



The Correlation Between Lower Limb Power and Balance On Roundhouse Kick In Pencak Silat At SMP Negeri 1 Pardasuka

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Abstract

This study aims to analyze the correlation between lower limb power, balance, and roundhouse kick ability in students participating in the extracurricular Pencak Silat program at SMP Negeri 1 Pardasuka. A quantitative approach with a correlational design was used. The sample consisted of 31 students selected through purposive sampling. Data were collected through physical tests to measure lower limb power and balance, as well as an assessment of roundhouse kick ability. The results showed that lower limb power has a significant correlation with roundhouse kick ability ($r = 0.582$), with a coefficient of determination of 33.9%. Balance also showed a significant correlation with roundhouse kick ability ($r = 0.514$), with a coefficient of determination of 26.4%. Furthermore, the combination of lower limb power and balance provided a greater contribution to roundhouse kick ability, with a multiple correlation of 0.656 and a coefficient of determination of 43.0%. Based on these findings, it is recommended that the extracurricular Pencak Silat training program focus on improving lower limb power and balance to enhance students' roundhouse kick technique.

Keywords: Lower Limb Power; Balance; Roundhouse Kick; Pencak Silat

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INTRODUCTION

Sport is a structured physical activity involving body movement to improve physical fitness, health, skills, or as a means of competition and recreation. Sport is an important part of a healthy lifestyle, both physically, mentally, and socially. Competitive sport, in general, is a type of sport that focuses on the coaching and development of athletes in an organized, structured, integrated, gradual, and continuous manner through competitions to achieve the best results with the support of science and technology in the field of sport. The goal is to achieve the highest achievements in sports through a systematic and continuous coaching process. Competition to advance sports in each region has begun to be felt, especially in the martial art of pencak silat.

Martial arts, in general, are a form of physical activity that combines elements of art, self-defense techniques, sport, and mental training. The primary goal of martial arts is to

protect, nurture, and defend oneself from threats or attacks of physical violence. Beyond self-defense, martial arts also play a role in maintaining physical and mental health while developing character traits such as discipline, patience, and self-confidence. According to Syahrial (2020) in his book "Jago Beladiri," martial arts combine physical activity, art, self-defense techniques, sport, and mental training.

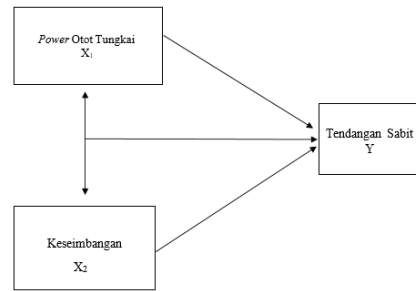
One technique frequently used in competitions is the sickle kick, which relies on a circular motion using the inside of the foot to strike the target. Success in executing this kick depends heavily on two main factors: leg muscle power and balance. Leg muscle power plays a role in generating kick speed and power, as well as coordination and body stability during movement. For students at SMP Negeri 1 Padasuka who are active in pencak silat extracurricular activities, a lack of flexibility and balance makes it difficult to perform movements such as the sickle kick or unstable stances.

In Pencak Silat, balance is the result of a combination of technical skill, physical strength, and mental focus. If balance is less than optimal, athletes will have difficulty controlling their movements, whether offensively, defensively, or counterattacking. Therefore, diligent practice and a thorough understanding of the basic stances are crucial.

According to the data mentioned above, when using the crescent kick technique, students do not demonstrate the expected skill, starting with leg irregularities and a lack of speed or stamina. This is due to the lack of a training program for students, resulting in students being unable to correctly execute the crescent kick technique and balance. Therefore, researchers wanted to examine the relationship between leg muscles and balance in the crescent kick in pencak silat at SMP Negeri 1 Padasuka.

METHOD

The type of this research is correlation research, namely research conducted by researchers in their research to determine the level of relationship between two or more variables without making changes, additions or manipulation to the existing data. According to (Sugiyono, 2013) this research is a correlation research that connects between independent and dependent variations. The independent variables in this study are leg muscle power (X1) balance (X2) while the dependent variable is the sickle kick ability (Y) of students of SMP 1 Negeri Padasuka.



Picture 1. Research Design

The population in this study was 31 students of SMP Negeri 1 Pardasuka, a pencak silat extracurricular student. The sampling technique used was total sampling, which involves taking samples from the entire population. Thus, the sample size for this study was 31 students. The study took place at SMP Negeri 1 Pardasuka, Pringsewu, and was conducted in October 2025.

The independent variables in this study were leg muscle power and balance, and the dependent variable was pencak silat crescent kick ability. The tests included leg muscle power tests (standing long jump), balance tests (stroke stand), and pencak silat crescent kick tests.

