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Analysis of Passing Ability in Futsal Based on Leg Muscle Strength (A Correlational Study of Students with an Interest in Futsal Sports at the Physical Education Department of Muhammadiyah University Surakarta)

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ABSTRACT

This study aims to examine how leg muscle strength and passing ability in futsal correlate with each other. The study sample consisted of 20 physical education students who actively participated in futsal. Passing ability and leg muscle strength tests were used to collect data. The results were tested for normality, linearity, and Pearson correlation. The results showed a significant relationship ($p < 0.05$) between lower limb muscle strength and passing ability; a correlation coefficient of 0.611 indicates a strong correlation. This suggests that good lower limb muscle strength, such as strength, balance, and coordination, significantly influences the ability to master passing techniques.

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1. INTRODUCTION

Physical education, sports, and health is an educational process that utilizes physical activities and health to improve the overall quality of individuals, both physically, mentally, and emotionally (Septiadi & Alficandra, 2024). Physical education is a tool to achieve educational goals or through the adaptation of physical activities to achieve educational goals (Iyakrus, 2019). Development, gymnastics, rhythmic activities, water activities, outdoor exercises, health, and sports games are all part of physical education, sports, and health (Erliana, 2014).

Sports games are types of sports played with a ball as the equipment. In badminton, a shuttlecock is used, but in other sports, such as volleyball, basketball, soccer, futsal, and others (Dewi & Jannah, 2019). Futsal is an indoor soccer game played five-on-five on a smaller field. There are strict rules, and the game relies on strong physical ability. (Susi Hawindri, 2016) Futsal players must be proficient in the basic techniques of futsal, such as receiving (control), chipping, dribbling, shooting, heading, catching, and passing (Surya et al., 2022).

Passing is an important technique that futsal players must possess. This is important because passing significantly influences futsal gameplay. To initiate attacks and collaborate in playing the ball together, players must have good basic passing techniques to ensure attacks and teamwork run smoothly and opponents cannot stop them (Taufiqurrahman et al., 2023) A futsal player must possess the following components: endurance, speed, agility, and leg muscle strength. Leg muscle strength is necessary to support kicking power, balance when passing the ball, and accuracy in ball kicking during basic passing techniques.

Many MBO futsal students consider basic passing techniques to be easy movements. However, in reality, many mistakes are made by MBO futsal students, such as passes that do not reach their target, kicks that do not hit the target, and excessive use of leg muscle strength when passing. However, futsal passing techniques are very important for competitions because they require high concentration and accuracy. Physical education students at Muhammadiyah University Surakarta utilize their sports interests and talents as a platform to enhance the skills they already possess before entering school and as an opportunity to discover untapped talents within themselves.

Based on the above explanations, the author seeks to explore the relationship between leg muscle strength and passing ability. Therefore, the author is highly interested in conducting the research titled "Analysis of Passing Ability in Futsal Games from the Perspective of Leg Muscle Strength (A Correlational Study Among Students with a Talent for Futsal in the Physical Education Program at Muhammadiyah University of Surakarta)."

2. METHODS

The type of research used is quantitative research with a correlational research design. Correlational research can be used to test hypotheses about how variables interact with one another or to determine the strength of the relationship between two or more variables (Arsyam & M. Yusuf Tahir, 2021). The research location is the Sports Hall at Campus 2 of Muhammadiyah University Surakarta. The population in this study consisted of all active MBO futsal students at Muhammadiyah University Surakarta, totaling 102 students. The sampling technique used in this study was purposive sampling, with the sample selected from 20 students based on the following criteria: active MBO futsal students from the 2022-2024 cohort, male students, and students willing to participate in the study. The variables used in this study were divided into two categories: independent variables (leg muscle strength) and dependent variables (passing ability). The instruments used in this study involved testing techniques, meaning the researcher directly administered practical tests to the respondents regarding leg muscle strength and passing ability. Data collection in this study was conducted using a passing ability measurement test and a leg muscle strength measurement test using the squat jump test.

The data collection technique involved preparing the testing location and equipment, explaining the leg muscle strength test, dividing the students into two groups, and having them take the test in sequence, with the data recorded systematically. To measure the extent of the relationship between the independent variable (lower limb muscle strength) and the dependent variable (passing ability), normality tests, linearity tests, and correlation tests were conducted using the SPSS application.

3. RESULT AND DISCUSSION

This study was conducted to determine whether there is a relationship between the independent variable (leg muscle strength) and the dependent variable (passing ability) and how strong that relationship is. Based on the field research conducted, the overall data results are summarized in the following table:

Table 1. Summary of Research Data Results

Variabel	Instrumen	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Leg Muscle Strength	Leg Muscle Strength	13	22	18.05	2.259
Passing Ability	*Passing*	8	17	11.45	2.460

a. Normality Test

The normality test aims to determine whether the residual values of the two variables are normally distributed or not. The following are the results of the normality test using the Kolmogorov-Smirnov test.

