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The Relationship Between Leg Muscle Power And Dollyo Chagi Kick Ability In Taekwondo Athletes of The Dekade Club of Bekasi City

Ryan Rasyid Al Fikri[1A-E*], Qorry Armen Gemael[2B-D], Deden Akbar Izzuddin[3B-D], R. Retna Kinanti Dewi[4B-D], Habibi Hadi Wijaya[5B-D]

[1,2,3,4,5] Universitas Singaperbangsa Karawang, Jawa barat, Indonesia

1910631240030@student.unsika.ac.id[1*], qorry.gemael@fikes.unsika.ac.id[2], deden.akbar@fikes.unsika.ac.id[3], retna.kinanti@fikes.unsika.ac.id[4], habibi.hadi@fikes.unsika.ac.id[5]

ABSTRACT

This study aimed to determine the relationship between leg muscle power and Dollyo Chagi kicking ability among members of the Taekwondo Dekade Club in Bekasi City. The study population consisted of all active club members, with a sample of 30 participants drawn using a purposive sampling technique. Data collection was conducted using the Vertical Jump Test to measure leg muscle power and the Dollyo Chagi Kick Test to measure kicking ability. Data were analyzed using the Kolmogorov-Smirnov and Shapiro-Wilk normality tests, as well as the Pearson Product-Moment Correlations Test using IBM SPSS Statistics 26 at a significance level of $\alpha = 0.05$. The results of the normality test indicated that both variables were normally distributed (Vertical Jump Test: Kolmogorov-Smirnov Sig. = 0.076; Shapiro-Wilk Sig. = 0.278; Dollyo Chagi Kick Test: Kolmogorov-Smirnov Sig. = 0.096; Shapiro-Wilk Sig. = 0.367). The results of the hypothesis test showed a Pearson correlation coefficient of $r = 0.583$ with a significance level of 0.001 ($p < 0.01$), indicating a significant positive relationship with moderate strength between leg muscle power and Dollyo Chagi kicking ability. The coefficient of determination (r^2) = 0.340 or 34%, meaning that 34% of Dollyo Chagi kicking ability is influenced by leg muscle power, while 66% is influenced by other factors. There is a positive and significant relationship with moderate strength between leg muscle power and Dollyo Chagi kicking ability among members of the Taekwondo Dekade Club in Bekasi City. Leg muscle power contributes 34% to the success of a Dollyo Chagi kick.

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A. Conception and design of the study;
B. Acquisition of data;
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D. Manuscript preparation;
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INTRODUCTION

The Dollyo Chagi kick is a kicking method in Taekwondo that can be considered one of the most common kicking techniques used by all Taekwondo athletes during championships. It can be said that this technique always appears in every Taekwondo match. This is because Dollyo Chagi is highly effective in gaining points in a championship.

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1910631240030@student.unsika.ac.id[1*]

Dollyo Chagi, or the circular kick, requires explosive movements that significantly engage the leg muscles, particularly muscle groups such as the quadriceps, hamstrings, and gastrocnemius. Muscle power in the legs is crucial for athletes to achieve optimal speed and power during kicks, increasing the technique's effectiveness (Apriliani et al., 2024).

Strong leg muscles support stability during explosive movements. Furthermore, leg muscle strength is crucial for maintaining posture for more targeted kicks. Weak or underpowered leg muscles can increase the risk of injury, especially to the knee and ankle joints, during intense movements like Dollyo Chagi. In championships, Dollyo Chagi is frequently used due to its fast and strategic nature.

