.995*	.99
A wall test	.909*	.953*	.91
A shooting test	.942*	.957*	.90

*p< .05; PE1 = the 1st scorer, PE2 = the 2nd scorer, PE3 = the 3rd scorer

2. The reliability of the futsal skills tests: a dribbling test, a wall test, and a shooting test; created by the researchers was analyzed from the test and retest scores by using Pearson Product-Moment Correlation Coefficient and the research results were found that indicated that the reliability of 3 tests for male students was positive in a very high level at the statistical significance of .05 ($r = .970, .928, .949$). However, only the reliability of the dribbling test for female students was positive in a very high level at the statistical significance of .05 ($r = .979$). Other tests (a wall test and a shooting test) for female students had the positive reliability in a high level at the statistical significance of .05 ($r = .858, .836$). In conclusion, overall reliability of all 3 tests (both males and females) were positive in a high level at the statistical significance of .05 ($r = .985, .907, .923$) as shown in Table 2.

Table 2 The reliability of the futsal skills tests from analysis of correlation coefficient between test and retest scores

Futsal Skills Tests	Test	Retest	R
Males (n=30)			
A dribbling test	17.81 (± 6.17)	17.27 (± 5.76)	.970*
A wall test	16.20 (± 4.95)	16.43 (± 4.75)	.928*
A shooting test	10.13 (± 4.55)	11.33 (± 4.55)	.949*
Females (n=30)			
A dribbling test	27.98 (± 5.86)	27.87 (± 5.67)	.979*
A wall test	11.73 (± 4.00)	13.33 (± 4.31)	.858*
A shooting test	8.10 (± 2.62)	9.83 (± 3.02)	.836*
Total (n=60)			
A dribbling test	22.90 (± 7.87)	22.57 (± 7.79)	.985*
A wall test	13.97 (± 5.00)	14.78 (± 4.80)	.907*
A shooting test	9.12 (± 4.42)	10.58 (± 4.25)	.923*

3. The futsal skill performance of RMUTT students in dribbling (as a dribbling test), kicking a ball against the wall for 30 seconds (as a wall test), and shooting a ball (as a shooting test) was summarized and presented by genders as shown in Table 3 and Table 4.

Table 3 The futsal skill performance of male students

Futsal Skills Tests	\bar{x}	S.D.	Max.	Min.	Range	Mode	Median
A dribbling test	17.76	5.30	30.50	7.40	23.10	13.00	16.57
A wall test	15.85	3.36	29.00	5.00	24.00	15.00	16.00
A shooting test	7.77	5.36	19.00	0	19.00	1.00	7.00

According to Table 3, 100 male students ($n = 100$) were tested by using the futsal skills tests constructed by the researchers. The average of a dribbling test was 17.76 seconds/a time with a standard deviation of 5.30. The average of a wall test was 15.85 times/30 seconds with a standard deviation of 3.36. And the average of a shooting test was 7.77 points with a standard deviation of 5.36.

Table 4 The futsal skill performance of female students

Futsal Skills Tests	\bar{x}	S.D.	Max.	Min.	Range	Mode	Median
A dribbling test	29.99	6.44	43.35	20.00	23.35	26.00	28.00
A wall test	10.60	3.79	19.00	1.00	18.00	13.00	11.50
A shooting test	6.93	3.69	15.00	0	15.00	8.00	7.50

According to Table 4, 100 female students ($n = 100$) were tested by using the futsal skills tests constructed by the researchers. The average of a dribbling test was 29.99 seconds/a time with a standard deviation of 6.44. The average of a wall test was 10.60 times/30 seconds with a standard deviation of 3.79. And the average of a shooting test was 6.93 points with a standard deviation of 3.69.

4. The norm of the dribbling test

4.1 The norm of the dribbling test for male students could be ranked into 5 levels: below 12.20 score was at a very good level, the score between 12.21 - 16.32 was at a good level, the score between 16.33 - 21.24 was at an average level, the score between 21.25 - 26.26 was at an acceptable level, and more than 26.27 was at an weak level.

