

The Relationship Between Backward Strike Flexibility and Arm Strength and Inward Throwing Ability in Football

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Authors' contribution:

A. Conception and design of the study; **B.** Acquisition of data; **C.** Analysis and interpretation of data; **D.** Manuscript preparation; **E.** Obtaining funding

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ABSTRACT

This study aims to find out the relationship between the flexibility of the strikeback and the strength of the arm with the ability to throw the ball inward in a football game. This research is a type of correlational descriptive research. The population of this study is all students of SMPN 19 Makassar with a research sample of 80 male students who are selected by proportional random sampling. The data analysis techniques used are simple and multiple correlation analysis techniques. Based on the results of data analysis, this study concludes that: There is a significant relationship between the flexibility of the backward strike and the ability to throw the ball inward in a football game, ($r_o = 0.771 > r_t = 0.220$); There was a significant relationship between arm strength and inward throwing ability in football games, ($r_o = 0.540 > r_t = 0.195$); There was a significant relationship between the flexibility of the strike back and the strength of the arm with the ability to throw the ball inward in the game of football ($R_o = 0.772 > R_t = 0.195$).

Keywords : Flexibility; Strength; Ball Throw; Football.

INTRODUCTION

Sports is a physical activity or physical activity that affects the development of the personality of the perpetrator (Wibowo et al., 2016). In addition, sports are an effort to encourage, awaken, develop, and foster physical and spiritual strength for those who do it (Dany et al., 2016). Therefore, exercise can improve the physical and mental of a tough, intelligent, strong, disciplined and responsible human being (Mulya & Millah, 2019).

One of the sports that is very popular among the community both in the city and in the countryside is football (Hutajulu, 2016). Football is a very interesting game that sometimes makes its fans fanatical too much (Aini, 2017). Therefore, he is a football athlete, he is required to master the basic techniques in the game of football (Alfi et al., 2019). Looking at the competitions that are often held from year to year (Aziz & Adityatama, 2020) indicates that not always the ball that enters the goal is the result of a foot pass given by a friend, but sometimes from a throw-in (S. & Yulifri, 2019). Thus, there needs to be certain attention to throwing the ball into the field for football.

Coaching as early as possible to find the next generation is a very positive thing (Komarudin, 2021). In school, one of the places or containers is to be used in conducting coaching or training (Sudirman et al., 2022). It's just that sometimes the obstacle in the school environment is inadequate field allocation (Burhanuddin et al., 2022), but interest for students is certainly very likely to be fostered (Sahabuddin et al., 2022). One of the schools that has the opportunity to be able to produce reliable seeds is SMP Negeri 19 Makassar, it's just that there are still several things that need to be considered, especially the basic techniques in the game of football. In terms of technique in playing, the average student has good playing skills, but sometimes small things are always forgotten as is the case with throwing the ball in. Unexpectedly, the throw-in that is always done usually does not reach a friend who is standing free, so it is easier for the opponent to control the ball and also the throw that is made wrong.

In connection with the problem to be studied, namely throwing the ball in, it is necessary to make an effort to find other factors that can hinder and improve the ability to throw the ball inward in the game of football (Meidiansya et al., 2021). The important thing that must be noted is that carrying out sports activities must be supported by the ability of the body or limbs (Isaac et al., 2023) to make adjustments or adaptations to the physical burdens they overcome. (Yulianto & Haprabu, 2021). When doing physical exercise, the body is prepared to receive the next stimulus to perform the movement (Azharullah, 2021). Likewise with throwing the ball in, one of the things that has a role in making the throw is the flexibility of the strike back and the strength of the arm. Analysis of movement on throwing the ball inward, that when throwing there is a movement of the body that is pulled back (Putra, 2021) So there is a direct need for the body or strike backwards and the arms as a driving force in making throws need to be supported or have physical abilities such as strength to be able to make long throws.

METHODS

The method used in this study is descriptive. The research design or research design used in this study is correlational. The population of this study is all students of SMPN 19 Makassar. However, the population is limited to male students only so that they have the same traits in terms of gender. The sample taken in this study was male students of SMPN 19 Makassar grade VIII, using a proportional random sampling technique by randomly against existing data sources, with a sample of 80 people, whose characteristics were the same or almost the same. The instrument used in this study is to find out the physical condition or state, especially regarding the problem of backward flexion, arm strength, and the ability to throw the ball inward in a football game. The collected data needs to be analyzed statistically, descriptively, or strictly to test research hypotheses.

RESULTS AND DISCUSSION

Result

Descriptive data

The descriptive analysis of the research data consisting of the test score of the backward flexibility, arm strength and the ability to throw the ball into the football game of SMPN 19 Makassar students can be seen in the summary of the results of the descriptive analysis listed in the following table:

Table 1.
Results of descriptive analysis of data

Hypothesis Statistics	Backward flexion	Arm strength	Throw-in ball
N	80	80	80
$\sum X$	3970	2351	1177,64
$\sum X^2$	210254	77137	17855,59
$\bar{X}$	49,63	29,39	14,72
Sd	12,943	10,222	19,999

Requirements testing analysis

Research data to be analyzed statistically must meet the requirements for analysis. For this reason, after the data on the flexure of the strike back, arm strength and the ability to throw the ball inward in this study were collected, then before conducting statistical analysis for hypothesis testing, a requirement test was first carried out, namely normality with a chi-squared test at a significant level of 95%. The results of the Chi-Quadratic (χ^2) test were carried out, the results were obtained as attached. The calculation results can be seen in the following summary table:

Table 2.
Data normality test results

It	Variable	χ^{20}	χ^{2t}	Information
1	Backward flexion	3,5294	11,070	Usual
2	Arm strength	4,6008	11,070	Usual
3	Throw-in ball	5,4621	11,070	Usual

Correlation analysis

Correlation analysis was carried out to determine the relationship between each independent variable and the bound variable. The correlation analysis used was a single correlation (r) and double correlation (R) analysis at a significant level of 95%. The results of the complete correlation analysis can be seen in the appendix, while the summary of the analysis results is listed in the following table:

Table 3.
Results of correlation analysis

Hypothesis	N	r0	rt	Information
- Correlation of backward flex with the ability to throw the ball inside in a football game	100	0,771	0,220	Significant
- Correlation of arm strength with inward throwing ability in football games	100	0,540	0,220	Significant
- Correlation of backward flex and arm strength with the ability to throw the ball inward in a football game	100	0,772	0,220	Significant

There is a relationship between the flexibility of the forward strike and the ability to throw the ball inside in the football game of SMPN 19 Makassar students.

Based on the results of the test analysis, the correlation analysis of the backward flexion data with the ability to throw the ball into the football game. The observation correlation value (r_0) = 0.771 was obtained which was greater than the table correlation value (r_t) at a significant level of 95% = 0.220. means that H_0 is rejected and H_1 is accepted. Thus, there is a significant relationship between the flexibility of the backward

strike and the ability to throw the ball inward in the football game of SMPN 19 Makassar students.

There is a relationship between arm strength and the ability to throw the ball inside in the football game of SMPN 19 Makassar students.

Based on the results of the test analysis of the correlation of arm strength data with the ability to throw the ball inward in a football game. It was obtained that the observation correlation value (r_0) = 0.540 was greater than the table correlation value (r_t) at a significant level of 95% = 0.220. means that H_0 is rejected and H_1 is accepted. Thus there is a significant relationship between arm strength and the ability to throw the ball inside in the football game of SMPN 19 Makassar students.

There is a relationship between the flexibility of the strikeback and the strength of the arm with the ability to throw the ball inward in the football game of SMPN 19 Makassar students.

Based on the results of the test analysis, the correlation between the flexity of the strikeback and the strength of the arm with the ability to throw the ball inward in football games. It was obtained that the observation correlation value (r_0) = 0.772 was greater than the table correlation value (r_t) at a significant level of 95% = 0.195. means that H_0 is rejected and H_1 is accepted. Thus there is a significant relationship between the flexity of the strikeback and the strength of the arm with the ability to throw the ball inward in the football game of SMPN 19 Makassar students.

Discussion

The first hypothesis; There was a significant relationship between the flexibility of the backward strike and the ability to throw the ball inside in the football game of SMPN 19 Makassar students. It is evident from the results of the analysis that the observation correlation value is greater than the correlation value of the table. This proves that in throwing the ball inside a football game, the flexibility of the strikeback is one of the factors that support the implementation of the throw in a football game. This flexion occurs when the player holds a pullback with the position of the two arms behind the head, the existing body pulls back while simultaneously releasing a throw and will contract automatically if this flexion of the strike is owned by every football player. By having flexibility, the ability to throw inside effectively and efficiently can be done.

The second hypothesis; There was a significant relationship between arm strength and the ability to throw the ball inside in the football game of SMPN 19 Makassar students. It is evident from the results of the analysis that the observation correlation value is greater than the correlation value of the table. This proves that a football player must have arm strength. Although the arm is less needed in football players except for a goalkeeper (goalkeeper) and later done when the ball comes out, on the other hand, the arm strength factor will have a great influence both in making throws and in other techniques. To achieve an accurate and powerful throw, of course, the strength of the arm greatly influences.

The third hypothesis; There was a significant relationship between the flexibility of the backward strike and the strength of the arm with the ability to throw the ball inward in the football game of SMPN 19 Makassar students. It is evident from the results of the analysis that the observation correlation value is greater than the correlation value of the table. This proves that the flexion of the strikeback and the strength of the arm are factors that support the basic technique of throwing the ball in the game of football. Increased flexibility can

affect the stretching of muscles, tendons and ligaments and strengthen movement to be able to move to the maximum extent so that it can expand joint movement. So flexibility is very important for football players, especially when throwing the ball in. In addition, flexibility exercises work to restore normal range of motion, improve muscle flexibility and flexibility, improve more efficient blood flow in capillary tissue, allow loosening and reduce the possibility of injury. Meanwhile, in throwing the ball in a football game, strength plays a very important role in supporting when throwing the ball in particular. The strength in question is the strength of the arm, where the arm is a factor that plays a role in carrying out the ball throw. With the support of physical strength, the results of throws in the game of football will be more directional and strong.

CONCLUSION

Based on data analysis with statistical calculations and hypothesis testing results as well as from the discussion, the results of the research are concluded as follows:

1. There was a significant relationship between the flexibility of the backward strike and the ability to throw the ball inside in the football game of SMPN 19 Makassar students.
2. There was a significant relationship between arm strength and the ability to throw the ball inside in the football game of SMPN 19 Makassar students.
3. There was a significant relationship between the flexibility of the striker's back and the strength of the arm with the ability to throw the ball inward in the football game of SMPN 19 Makassar students.

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