COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 ‖ Volume 17, Number 2, 2025 ‖ P.1901-1908

Contact Between Body Height And Leg Muscle Explosive Power On Smash Ability In Volleyball Games, ITM Women's Volleyball, Tindoli Village

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ABSTRACT

Researcher aims to find out: 1). To find out the Relationship between Height and Smash Ability in Volleyball Games on the Tindoli Village Women's Volleyball Team?. 2). To find out the Relationship between Leg Muscle Explosive Power and Smash Ability in Volleyball Games on the Tindoli Village Women's Volleyball Team?. 3). To find out the Relationship between Height and Leg Muscle Explosive Power and Smash Ability in Volleyball Games on the Tindoli Village Women's Volleyball Team. The research method in this study is quantitative descriptive, with the sampling method being purposive sampling. The population in this study was members of the Tindoli Village Women's Volleyball Team, totaling 15 people who were used as samples. The data analysis technique used was the product-moment correlation statistical technique. The results of the study showed that there was a Relationship between Height and Leg Muscle Explosive Power and Smash Ability in Volleyball Games on the Tindoli Village Women's Volleyball Team. This is proven by the results of the calculation of the Product Moment correlation obtained by the results of this study showing Height to Smash Ability where rcount = 0.620 obtained rtable = 0.532 because rcount> rtable or 0.620> 0.532 with a significant level of 5% with a degree of difference (db) (N-1) = 15-1 = 14, and the results of the calculation of the Product Moment correlation of leg muscle explosive power to Smash Ability where rcount = 0.873 obtained rtable = 0.532 because rcount> rtable or 0.873> 0.532 with a significant level of 5% with a degree of difference (db) (N-1) = 15-4 = 14. Thus it is concluded that there is a significant relationship between Height and Leg Muscle Explosive Power to Smash Ability in Volleyball Games on the Tindoli Village women's volleyball team.

ARTICLE HISTORY
Received: 2025/06/22
Accepted: 2025/06/26
Published: 2025/06/30

KEYWORDS
Body Height;
Leg Muscle;
Explosive Power;
Smash;
Volleyball.

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

Cites this Article : Torongko, Find Claudia; Purwanto, Didik; Kungku, Christian; Sukrawan, Nyoman. (2025). Contact Between Body Height And Leg Muscle Explosive Power On Smash Ability In Volleyball Games, ITM Women's Volleyball, Tindoli Village. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 17 (2), p.1901-1908

INTRODUCTION

Sport is an essential human need that plays an important role in developing a healthy body and soul. People who exercise regularly will have better physical and mental health than those who rarely or never exercise (Halipah & Febriyanto, 2022). One of the most popular sports in Indonesia is volleyball. Volleyball is a sport that was born from

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recreational sports (Nasuka, 2019). Volleyball is a sport that is widely known by all groups, from teenagers to the elderly, both men and women, and from local to international levels. Mastering the basics of volleyball is actually not difficult and can be done by almost anyone. Using this technique can be learned easily without complicated conditions, but to achieve a high level of skill requires talent and hard training. According to Dieter Beutelstahl in (Mulyadi and Pratiwi, 2020) explains that there are six types of ball contact, so that six types of basic techniques appear, namely serve, dig, attack (smash), volley, block, and defense.

Smash is an act of hitting the ball hard using a certain technique so that the ball can enter the opponent's field (Mulyadi and Pratiwi, 2020). Nothing can stop the other team from playing in the hope of getting points in the game. This step is done when the ball sodang floats over the net, whether it's from a teammate's pass or a passopponent to do a smash. In other words, a smash can be interpreted the same as a spike. Smash is a technique in volleyball and one type of hitting technique that is very effective in producing numbers/points compared to other techniques. Smash can be defined as a way to play the ball effectively and efficiently to get optimal results, but still adhere to the established rules of the game. (Mulyadi and Pratiwi 2020). In volleyball, the components of physical condition that play an important role in volleyball are strength, endurance, explosive power of leg muscles, speed, flexibility and agility. Every athlete must have prime physical condition to maintain and improve their performance. This is supported by good height and leg muscle strength.

