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Contribution of leg muscle strength, decisiveness and balance to the ability to kick a ball in elementary school student football games

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Abstract
This research aims to find out; (1) contribution of leg muscle strength, flexibility, and balance to the ability to kick the ball in football games students of SD Inpres Bonto-bontoa, Gowa Regency; (2) the contribution of leg muscle strength, flexibility and balance together to the ability to kick the ball in football games students of SD Inpres Bonto-bontoa, Gowa Regency. The sample used was 30 people. The sampling technique is by simple random sampling. The data analysis technique used is descriptive analysis, analysis of Pearson product moment correlation coefficient (r), and the results of multiple correlation analysis (R) at a significant level $\alpha = 0.05$. The results of the study indicate that; (1) There is a significant contribution between leg muscle strength to the ability to kick the ball in soccer games students of SD Inpres Bonto-bontoa, Gowa Regency, with a r value of 0.721 ($P_{value} < \alpha$ 0,05) with a percentage of 72.10%; (2) There is a significant contribution between the flexibility of the ability to kick the ball in football games students of SD Inpres Bonto-bontoa, Gowa Regency, with a r value of 0.718 ($P_{value} < \alpha$ 0,05) with a percentage of 71.80%; (3) There is a significant contribution between the balance of the ability to kick the ball in football games students of SD Inpres Bonto-bontoa, Gowa Regency, with a r value of 0.729 ($P_{value} < \alpha$ 0,05) with a percentage of 72.90%; (4) There is a significant contribution between leg muscle strength, flexibility and balance together towards the ability to kick the ball in football games of students of SD Inpres Bonto-bontoa Gowa.

Keywords: leg muscle strength, flexibility and balance; the ability to kick the ball

Introduction

Development in the field of sports is part of the development of the region or nation as a whole, as well as the progress achieved in the field of sports is one tool to measure the development of a region or nation. Through development in the field of sports that is achieved with sports achievements, it can make the region or nation famous.

Football is one of the sports that involves many players, and is commonly called a team. The number of players is quite large and uses a fairly wide field in the game of football so that if viewed in terms of cultural social, football sports can be used as a medium to access information quickly and accurately, media to gather strength, and as a medium to strengthen brotherhood in building sportsmanship values.

Today's soccer game is a highly developed and accomplished sporting activity, so it's no wonder that through this soccer branch it can raise sports achievements in the country. To achieve higher achievements must be with rigorous and continuous training, also inseparable from the factors of motion skills and good game techniques.

In soccer games, a series of basic movements carried out involve physical activities, such as kicking a ball, dribbling, heading, and so on. All of them have elements of strength, balance, flexibility, agility and good coordination of motion, so it is expected that soccer athletes have these elements which are thought to have a considerable contribution in achieving maximum results in the ability of the movement.

Kicking or kicking a football is one of the most important parts of the game in football, because with a good kick in the defense and attack it will work well. The ability to kick the ball referred to in this study is the ability to kick the ball at great distances.

To achieve maximum kicks in addition to physical conditions, the technique must also be considered specifically the technique of kicking the ball. kicking a ball is one way to move the ball from one place to another using feet. The distance of a kick in a soccer game can be done in a state of silent ball, rolling and the ball floating in the air. But basically the ability to kick the ball in football games needs the support of physical components for individuals. The physical component itself is leg muscle strength, flexibility and balance.

From the description above, it is assumed that leg muscle strength, flexibility and balance possessed by someone have an influence on the ability to kick the ball in soccer games. This is the background of the author to conduct research in order to ascertain the existence of these contributions, through this study with the title: "Contribution of leg muscle strength, flexibility and balance to the ability to kick the ball in football games in SD Inpres Bonto-bontoa students in Gowa Regency".

The purpose of this study was to determine the contribution of leg muscle strength, flexibility, and balance to the ability to kick the ball in football games, as well as to determine the joint contribution of leg muscle strength, flexibility, and balance to the ability to kick the ball in soccer games.