1. Leg Muscle Power Test (*standing Long Jumpt Test/Broad jump*) (Widiastuti, 2015)



Picture 2. *Standing Long Jumpt Test/Broad Jump*

2. Balance test (*Strock Stand*) (Widiastuti, 2015)



Picture 3. Strock Stand

3. Crescent Kick Test (Lubis & Wardoyo, 2014)



Picture 4. Crescent Kick Test

Data Analysis Techniques

1. Prerequisite Tests

a. Normality Test

To test the normality of the data, a normality test known as the Lillefors test is used. Data are considered normally distributed if $L_{count} < L_{table}$ with a significance level of 5%.

b. Linearity Test

The linearity test is used to determine the nature of the relationship between the independent and dependent variables. For linearity testing, the f-test is used.

2. Hypothesis Testing

a. Testing Hypotheses 1, 2, and 3

RESULTS AND DISCUSSION

Result

The data collected in this study consisted of two independent variables: leg muscle power and balance, and one dependent variable: sickle kick ability. A summary of the overall data description is presented in the following table:

Table 1. Research Data: Leg Muscle Power, Balance, and Sickle Kick Ability

No	Result	Variable		
		Leg Muscle Power (X1)	Balance (X2)	Crescent Kick Ability (Y)
1	Mean	176	38,23	16
2	Median	172	38,30	16
3	Modus	212	35,13	14
4	Standar Deviasi	28,93	15,65	2,99
5	Min	118	14,25	12
6	Max	233	67,95	22

1. Leg Muscle Power Data

The results of the study on the leg muscle power variable showed quite a wide variation in values. Based on the descriptive analysis, the average (mean) leg muscle power score for participants was 176, indicating a general trend of leg muscle power ability in the fairly good category. The median score of 172 indicates that half of the respondents scored below 172 and the other half scored above. Meanwhile, the mode score of 212 indicates that this score was the most frequently occurring score in the measurement data. Data variability is indicated by a standard deviation of 28.93, indicating that the distribution of leg muscle power values among participants was quite varied. The minimum score of 118 indicates the participant with the lowest leg muscle power ability, while the maximum score of 233 indicates the highest ability achieved by the respondents. The following is a description of the leg muscle power of the 31 students, based on the study results, after being grouped and classified based on the leg muscle power test norms:

Table 2. Frequency Distribution of Leg Muscle PowerData Leg Muscle Power

Jump Distance (cm)	Category	Frequency	Percentage
165-175 cm	Poor	17	54,8%
176-185 cm	Moderate	1	3,2%
186-195 cm	Good	5	16,1%
200 cm	Very Good	8	25,8%
Amount		31	100,0%

In the results table above, most participants are in the Poor Category, and only a few are in the Very Good Category.

2. Balance Data

The measurement results for the balance variable show a mean value of 38.23, indicating that participants' balance levels are in the moderate category. The median value of 38.30 indicates that the respondents' middle scores are very close to the mean, thus the data distribution tends to be symmetrical. The mode value of 35.13 indicates that this is the most frequently occurring balance score. Meanwhile, the standard deviation of 15.65 indicates significant variation in participants' balance abilities. The minimum score of 14.25 indicates the lowest balance ability, while the maximum score of 67.95 represents the highest balance ability achieved by participants.

The balance profile of the 31 athletes, based on the research results, after being grouped and classified based on balance test norms, is as follows:

Table 3. Balance Frequency Distribution

Time survives	Category	Frequency	Percentage
>67 Second	Very Good	1	3,2%
45-67 Second	Good	9	29,0%
30-44 Second	Moderate	10	32,3%
15-29 Second	Poor	10	32,3%
<15 Second	Very Poor	1	3,2%
Amount		31	100,0%

In the table results, most participants are in the moderate and poor categories, with a few participants having very good or very poor balance.

3. Crescent Kick Ability Data

For the crescent kick ability variable, the descriptive analysis results show that the average kicking ability score was 16, reflecting the participants' general ability to perform the crescent kick at a fairly good level. The median score of 16 indicates that the participants' mean score is equal to the mean, indicating a normal or balanced distribution of the data. The mode score of 14 is the most frequently occurring score in the crescent kick ability test results. Furthermore, the standard deviation of 2.99 indicates that the distribution of scores among participants is not too large, indicating relatively homogeneous abilities. A minimum score of 12 indicates the participant with the lowest ability, while a maximum score of 22 indicates the highest ability.

Table 4. Frequency Distribution of Crescent Kick Ability

Crescent Kick Score	Category	Frequency	Percentage
>18	Very Good	9	29,0%
16-18	Good	7	22,6%
14-15	Moderate	10	32,3%
12-13	Poor	5	16,1%
Amount		31	100,0%

Thus, in this study, the majority of participants were in the moderate and excellent categories.

Prerequisite Analysis Test

1. Normality Test

Table 5. Normality Test

Variable	L_{count}	L_{table}	Sig.	Description
Leg Muscle Power	0,095	0,159	0,804	Normal
Balance	0,102	0,159	0,235	Normal
Scythe Kick	0,142	0,159	0,055	Normal

Based on the results of the normality test in the table above, the leg muscle power variable data shows a calculated L value of $0.095 < L_{table} = 0.159$, the balance variable data shows a calculated L value of $0.102 < L_{table} = 0.159$, and the sickle kick ability variable data shows a calculated L value of $0.142 < L_{table} = 0.159$. Therefore, it can be concluded that all data variables are normally distributed.

