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The Effect Of Arm Muscle Strength On Throw-In Ability In Football Games In Elementary School Students

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ABSTRACT

This study aims to determine the effect of arm muscle strength on the ability to throw in football in elementary school students. This study uses a Quantitative method with a Pre-experimental approach and uses a Group Pre-test and Post-test Design research design to determine the differences before and after being given certain treatments. The population in this study was students of SDN Bunter 1 in grades III, IV, and V who participated in extracurricular football, with a sample of 20 people. Data collection techniques used tests and measurements, while data analysis was carried out using t-test statistics. Using a throw test as an instrument in the study. This study found that the average score of the final throw test was higher than the initial test. The conclusion shows that arm muscle strength affects the ability to throw in football in elementary school students at Bunter 1, located in Cimanggung District, Sumedang Regency.

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INTRODUCTION

Football has long been a favourite sport among all ages, including elementary school students around the world. Its popularity is not only seen in big city fields but also in small schoolyards. Many factors make football so popular with elementary school students (Erfayliana & Wati, 2021). Football has been proven to be popular among elementary school students for various reasons. The existence of football clubs and activities that encourage student participation in this sport plays an important role in building their interest and enthusiasm (Murtiyono, 2016). According to (Ridwan et al., 2017), there are various important techniques in the game of football, such as passing. Heading, stopping, shooting, dribbling, controlling, handling, goalkeeping, and throw-ins. Success in football is based on mastery and the ability to practice basic techniques consistently and effectively (Kristina, 2018). The goal of the game of football is to try to get as many balls into the goal as possible (Kismono & Dewi, 2021)

A throw-in is an important basic technique in football that is used to return the ball to play after the ball has gone out of the field. Although it seems simple, a throw-in requires a combination of strength, technique, and understanding of the game situation.

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According to Miller (2018), an effective throw-in can affect ball possession and create opportunities for the team to attack and score goals. In today's football game, a football player is required to be able to throw as far as possible correctly. If a football player wants to achieve success and have the ability to throw, the player must train their arm muscle strength in a programmed manner.

Basic ball throwing exercises in football games will certainly increase the ability to throw the ball in terms of the distance of the throw. The throw-in technique involves the use of both hands, with one foot behind the sideline and the other foot in front. Kumar and Jain (2019) explain that body position and throwing technique greatly determine the distance and accuracy of the throw. Research by Pramono (2021) shows that students who are trained with the correct technique in doing throw-ins can improve their overall game performance. In addition, Johnson (2017) underlines the importance of mastering arm muscle strength in supporting effective throwing abilities. By increasing arm muscle strength through targeted training, students are expected to be able to throw more effectively, which can ultimately support their game strategy.

This is in line with the view of B. H. S. Rahardjo (2015), who stated that "quality physical education must be able to integrate physical and technical aspects so that students can develop their maximum potential. According to Miller (2018), increased arm muscle strength is correlated with increased throwing effectiveness in various sports. This is supported by Kumar and Jain (2019), who found that children who participated in a strength training program had better throwing abilities than those who did not. Suharjo (2020) emphasized the importance of developing arm muscles in elementary school students to support overall physical abilities, including in team sports such as football. In addition, Pramono (2021) found that children with good arm muscle strength tend to be more successful in throwing techniques. Research by Johnson (2017) explains that the combination of muscle strength and technical skills is very important in making effective throws.

Based on the above problems, the problem can be identified as "Is there an effect of arm muscle strength on the ability to throw in football in elementary school students?". The purpose of this study is to understand "the effect of arm muscle strength on the ability to throw in football in elementary school students." Research on arm muscle strength has been conducted by several researchers. In a study of plyometric training (Pullover Toss) on the results of throw-ins in a football club carried out by 17 people, the training successfully obtained a t-value of 4.508 with a significance level of 5%, it was concluded that there was an effect of plyometric training (Pullover Toss) on the results of throw-ins (Erfan, 2020). In a study of bench press training to increase an athlete's explosive power carried out by 15 people, it was proven with a t-value (6.42) > (2.15) at a = 0.05 (Fella Maifitri, 2018). In the study, overhead tricep extension resistance band training was successful with a percentage of 27.4%, and overhead dumbbell extension training showed an increase of 10.9%.

METHODS

This study uses quantitative research methodology and a pre-experimental research approach. The term "quantitative method" refers to a research method based

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on positivist theory. It is used to study a population or sample, collect data using analytical tools, analyze data with quantitative or statistical significance, and draw conclusions to support previously established hypotheses. The design used by researchers is One-Group Pretest-Postest Design, before being given treatment or treatment the sample will be given a Pre-test, with the aim that the results of the treatment will then be used as a comparison after being given treatment.