Research methods

Research variable

In this study there are two variables seen, namely the independent variable and the dependent variable. The two variables will be identified in this study as follows:

a. Free variables, namely:
   - Leg muscle strength

- Decisiveness
- Balance

b. The dependent variable, namely:
- Ability to kick a ball

Population

Population according to Arikunto (1997: 115) provides definitions as follows: Population is the whole individual or group that can be observed from several group members. Based on the opinions mentioned above, the population of this study was all students of SD Inpres Bonto-bontoa, Gowa Regency. However, the population is restricted to male students in order to have similar characteristics in terms of sex.

Sample

Samples are a portion of individuals representing the population. Given the population in this study is quite a lot, so it is necessary to select the sample according to the needs of the sample in this study. Because the population in the study is relatively large, the researchers limit the selection of randomly using the "Simple Random Sampling" technique, so that the number of samples is 30 students from SD Inpres Bonto-bontoa, Gowa Regency.

Data analysis technique

After all the assessment data are collected, namely the test of leg muscle strength, flexibility, balance and the ability to kick the soccer ball game, to test the hypothesis that will be submitted in this study, the data is compiled, processed and analyzed with the help of computers through the SPSS program.

Research results and discussion

Data Description

The description of the data from the results of the study aims to provide an overview of the distribution of data on leg muscle strength, flexibility, balance and the ability to kick the ball in football games at SD Inpres Bonto-bontoa students in Gowa Regency. The summary results of the statistical calculation of the description are presented as follows:

Table 1: Summary of research results

Statistics	Variable			
	X_1	X_2	X_3	Y
Sample Number (n)	30	30	30	30
Minimum Value	13.00	12.00	54.00	9.86
Maximum Value	24.00	26.00	82.00	20.12
Range	11.00	14.00	28.00	10.26
Average	18.8333	19.1000	68.1000	14.8390
Median	19.0000	19.0000	68.0000	14.6050
Standard deviation (s)	2.76784	3.74488	8.27272	2.58484
Varians (S^2)	7.661	14.024	68.438	6.681

Variable Ability to kick a ball in a football game (Y)

Based on the research data on the ability to kick the ball in football (Y), the minimum value is 9.86 meters and the maximum value is 20.12 meters, with a range of 10.26 meters. The average value is 14.83 meters, has a median of 14.60 meters with a standard deviation of 2.58 meters, and a variance of 6.68 meters.

Variable Leg Muscle Strength (X1)

Based on the research data on the variable leg muscle strength (X1), a minimum value of 13 times and a maximum value of 24 times, with a range of 11 times, were obtained. The average value is 18.83 times, has a median of 19 times, with a standard deviation of 3.74 times, and a variance of 14.02 times.

Variability variable (X2)

Based on the results of the research data on variable flexibility (X2), a minimum value of 12 cm was obtained and a maximum value of 26 cm, with a range of 14 cm. The average value is 19.10 cm, has a median of 19 cm, with a standard deviation of 3.74 cm, and a variance of 14.02 cm.

Balance Variable (X3)

Based on the research data on the balance variable (X3), a minimum value of 54 points is obtained and a maximum value of 82 points with a range of 28 points. The average value is 68.10 points, has a median of 68 points, with a standard deviation of 8.27 points, and a variance of 68.43 points.

Data Normality Test

The results of testing the normality of data using the Kolmogrov-Smirnov (KS-Z) test show the following results:

1. For data on the ability to kick the ball in football games, the KS-Z value = 0.087 (P = 0.200> α 0.05), so that it can be concluded that the data of the ability to kick the ball in soccer games follows a normal distribution or normal distribution.
2. For the data on leg muscle strength, the KS-Z value = 0.091 (P = 0.200> α 0.05), so it can be concluded that the data on leg muscle strength follows a normal distribution or normal distribution.
3. For the data for completeness, the KS-Z value = 0.077 (P = 0.200> α 0, 05), so that it can be concluded that the data of normality follows a normal distribution or normal distribution.
4. For balance data, obtained KS-Z value = 0.090 (P = 0.200> α 0.05), so it can be concluded that the balance data follows a normal distribution or normal distribution.