Anthropometry can be used as a reference in measuring the variation of each person's physical form. The success of a player in doing a smash is not only due to the mastery of basic smash techniques, but is also supported by other factors such as height and leg muscle explosive power in expanding the movement. In fact, the level of physical and anatomical conditions of individuals varies. To get quality volleyball players, it is important to pay attention to factors such as height and leg muscle explosive power because they affect the results of the smash in volleyball. Doing a smash well requires dedication to time, intensity, and frequency of training.

Regarding height, it is quoted by (Setiawan, 2022) who put forward a theory that tall players have the same advantages as short players, but short players cannot match the reach ability of tall players in volleyball. Height has a big influence in playing volleyball. In addition, it also aims to prevent the opponent from scoring the ball in the opponent's area. Leg muscle explosive power is a very important factor and must be considered in volleyball, especially when hitting so that by having good leg muscle explosive power, it will produce a better smash. The high and low leg muscle explosive power also affects the results of the smash ability, the higher the leg muscle explosive power, the higher it is to reach the ball, the higher the jump when doing a smash, the better the ball produced and if the ball produced is good, the distance the ball falls will be closer and the time taken will be shorter. According to Azhari (2021) Muscle explosive power or muscular power is a person's ability to exert maximum strength with effort that is driven in the shortest possible time.

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Referring to the above, a team must have one mainstay smash that is most effective for them. Because the scoring system used is a rally point system, any mistake, no matter how small, will benefit the opposing team. By mastering one of the mainstay smashes, volleyball players can direct the ball according to their wishes and the results of the smash are more effective. From the observations made, it can be seen from the implementation that the Tindoli Village women's volleyball team still has difficulty in performing volleyball smash techniques such as jumping over the net, the ball not hitting the palm when hit, the direction of the ball bouncing or getting caught in the net. The researcher found several problems in the mastery of techniques in performing smashes that were not optimal. This is because the explosive power of the leg muscles of the team members is still not strong enough to jump to do a smash or attack the opponent's area and is not supported by the tall posture of the members of the Tindoli Village women's volleyball team. When attacking the opponent's area, the team members only rely on the flexibility of the wrist to attack or smash. From that, the failure arose and the members of the Tindoli Village volleyball team were suspected of not having good leg muscle strength and also the height to support them in carrying out attacks or smashes into the opponent's area, so that when carrying out smashes they always failed and ended in defeat.

METHODS

The research conducted is correlational. Sulistyaningsih (Khairani et al., 2021) stated that: "Correlational research is research that is used to find the relationship between two or more variables as a systemic investigation process while other variables can be controlled or even ignored, so that it functions to determine the magnitude of variation in one factor whether it is related to other factors based on the correlation coefficient". Meanwhile, Sumadi Suryabata (Fitri and Haryanti, 2020) argues that: "correlational research is detecting the extent to which variations in a factor are related to variations in one or more other factors based on the correlation coefficient".

The research method in this study is quantitative descriptive, because the researcher wants to know or describe the relationship between height and leg muscle explosive power towards volleyball smash skills. Population is the entire research subject, the entire object studied, whether in the form of people, objects, events, values, or things that happen. Population can also be interpreted as a generalization area consisting of objects/subjects that become certain quantities and characteristics determined by researchers to be studied and then conclusions drawn (Danuri, 2019). Population is the entire research subject. If someone wants to research all the elements in the research area, then the research is population research (Suharsimi Arikunto, 2010). From the definition above, what is meant by population in this study is all the players of the Tindoli village women's volleyball team, namely 15 players. Based on the opinion above, this study uses the entire population as a sample, namely 15 players of

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the Tindoli village women's volleyball team with an age range of 17-25 years. Because the population is less than 100 players, this study can be called population research.

Instruments are defined as measuring instruments used in research, which are tools used to measure observed variables (Sugiyono, 2017). Data collection instruments are tools used to collect data. The quality of a study will be determined by the quality of the data collected. Data is a depiction of research variables. Data quality is highly dependent on the quality of the instruments used to collect information or research data. Good instruments generally must meet several criteria (Budiwanto, 2017). To obtain the required data, players must take a test that has been determined, the types of tests in this study include: Height tests are carried out using a stadiometer with units of centimeters (cm).