Table 2. Normality Test

Variabel	N	*Sig*	Kriteria
Leg Muscle Strength	20	0.172	Normal
Passing Ability	20	0.121	Normal

Based on the results of the normality test above, it is concluded that leg muscle strength has a value of 0.172, which is greater than 0.05 (0.172 > 0.05), meaning that the variable is normally distributed, and passing ability has a significance value of 0.121 > 0.05, meaning that it is normally distributed.

b. Linearity Test

The linearity test is a procedure to determine whether the distribution of research data is linear or not. The linearity test seeks the regression line equation of the independent variable against the dependent variable (Hasibuan et al., 2024). The results of the simple regression analysis are only to determine the degree of linear relationship between one independent variable and one dependent variable.

Table 3. Linearity Test

Variabel	F	Sig	Kriteria
Passing Ability – Leg Muscle Strength	0.242	0.965	Linear

Based on the results of the linearity test above, it is concluded that the variable has an F-value (Deviation from Linearity) of 0.242 with a significance level of 0.965. This result indicates that the significance level of 0.965 > 0.05, meaning there is a linear relationship between the independent variable (Passing Ability) and the dependent variable (Lower Limb Muscle Strength).

c. Hypothesis Test

In this hypothesis test, the Pearson product-moment bivariate correlation test was used to determine the strength of the relationship between the independent variable (leg muscle strength) and the dependent variable (passing ability).

Table 4. Pearson's Bivariate Product Moment Correlation Test

VARIABEL	N	Correlation Coefficient	*Sig*	Kriteria
Relationship between leg muscle strength and passing ability in futsal	20	0,611	0,004	Correlated and significant

Based on the results of the correlation test above, it is known that both variables have a significance value of 0.004 < 0.05 and a correlation coefficient of 0.611. Based on the degree of relationship guidelines, it can be concluded that there is a significant relationship between the independent variable (leg muscle strength) and the dependent variable (passing ability in futsal).

4. CONCLUSION

Based on the analysis of the research data using normality tests, linearity tests, and correlation tests, the following conclusions were drawn:

There is a significant relationship between leg muscle strength and passing ability among Physical Education students at Muhammadiyah University Surakarta, with a significance level of 0.004 < 0.05, indicating that the two variables are correlated, and a correlation coefficient of 0.611, indicating that the two variables have a strong correlation and a significant relationship.

AUTHOR'S STATEMENT

In this research, the researchers have not published in other journals/scientific publications and there are no elements of plagiarism. The authors wrote this article in a healthy state and without interference or pressure from other parties.

REFERENCES

Arsyam, M., & M. Yusuf Tahir. (2021). Types of Research and Perspectives. Al-Ubudiyah: Journal of Education and Islamic Studies, 2(1), 37–47. https://doi.org/10.55623/au.v2i1.17

Dewi, D. O., & Jannah, M. (2019). Differences in Emotional Regulation Strategies between Athletes in Accuracy Sports and Martial Arts. Character: Journal of Psychological Research, 6(2), 1–6.

Erliana, M. (2014). The Effect of the Play-Based Learning Model on Mini Volleyball Passing Skills. Multilateral Journal, 13, 53–62.

Hasibuan, L. R., Edi, S., Rahmatina, S., Mawardati, R., Hasan, H. A., Laka, L., Fahradina, N., Hanum, A., Furda, Y. P. E., & Mahdiannur, M. A. (2024). Educational Statistics: The Path to Success in Processing and Analyzing Data. Elfarazy Media Publisher. https://books.google.co.id/books?id=q_EkEQAAQBAJ

Iyakrus, I. (2019). Physical Education, Sports, and Achievement. Altius: Journal of Sports Science and Health, 7(2). https://doi.org/10.36706/altius.v7i2.8110

Septiadi, N. R., & Alficandra. (2024). The Contribution of Eye-Foot Coordination and Leg Muscle Strength to Passing and Stopping in Futsal Among Extracurricular Students at SMA Negeri 10 Pekanbaru. Journal of Social Science Research, 4(1), 7986–7997.

Surya, W. A., Sembiring, L. T., & Sumantri, A. (2022). Analysis of Passing Skills in Futsal at Negaraw FC Bengkulu Selatan Club. Educative Sportive-EduSport, 3(1), 53–57.

Susi Hawindri, B. (2016). Utilization of Basic Futsal Technique Training Guidelines for Beginner Athletes. Proceedings of the National Seminar on the Role of Physical Education in Supporting Interdisciplinary Sports Science, 284–292.

Taufiqurrahman, M., Sugiarto, T., Amiq, F., & Yudasmara, D. S. (2023). The Use of Drill Methods to Improve Basic Futsal Passing Skills in the Sparta Football Sala Blitar Women's Club. Sport Science and Health, 5(2), 158–168. https://doi.org/10.17977/um062v5i22023p158-168