Most male student performance in dribbling was at a good level ($n=38, \bar{x} = 38.00$), followed by an average level ($n=29, \bar{x} = 29.00$), an acceptable level ($n=15, \bar{x} = 15.00$), a very good level ($n=9, \bar{x} = 9.00$), and a weak level ($n=9, \bar{x} = 9.00$).

4.2 The norm of the dribbling test for female students could be ranked into 5 levels: below 21.45 score was at a very good level, the score between 21.46–27.32 was at a good level, the score between 27.33–32.78 was at an average level, the score between 32.79–37.64 was at an

acceptable level, and more than 37.65 was at a weak level.

Most female student performance in dribbling was at a good level ($n=39$, $\bar{x} = 39.00$), followed by an average level ($n=22$, $\bar{x} = 22.00$), a weak level ($n=21$, $\bar{x} = 21.00$), an acceptable level ($n=13$, $\bar{x} = 13.00$), and a very good level ($n=5$, $\bar{x} = 5.00$).

The scores of both male and female students could be seen in Table 5.

Table 5 The norm of the dribbling test

Skill Levels of Dribbling	Males (n = 100)			Females (n = 100)		
	Scores	n	%	Scores	n	%
Very Good	Below 12.20	9	9.00	Below 21.45	5	5.00
Good	12.21 – 16.32	38	38.00	21.46 – 27.32	39	39.00
Average	16.33 – 21.24	29	29.00	27.33 – 32.78	22	22.00
Acceptable	21.25 – 26.26	15	15.00	32.79 – 37.64	13	13.00
Weak	More than 26.27	9	9.00	More than 37.65	21	21.00

5. The norm of the wall test by kicking a ball against the wall for 30 seconds

5.1 The norm of the wall test for male student could be ranked into 5 levels: more than 21 score was at a very good level, the score between 18 - 20 was at a good level, the score between 15 - 17 was at an average level, the score between 12 - 14 was at an acceptable level, below 11 score was at the weak level.

Most male student performance of the wall test was at an average level ($n=45$, $\bar{x} = 45.00$), followed by a good level ($n=24$, $\bar{x} = 24.00$), an acceptable level ($n=22$, $\bar{x} = 22.00$), a weak level ($n=6$, $\bar{x} = 6.00$), and a very good level ($n=3$, $\bar{x} = 3.00$).

5.2 The norm of the wall test for female student could be ranked into 5 levels: more than 16 score was at a very good level, the score between 13–15 was at a good level, the score between 10–12 was at an average level, the score between 7–9 was at an acceptable level, below 6 score was at the weak level.

Most female student performance of the wall test was at a good level ($n=37$, $\bar{x} = 37.00$), followed by an average level ($n=27$, $\bar{x} = 27.00$), an acceptable level ($n=21$, $\bar{x} = 21.00$), a weak level ($n=13$, $\bar{x} = 13.00$), and a very good level ($n=2$, $\bar{x} = 2.00$).

The scores of both male and female students could be seen in Table 6.

Table 6 The norm of the wall test

Skill Levels of Kicking a Ball against the Wall	Males (n = 100)			Females (n = 100)		
	Scores	n	%	Scores	n	%
Very Good	More than 21	3	3.00	More than 16	2	2.00
Good	18 - 20	24	24.00	13 - 15	37	37.00
Average	15 - 17	45	45.00	10 - 12	27	27.00
Acceptable	12 - 14	22	22.00	7 - 9	21	21.00
Weak	Below 11	6	6.00	Below 6	13	13.00

6. The norm of the shooting test

6.1 The norm of the shooting test for male student could be ranked into 5 levels: more than 16 score was at a very good level, the score between 12-15 was at a good level, the score between 8-11 was at an average level, the score between 4-7 was at an acceptable level, below 3 score was at the weak level.