From the description of the Kolmogorov smirnov normality test in each group of data can be summarized in Table 2 below:

Table 2: Summary of the Normality Test Results of Kolmogorov Smirnov

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Leg Muscle Strength	.091	30	.200*	.981	30	.849
Flexibility	.077	30	.200*	.977	30	.744
Balance	.090	30	.200*	.959	30	.297
The ability to kick the ball	.087	30	.200*	.981	30	.846

Based on Table 2, it can be seen that the significance of each group of data is more than 0.05. Thus it can be concluded that the sample of this study came from a population that was normally distributed.

Hypothesis testing

After testing the data normality requirements on the hypothesis to be tested, further testing of the hypothesis is carried out to prove the truth. The results of statistical calculations on the research hypothesis are described as follows.

Contribution of leg muscle strength to the ability to kick the ball in soccer games

The first hypothesis tested in this study was "there is a contribution of leg muscle strength to the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency."

Coordination of ankle contributions to Service Ability

The first hypothesis tested in this study was "There is a strength contribution of ankle coordination to service ability in sepaktakraw games."

The contribution of leg muscle strength to the ability to kick the ball in football games at SD Inpres Bonto-bontoa students in Gowa Regency can be seen from the magnitude of the correlation coefficient obtained. The summary of the calculation of the correlation coefficient and F test can be seen in table 3.

Table 3: Test of Significance Coefficient of Determination between leg muscle strength and the ability to kick the ball in football games SD Inpres Bonto-bontoa students Gowa Regency

total Observation (n)	Coefficient of Determination (r_{y1})	F_{hit}	F_{tab} α=0,05
30	0,520	30,393**	4,17

Ket: ** = Significant coefficient of determination (f_h=30,393> F_t=4, 17 pada α=0, 05)

Contribution of Decision with the ability to kick the ball in football games

The second hypothesis tested in this study was "there is a contribution of flexibility with the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency."

The contribution of flexibility to the ability to kick the ball in football games to students of SD Inpres Bonto-bontoa in Gowa Regency can be seen from the magnitude of the correlation coefficient obtained. The summary of the calculation of the correlation coefficient and F test can be seen in table 4.

Table 4: Test of Significance Coefficients Determination of flexibility with the ability to kick the ball in football games SD Inpres Bonto-bontoa students Gowa Regency

total Observation (n)	Coefficient of Determination (r_{y2})	F_{hit}	F_{tab} α=0,05
30	0,516	29,814**	4,17

Ket: ** = Koefisien determinasi signifikan (f_h=29,814 > F_t=4, 17 pada α=0, 05)

Balance Contribution with the ability to kick the ball in football games

The third hypothesis tested in this study is "there is a contribution of balance with the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency."

The contribution between balance and the ability to kick the ball in football games at SD Inpres Bonto-bontoa students in Gowa Regency can be seen from the magnitude of the correlation coefficient obtained. The summary of the calculation of the correlation coefficient and F test can be seen in table 5.

Table 5: Test for Significance of the Coefficient of Determination between balance and the ability to kick the ball in football games SD Inpres Bonto-bontoa students Gowa Regency

total Observation (n)	Coefficient of Determination (r_{y3})	F_{hit}	F_{tab} α=0,05
30	0,531	31,758**	4,17

Ket: ** = Koefisien determinasi signifikan (f_h=31,758 > F_t=4, 17 pada α=0, 05)

Contribution of leg muscle strength, jointness and balance to the ability to kick the ball in football games

The fourth hypothesis tested in this study is "there is a contribution of leg muscle strength, flexibility and balance together to the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency."

The results of the calculation of the coefficient of determination which shows the strength of contribution that illustrates the effect of leg muscle strength, flexibility and balance together with the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency are shown by $R_{y.1.2.3}$ = 0.835. Test the significance of multiple correlation coefficients can be seen in table 6.