The subjects in this study were students of SDN Bunter 1 in grades III, IV, and V who participated in extracurricular football, with a total of 20 people. This study was conducted on Tuesday and Friday. The instrument used in this study was a throw-in test. The purpose of the test was to determine whether arm muscle strength affects the ability to throw in terms of distance. The tools and facilities used during the test were a football field, a size 5 ball (football), a meter, cones, and stationery. In this test, the researcher conditioned each sample on the football field/schoolyard. Each sample

Carefully considered and placed on the sidelines, and designated fields equipped with balls and ready to do the test. When the throw-in guard is ready, the sample throws in to each student 3 times. The calculated value is the final throw result and is entered into the content table. This study uses a test to collect data. Data collection is carried out using a pre-test and a post-test. After the pre-test, an intervention in the form of training using weight equipment will be given for 2 sessions per week. Data are collected by testing the ability to throw through training using the weight. This experimental design is based on three activities: Pre-test, Treatment, and Post-test. The results of the Pre-test and Post-test will be used to test the hypothesis. The prerequisite test uses the Normality Test and Homogeneity Test. And the Hypothesis Test uses the Paired sample t-test.

RESULTS AND DISCUSSION

Result

This study aims to determine the skills of throw-in ability in students of SD Bunter 1. Data obtained from throw-in training, namely Pre-Test and Post-test from the research sample, can be used to understand the impact of weight training on distance learning ability in football. The effect has been tested according to expectations.

Table 1.
Descriptive Statistics Results

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	20	5,00	10,00	8,0500	1,14593
Postest	20	8,00	15,00	11,0000	1,65434
Valid N (listwise)	20				

Table 2.
Normality Test

	Statistic	Df	Sig.	Statistic	df	Sig.
Pretest Throw-in	.196	20	.042	.891	20	.028
Postest Throw-in	.177	20	.100	.951	20	.382

The normality test on this data uses the Shapiro-Wilk technique, which is generally used for small samples or less than 50. If the sig value <0.05, then the data is not normally

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distributed; conversely, if the sig value> 0.05, then the data is normally distributed. Based on the data above, the results of the normality test from the pretest data sig value of .028> 0.05, and the post-test data sig value of .382; therefore, the variable data is normally distributed.

Table 3.
Homogeneity Test

Levene Statistik	df1	df2	Sig.
2.594	1	38	.116

Based on the table above, it can be concluded that the significant data obtained is 0.116. It can be said that the data is homogeneous because the significance value exceeds 0.005.

Table 4.
Paired Sample t-test

		t	df	Sig. (2-tailed)
Pair 1	Pretest-postest	-15.980	19	.001

Based on the calculation results above using the t-test with SPSS, the Sig. (2-tailed) The value is 0.001. This result is smaller than the significance of 0.05 with a t-value of 15,980> 2,100. Therefore, it can be concluded that this hypothesis is accepted, with HO rejected or H1 accepted. In addition, arm muscle strength and weight training have a significant impact on the ability of players to throw in football games in SD Bunter 1 students.

Table 5.
Coefficient of Determination (R2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,888[a]	,789	,778	,78024

The results in the table show an R Square value of 0.789, which can be interpreted as the influence of the independent variable on the dependent variable is 0.789 x 100% = 78.9%. So, with the existence of good arm muscle strength increasing the ability to throw in football is significantly by 78.9%.

Discussion

In this discussion, the researcher will explain the results of data management, the influence, and how much influence arm muscle strength has on the ability to throw in football in elementary school students. Based on the analysis of the paired sample test calculation above in Table 4 it obtained a value of 0.01 was obtained < 0.05, indicating that there is a significant difference between the pre-test and post-test. It can be concluded that arm muscle strength with the application of overhead extension weight training affects the ability to throw in football in elementary school students Bunter 1. Similar to the research that has been conducted by Muhammad Evik Nugroho entitled "The Effect of Static and Dynamic Sit-Up Exercises on Throw-In Results in Ababil FC Temanggung Football Club in 2011". The results of this study are as follows: The results

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of data analysis are known; 1). experimental group 1, t count = 4.37> t table = 2.26, meaning there is an effect of static sit-up exercise on the results of throw-in in football. 2) experimental group 2, t count = 13.04 > t table = 2.26, meaning that there is an effect of dynamic sit-up training on the results of throw-ins. 3) The results of the difference test of experimental groups 1 and 2 obtained t count 2.58 > t table 2.10, meaning that static and dynamic sit-up training have an effect on the results of throw-ins, where dynamic sit-up training has a better effect than static sit-up training.

CONCLUSION

The results of the throw-in in the football game can be obtained by using a three-time throw-in test. To determine the extent of the influence of arm muscle strength training, the author used a t-test analysis. Based on the hypothesis testing and statistical analysis above, it can be concluded that there are some changes. Based on the review, it can be concluded that arm muscle strength can affect the improvement of learning outcomes in students of SD Bunter 1 who participate in extracurricular football. This can be seen in the results of the pre-test and post-test after the training was given. A total of 16 effective throw-in training sessions were conducted with students of SDN Bunter 1. It is estimated that by using arm muscle strength, this study will be able to improve learning outcomes more effectively. There was an increase in the learning outcomes of 20 students of SD Bunter 1 after eight weeks of data collection using the training program. In addition, there are similarities with the research of Muhammad Evik Nugroho (2011), which has the title The Effect of Static and Dynamic Sit-up Training on Throw-in Results. Another study has shown that overhead extension weight training with various variations can increase endurance, muscle strength, and size when performed mostly during the tectonic phase, which includes four types of muscles, namely the chest, triceps, shoulders, and abdomen (Rustiawan & Rohendi, 2021)

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