Most male student performance of the shooting test was at an average level ($n=28$, $\bar{x} = 28.00$), followed by a weak level ($n=26$, $\bar{x} = 26.00$), an average level ($n=19$, $\bar{x} = 19.00$), a good level ($n=17$, $\bar{x} = 17.00$), and a very good level ($n=10$, $\bar{x} = 10.00$).

6.2 The norm of the shooting test for female student could be ranked into 5 levels: more than 14 score was at a very good level, the score between 11-13 was at a good level, the score between 8-10 was at an average level, the score between 5-7 was at an acceptable level, below 4 score was at the weak level.

Most female student performance of the shooting test was at an average level ($n=36$, $\bar{x} = 36.00$), followed by an acceptable level ($n=27$, $\bar{x} = 27.00$), a weak level ($n=23$, $\bar{x} = 23.00$), a good level ($n=11$, $\bar{x} = 11.00$), and a very good level ($n=3$, $\bar{x} = 3.00$).

The scores of both male and female students could be seen in Table 7.

Table 7 The norm of the shooting test

Skill Levels of Shooting a Goal	Males (n = 100)			Females (n = 100)		
	Scores	n	%	Scores	n	%
Very Good	More than 16	10	10.00	More than 14	3	3.00
Good	12 - 15	17	17.00	11 - 13	11	11.00
Average	8 - 11	19	19.00	8 - 10	36	36.00
Acceptable	4 - 7	28	28.00	5 - 7	27	27.00
Weak	Below 3	26	26.00	Below 4	23	23.00

V. DISCUSSIONS

1. The results of a construction of futsal skills tests for RMUTT students: a dribbling test, a wall test, and a shooting test; were found that the objectivity of futsal skills tests was positive in a very high level at the statistical significance

of .05 because the researchers followed the research process. First, the researchers reviewed the literature involving futsal skills, the principles of test design, and test construction; then the tests were approved by 5 experts for content validity and the tests were improved by the experts' advice. After that the tests were tried out with 60 students by using the test-retest method. The tests were standardized, appropriate, not complicated, taking a short period with clear criteria. As [4] stated, characteristics of a good test should have validity, objectivity and fairness. The test should not be complicated, provide clear criteria, and not take too much time. The results were also consistent with the previous research of [5] found the retest of futsal skills would have higher scores than the first time. The skill test with test-retest method would be more reliable because they were analyzed by correlated coefficient. This would make the tests more qualified and practical. Also, the research of [6] showed that the reliability from test and retest was 0.71 - 0.97 and the objectivity was 0.97 - 0.99, so the test was qualified and practical. Moreover, [7] and [8] said that the reliability referred to the consistency of measure. Even when the test was retested, the reliability would not change.

2. The norm of the futsal skills tests for RMUTT students was from analyzing the scores by genders. After that, the scores were ranked into 5 levels of skills: very good, good, average, acceptable, and weak. The results were consistent with the previous researches of [6], and [9].

VI. RECOMMENDATIONS

Recommendations for Practices

1. The objectives of the tests should be informed to test takers. The test should be explained and demonstrated; then the test takers should be given an opportunity to ask questions, and warm up for 5-10 minutes before starting the tests.
2. Equipment and place for the tests should be prepared, and the scorers should follow the rules. For example, the position of the ball or

the feet of the test takers, the wall with smooth surface, etc.

Recommendations for Future Research

1. The skills tests can be constructed in different contexts by using this research as a guideline.
2. The skills tests of other sports can be constructed for raising standards of teaching and learning sports.

CONCLUSION

The results of testing all three futsal skills tests for RMUTT students showed that these tests were qualified and suitable to use as measurement tools because of validity, reliability, and objectivity. Furthermore, the norms of the tests were studied in detail with the clear criteria for both males and females, so it will be useful if these tests are applied in other universities.

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