Measurement of leg muscle explosive power. The explosive power test is a test used to measure explosive power. The test that can be used for this is the Vertical jump meter, both electric and manual. Smash ability test. The instrument in this study used a test, namely the Volleyball Smash test according to Fenanlampir (2015). This test aims to determine the ability to smash in volleyball.

RESULTS AND DISCUSSION

Resultsl a series of field studies conducted by researchers on the relationship between height and leg muscle explosive power with smash ability in the Tindoli village women's volleyball team, obtained research data in the form of height test data, leg muscle explosive power and smash ability. The test was given to determine the relationship between the three variables. The data is tabulated into a table and the results are as follows:

Tabel 1

Results of Height Measurement (X1) Leg Muscle Explosive Power (X2) and Kemam Mrs. Smash (Y)

No	Name	Itest		
		Tall Body (CM)	Vertical Jump (CM)	Toability Smash
1.	Mastin Ten	155	39	11
2.	Lila Sambali	162	44	12
3.	Godin Tadonggu	156	35	9
4.	Gita Torongko	156	40	9
5.	Thisin Mowidu	158	38	8
6.	Elsa Tancoe	155	32	6
7.	Elsi Tancoe	154	34	7
8.	Noslin budiman	157	40	11
9.	Testa Rantaola	153	36	9
10.	jeen Bindu	158	39	10
11.	SOnya Pombaela	153	36	8
12.	Viby Morato	150	31	7
13.	The Dream of Tunggai	156	37	10
14.	Diamond Santule	153	34	7
15.	Ruth Parusu	155	39	11
Amount		**2,331**	**554**	**135**

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ResultsI Prerequisite Test

Data analysis to test the hypothesis requires several requirement tests that must be met so that the results can be accounted for. Analysis requirement tests include: Normality Test. The purpose of the normality test is to determine whether the data obtained from each variable analyzed actually follows a normal distribution pattern or not. The variable normality test is carried out using the SPSS 24 program which is carried out using the One Sample Kolmogorov Smirnov method. The test rule used to determine whether a distribution is normal or not is p> 0.05, then the conclusion is that the data is not normally distributed, and if p <0.05 then the data is normally distributed. The results of the Height measurement obtained a Kolmogorov-Smirnov test value of 0.575 with a probability level of 0.896 greater than the α value of 0.05 and the results of the Explosive Power measurement obtained a Kolmogorov-Smirnov test value of 0.490 with a probability level of 0.970 greater than the α value of 0.05 and the results of the smash measurement obtained a Kolmogorov-Smirov test value of 0.510 with a probability level of 0.957 greater than the α value of 0.05 thus the Height, Explosive Power and smash data obtained are normally distributed, so that further analysis can use a correlation test.

From the table above, it can be seen that the Pearson Correlation between Height and Smash Ability is 0.620 with a significance value of 0.014 <0.05. So, it can be concluded that there is a strong and significant relationship between Height and Smash Ability. From the Pearson Correlation data between Leg Muscle Explosive Power and smash ability of 0.873 with a significance value of 0.000 <0.05. So, it can be concluded that there is a very strong and significant relationship between Leg Muscle Explosive Power and smash ability.

Based on the calculation results of the Height Correlation Test where rcount = 0.620 obtained rtable = 0.532 because rcount > rtable or 0.620 > 0.532 with a significance level of 5% with a degree of difference (db) (N-1) = 15-1 = 14, and the calculation results of the Leg Muscle Explosive Power Correlation Test where rcount = 0.873 obtained rtable = 0.532 because rcount > rtable or 0.873 > 0.532 with a significance level of 5% with a degree of difference (db) (N-1) = 15-4 = 14, then the null hypothesis (H0) which states there is no relationship is rejected so that (the alternative hypothesis) is accepted. Thus the hypothesis stating "There is a Relationship between Height and Leg Muscle Explosive Power to Smash Ability in Volleyball Games in the Tindoli Village Women's Volleyball Team is accepted".

Relationship of Height to Smash Ability Based on the results of this study using the Correlation Test between the height test and the smash ability test on the Tindoli Village women's volleyball team, the Sig. (2-tailed) value is 0.014 <0.05 so that the data can be said that there is a significant relationship between the height test and the smash ability test on the Tindoli Village women's volleyball team. To prove a significant relationship, it is proven by comparing the Pearson Correlation value with the rtable value. Where the Pearson Correlation value between the height test and the smash ability is = 0.620 using a significance level of 5% from db = (N-1) = (15-1) = 14, the rtable value is 0.532 so that from the data that the Pearson Correlation value is 0.620> rtable 0.532 then the researcher

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concludes that there is a significant relationship between the height test and the smash ability in the volleyball game on the Tindoli Village women's volleyball team.