The problem is that not all athletes have the same level of leg muscle power, even when following similar training programs. This can be influenced by genetic factors, training patterns, and nutritional intake. Athletes with low leg muscle power may struggle to achieve optimal speed and power when executing the Dollyo Chagi kick. Even with adequate leg muscle power, an imperfect kicking technique can disrupt the transfer of kinetic energy from the muscles to the kick. Many athletes are unaware of the importance of coordination between leg, hip, and trunk movements to enhance kick effectiveness. The balance between agonist and antagonist muscles in the legs can also impact kicking results. For example, quadriceps dominance without balanced hamstring strength can lead to instability and reduce kick effectiveness. The aforementioned issues demonstrate that the relationship between leg muscle power and an athlete's ability to execute the Dollyo Chagi kick depends not only on physical aspects but also on technique, training program, and mental state. A comprehensive approach is needed to address these issues so that athletes can optimize their kicking abilities.

Based on the author's observations during training in May 2025 at the Taekwondo Dekade Club, the extent to which leg muscle power contributes to the Dollyo Chagi kick is unknown. This is due to some athletes lacking power when executing the Dollyo Chagi kick. This is due to some athletes rarely training due to exams or other training commitments, resulting in suboptimal Dollyo Chagi kicks and inadequate basic kicks. Problems that arise during field training include: One issue relates to the Dollyo Chagi (side) kick technique. The Dollyo Chagi technique employed by athletes is still weak, stiff, and ineffective, resulting in suboptimal results or the in ability to execute this kick. In particular, suboptimal Dollyo Chagi kicks, in particular, impact the points earned during competitions. Points earned will be very low, and a point deduction will be made if the kicking power is inadequate.

Furthermore, competing athletes are more likely to fall when executing kicks or receiving kicks from opponents. This situation is clearly detrimental to athletes and can also hinder the development of their performance, both in competitions and in assessments by coaches. Common mistakes often made by athletes include lifting the knee too low, which makes the kick not hit the target properly. In addition, the limb that hits is also not on target, both from the shape and position of the foot contact. So this is what interests the author to research at Taekwondo Dekade Club with the title "The Relationship Between Leg Muscle Power and Dollyo Chagi Kicking Ability in Taekwondo Athletes Dekade Club Bekasi City"

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METHODS

This research uses a descriptive quantitative approach. Quantitative research is an organized scientific method for investigating phenomena and their interactions.

In this study, the researcher conducted tests and measurements using a survey method with a one-shot model. This approach directly observed the implementation of the tests and measurements in the field. This approach was a post-test and involved only one group.

The chosen relationship design was the correlational method. Correlational research is a quantitative study that aims to identify relationships between two or more variables without manipulating those variables.

The independent variable was leg muscle power (x1), and the dependent variable was Dollyo Chagi's kicking ability (y). The research design in this study was carefully designed and implemented to generate empirical evidence closely related to the research problem. SPSS was used to process the data.

RESULTS AND DISCUSSION

Based on the research data, some participants experienced improvements in their Vertical Jump Test results. This can be seen in the test results obtained from the study.

Of the 30 athletes, 15 experienced improvements in their vertical jump but not in the normative category, falling into the "poor" category after a 5-minute rest period between the first and second vertical jumps. Eight athletes achieved adequate results in their first vertical jump and a 5-minute rest period, but experienced normative improvements in their second vertical jump. Seven athletes achieved similar results in their first and second vertical jumps.

Table 1.
Men's and Women's Vertical Jump Test Results

Category	Max	Min	Mean	Median
Male	3	2	2,933	3
Female	4	2	2,8	3

Based on the table above, the mean (average) score for the post-test was 2.93. The minimum score for the post-test was 2, the maximum score was 3, and the median (middle) score was 3.

Based on the table above, the mean (average) score for the post-test was 2.8, the minimum score for the post-test was 2, the maximum score was 4, and the median (middle) score was 3.

Table 2.
Dollyo Chagi Kick Test Results for Boys and Girls

Category	Max	Min	Mean	Median
Male	22	14	18,53	19
Female	20	9	15,2	16

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1910631240030@student.unsika.ac.id[1*]

Based on the table above, the mean (average) score for the post-test was 18.53, the minimum score was 14, the maximum score was 22, and the median was 19.

Based on the table above, the mean (average) score for the post-test was 15.2, the minimum score was 9, the maximum score was 20, and the median was 16.