Table 6: Test of Significance of the Correlation Coefficient between leg muscle strength, flexibility and balance together to the ability to kick the ball in soccer games

total Observation (n)	Coefficient of Determination ($r_{y1,23}$)	F_{hit}	F_{tab} α=0,05
30	0,698	19,992**	4,17

Keterangan: ** = Koefisien determinasi signifikan (f_h=19,992 > F_t=4, 17 pada α=0, 05)

Discussion of Research Results

Contribution of leg muscle strength with the ability to kick the ball in soccer games

From the results of testing the first hypothesis it was found that leg muscle strength had a contribution to the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency. Based on the calculation results obtained the value of the correlation coefficient of 0.721 is explained through the regression equation $\hat{Y} = 2,150 + 0,674 X_1$. This finding implies that the better the leg muscle strength, the better the ability to kick the ball in football games SD Inpres Bonto-bontoa regency, Gowa regency, on the contrary, the limb muscle strength is not good, the ability to kick the ball in football games SD Inpres Bonto-bontoa Regency students Gowa is getting worse too.

Contribution to flexibility with the ability to kick the ball in football games

From the results of testing the second hypothesis it was found that flexibility has a significant contribution to the ability to kick the ball in football games of students of SD Inpres Bonto-bontoa, Gowa Regency. Based on the calculation results obtained the correlation coefficient value of 0.718 is explained through the regression equation $\hat{Y} = 24,306 + -0,496 X_2$. This finding means that the better the flexibility, the better the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency, on the contrary, the less the flexibility, the ability to kick the ball is less than optimal.

Contribute to balance with the ability to kick the ball in football games

From the results of testing the third hypothesis it was found that balance has a strong and significant contribution to the ability to kick the ball in football games SD Inpres Bonto-bontoa students in Gowa Regency. Based on the calculation results obtained the value of the correlation coefficient of 0.729 which is explained by the regression equation $\hat{Y} = -0{,}673 + 0{,}228\ X_3$. This finding implies that the better the balance, the better the ability to kick the ball in football games, on the contrary the lower the balance, the more the ability to kick the ball in soccer is not good.

Contribution of leg muscle strength, flexibility and balance with the ability to kick the ball in soccer games

From the results of testing the fourth hypothesis which shows a simultaneous contribution between leg muscle strength, flexibility and balance with the ability to kick the ball in soccer games SD Inpres Bonto-bontoa students in Gowa Regency. Based on the calculation results obtained by the correlation coefficient of 0.823 which is explained through the regression equation $\hat{Y} = 4{,}765 + 0{,}290X_1 + -0{,}186X_2 + 0{,}120X_3$. This result further strengthens the results of testing the first, second and third hypotheses. Thus leg muscle strength, flexibility and balance can be a good predictor of the ability to kick the ball in soccer games. That is, if leg muscle strength, flexibility and good balance are categorized, then it can be ascertained the ability to kick the ball in football will be better.

Conclusion

Based on data analysis and discussion, the results of this study can be summarized as follows:

1. There is a significant contribution of leg muscle strength to the ability to kick the ball in soccer games to students of SD Inpres Bonto-bontoa, Gowa Regency.
2. There is a significant contribution of flexibility to the ability to kick the ball in football games to students of SD Inpres Bonto-bontoa, Gowa Regency.
3. There is a significant contribution to the balance of the ability to kick the ball in football games for students of SD Inpres Bonto-bontoa, Gowa Regency.
4. There is a significant contribution jointly of leg muscle strength, flexibility and balance to the ability to kick the ball in soccer games to students of SD Inpres Bonto-bontoa, Gowa Regency.

Uggestion

Based on the results of data analysis and conclusions of this study, the following suggestions can be put forward:

1. The teacher is expected to be able to strengthen leg muscle strength, flexibility and balance through training in improving the ability to kick the ball in soccer games.
2. Students are expected to have the willingness to increase the physical component through leg muscle strength, flexibility and balance in improving the ability to kick the ball in soccer games.

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