Relationship between Leg Muscle Explosive Power and Smash Ability. Based on the results of this study using the Correlation Test between the leg muscle explosive power test and the smash ability test on the Tindoli Village women's volleyball team, the Sig. (2-tailed) value is 0.000 <0.05 so that the data can be said that there is a significant relationship between the leg muscle explosive power test and the smash ability test on the Tindoli Village women's volleyball team. To prove a significant relationship, it is proven by comparing the Pearson Correlation value with the rtable value. Where the Pearson Correlation value between the leg muscle explosive power test and smash ability is = 0.873 using a significance level of 5% from db = (N-1) = (15-1) = 14, the rtable value is 0.532 so that from the data that the Pearson Correlation value 0.873> rtable 0.532 then the researcher concludes that there is a significant relationship between the leg muscle explosive power test and smash ability in the volleyball game on the Tindoli Village women's volleyball team.

Relationship between Height and Leg Muscle Explosive Power to Smash Ability. Based on the results of this study using the correlation test between the height test and the smash ability test on the Tindoli Village women's volleyball team, the Sig. (2-tailed) value is 0.014 <0.05 and the results of this study using the correlation test between the leg muscle explosive power test and the smash ability test on the Tindoli Village women's volleyball team, the Sig. (2-tailed) value is 0.00 <0.05 so that the data can be said to have a significant relationship between Height and Leg Muscle Explosive Power to Smash Ability.

Prove a significant relationship is proven by a comparison of values based on the results of the Height Correlation Test calculation where rcount = 0.620 obtained rtable = 0.532 because rcount> rtable or 0.620> 0.532 with a significant level of 5% with a degree of difference (db) (N-1) = 15-1 = 14, and the results of the calculation of the Correlation Test of leg muscle explosive power where rcount = 0.873 obtained rtable = 0.532 because rcount> rtable or 0.873> 0.532 with a significant level of 5% with a degree of difference (db) (N-1) = 15-4 = 14, then the null hypothesis (H0) which states there is no relationship is rejected so that (the alternative hypothesis) is accepted. Thus the hypothesis stating "There is a Relationship between Height and Leg Muscle Explosive Power to Smash Ability in Volleyball Games in the Tindoli Village Women's Volleyball Team is accepted".

Based on the results of statistical calculations and the figures from the calculations with the formula used in this study, it can be seen that there is a significant relationship between Height and Leg Muscle Explosive Power to Smash Ability in Volleyball Games in the Tindoli Village Women's Volleyball Team. The existence of this relationship shows that height greatly supports a volleyball player's ability to smash, and explosive power has a very important role in making high jumps to be able to smash easily into the opponent's area. This study is in line with Azhari's research (2021), The Relationship between Height and Leg Muscle Explosive Power with Smash Ability in Volleyball Extracurricular Students at SMP Negeri 1 Makmur, also Silvera Susana Molio'a's research (2021), The Relationship

between Height and Leg Muscle Explosive Power to Smash Ability in Volleyball Games in Extracurricular Students at SMK 1 Pamona Selatan and also Research conducted by Sistiasih & Pratama (2021) entitled "The relationship between abdominal muscle strength and leg muscle explosive power to volleyball smash ability". Overall, it can be said that the research hypothesis has been accepted and answers the problem, and achieves the objectives of this research.

CONCLUSION

Based on the results of the analysis and discussion of the research results on the Tindoli Village women's volleyball team, it can be concluded that the results of the analysis and discussion of the results of this study indicate that height has a relationship with smash ability as evidenced by the results of the Pearson Correlation value = 0.620> r table = 0.532, and leg muscle explosive power has a relationship with smash ability as evidenced by the results of the Pearson Correlation value = 0.873> r table = 0.532. Thus, there is a significant relationship between Height and Leg Muscle Explosive Power to Smash Ability in Volleyball Games on the Tindoli Village women's volleyball team.

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