Table 3.
Normality Test Results

	Kolmogorov-Smirnov		Shapiro-Wilk	
Category	**Statictic**	**Sig**	**Statictic**	**Sig**
Vertical Jump Test	152	.076	.958	.278
Dollyo Chagi Men's Kick	147	.096	.963	.367

Based on the data above, a normality test was conducted using SPSS version 26 software using two main methods: Kolmogorov-Smirnov and Shapiro-Wilk, supplemented with Lilliefors Significance Correction. The study sample consisted of 30 athletes from the Taekwondo Dekade Club in Bekasi City, so the Shapiro-Wilk method was preferred due to its greater sensitivity and accuracy for small samples ($n < 50$).

Shapiro-Wilk Test (Priority for sample = 30): A Sig. value > 0.05 indicates a normal distribution of the data. For the Vertical Jump Test: Sig. = 0.279 > 0.05, indicating a normal distribution. For the Dollyo Chagi Kick Test: Sig. = 0.367 > 0.05, indicating a normal distribution. Conclusion of Normality Test Based on the results of the Kolmogorov-Smirnov and Shapiro-Wilk tests with Lilliefors Significance Correction, both research variables (leg muscle power and Dollyo Chagi kick results) are normally distributed at a significance level of 5% ($\alpha = 0.05$). Therefore, the normality assumption requirements have been met, so that researchers can continue the hypothesis analysis using the parametric Correlations test (Pearson Product Moment) to test the relationship between leg muscle power and Dollyo Chagi kicking ability in Taekwondo athletes from the Bekasi City Dekade Club. Additional notes: Although both tests show consistent results, the main interpretation refers to Shapiro-Wilk due to the small sample size ($n = 30$), in accordance with statistical recommendations (Field, 2013; Pallant, 2020).

Table 4
Product-Moment Correlations Test

Category			
Vertical Jump Test	Pearson Correlation	1	.583
	Sig. (2-tailed)		.001
	N	30	30
Dollyo Chagi Putra's Kick	Pearson Correlation	.583	1
	Sig. (2-tailed)	.001	
	N	30	30

The table above explains that, in this study, the independent variable was leg muscle power (measured using the Vertical Jump Test) and the dependent variable was the Dollyo Chagi kick result (measured using the Dollyo Chagi Kick Test). The primary objective was to test for a linear relationship between these two variables among members of the Bekasi City Taekwondo Dekade Club.

The Pearson Product-Moment Correlation test was chosen because: 1) The data for both variables are on an interval/ratio scale. 2) The data distribution was assumed to be

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1910631240030@student.unsika.ac.id[1*]

normal (previously tested using a normality test). 3) The desired relationship was linear. 4) The sample size was 30 individuals (n = 30), meeting the minimum requirements for parametric testing.

CONCLUSION

The results of the Shapiro-Wilk normality test showed a significance value >0.05 for the leg muscle power variable (Vertical Jump Test: Sig. = 0.278) and Dollyo Chagi's kicking ability (Sig. = 0.367). Therefore, the requirements for using the parametric test (Pearson Product-Moment) were met.

There was a positive and significant relationship between leg muscle power and Dollyo Chagi's kicking ability. The Pearson Product-Moment Correlation test results showed a correlation coefficient of r = 0.583 with Sig. (2-tailed) = 0.001 < 0.01. This means that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted.

The r value of 0.583 falls within the range of 0.40–0.59, indicating a moderate and unidirectional relationship. The higher the leg muscle power, the better the Dollyo Chagi's kicking ability.

The coefficient of determination (r^2) = 0.340 or 34%. The remaining 66% is influenced by other factors such as technique, speed, coordination, flexibility, balance, and training experience.

Overall, leg muscle power is a crucial factor in the success of the Dollyo Chagi kick among Dekade Club Kota Bekasi taekwondo athletes.

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1910631240030@student.unsika.ac.id[1*]

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