2. Linearity Test

Table 6. Linearity Test

Variable	F _{count}	F _{table}	Sig.	Description
Scythe Kick - Leg Muscle Power	4,405	8,630	0,123	Linear
Scythe Kick - Balance	2,342	5,769	0,212	Linear

Based on the results of the linearity test in the table above, it is known that the variables for leg muscle power and sickle kick ability show an F-value of $4.405 < F\text{-value of } 8.630$, and the variables for balance and sickle kick ability show an F-value of $2.342 < F\text{-value of } 5.769$. Therefore, it can be concluded that there is a linear relationship between the two variables in all data.

Hypothesis Testing

1. Hypothesis 1: Relationship between Leg Muscle Power and Sickle Kick Ability

Table 7. Correlation between Leg Muscle Power (X1) and Sickle Kick Ability (Y)

Correlation	r _{count}	r _{table}	Criteria	Description
X ₁ – Y	0,582	0,355	Moderate	Signifikan

Thus, the hypothesis "There is a significant relationship between leg muscle power and the results of the sickle kick in the pencak silat extracurricular students of SMP Negeri 1 Pardasuka" is accepted.

2. Hypothesis 2: The Relationship between Balance and the Results of the Sickle Kick

Table 8. Correlation of Balance (X2) and Sick Kick Results (Y)

Correlation	r _{count}	r _{table}	Criteria	Description
X ₂ – Y	0,514	0,355	Moderate	Signifikan

In this study, the hypothesis "There is a significant relationship between balance and crescent kick performance in extracurricular pencak silat students at SMP Negeri 1 Pardasuka" is accepted.

3. Hypothesis 3: Relationship between Leg Muscle Power and Balance and Crescent Kick Performance

Table 9. Correlation of Leg Muscle Power and Balance (X2) and Crescent Kick Performance (Y)

Correlation	r_{count}	r_{table}	F_{count}	F_{table}	Description
X ₁ dan X ₂ – Y	0,656	0,355	10,576	4,196	Signifikan

Based on the comparison between $r_{count} = 0.656$ with $r_{table} = 0.355$ and $F_{count} = 10.576$ with $F_{table} = 4.196$, it can be concluded that the correlation coefficient between leg muscle power and balance on the ability of the sickle kick is significant at the 95% confidence level. Therefore, the hypothesis that states "There is a significant relationship between leg muscle power and balance on the results of the ability of the sickle kick in the extracurricular pencak silat students of SMP Negeri 1 Pardasuka" is accepted.

Discussion

This study aimed to analyze the relationship between leg muscle power, body balance, and sickle kick ability in extracurricular pencak silat students at SMP Negeri 1 Pardasuka. Based on the results of the correlation analysis, the first hypothesis, which examined the relationship between leg muscle power and sickle kick ability, proved significant with an r value of 0.582, indicating a moderate relationship between the two variables. Furthermore, the second hypothesis, which examined the relationship between balance and sickle kick ability, also showed significant results with an r value of 0.514. Body balance has been shown to significantly influence the ability to execute an effective sickle kick. In pencak silat, balance functions not only in static positions but also in dynamic positions during attacks and defenses. With a coefficient of determination of $r^2=0.264$, this study indicates that 26.4% of the variation in sickle kick ability is influenced by body balance, with the remainder likely influenced by other components such as muscle coordination and technique.

In the third hypothesis, which examined the relationship between the combination of leg muscle power and balance on sickle kick ability, the analysis revealed a multiple correlation coefficient of 0.656, which is considered strong. This indicates that both variables together

have a significant influence on sickle kick ability. The coefficient of determination $r^2 = 0.430$ indicates that approximately 43.0% of the variation in sickle kick ability can be explained by leg muscle power and balance together, with the remainder influenced by other factors such as technique, training, and psychological aspects. Overall, this research makes a significant contribution to the development of pencak silat techniques, particularly in improving sickle kick ability by strengthening leg muscle power and body balance. By understanding the significant relationship between these factors, it is hoped that training programs can be more focused and directed to achieve optimal results in pencak silat.

CONCLUSION

Based on the results of research conducted on the relationship between leg muscle power and balance on sickle kick ability in extracurricular pencak silat students at SMP Negeri 1 Pardasuka, it can be concluded that: Leg muscle power is significantly related to sickle kick ability. The better a student's leg muscle power, the more effective their sickle kick execution. Body balance is significantly related to sickle kick ability. Students with good balance tend to be able to execute sickle kicks with greater stability, control, and accuracy. Leg muscle power and balance together have a significant relationship to sickle kick ability. The combination of these two components of physical condition plays a crucial role in supporting the effectiveness and quality of students' sickle kick technique.

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