

The Influence of Squat Jump Training on Leg Muscle Power of Pesilat at Education of Pencak Silat Persinas Asad Bangkalan

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Received: June 25, 2023; *Reviewed:* June 27, 2023; *Accepted:* June 28, 2023;

Published: June 30, 2023

ABSTRACT

This study aims to describe the implications and responses of fighters on the use of Squat Jump exercises in learning pencak silat. The research design in this study is quantitative. This research involved martial arts fighters aged 14-17 years at the Persinas Asad Pencak Silat College as research subjects. The data were obtained through martial arts, in this study the researcher carried out several stages to analyze the data, namely the pre-test and post-test. The results of the study show that the use of squat jump exercises is effective in the process of practising pencak silat because fighters get something different by using squat jump exercises. The squat jump exercise is also used to provide input to fighters to get good leg muscle power. According to fighters, squat jump training is a training model that invites fighters to further increase leg muscle power. In addition, fighters can also provide more power when kicking pencak silat.

Keywords: *Leg Muscle Power; Pencak Silat; Squat Jump.*

INTRODUCTION

Pencak silat is a branch of traditional martial arts inherited from the ancestors of the Indonesian nation which needs to be preserved, on the island of Java (Suhada & Priyambada, 2022). It is known as pencak while in Indonesia itself the term pencak silat only started after the founding of a pencak silat organization (IPSI) (Hadiana, 2016). Pencak silat is one of the branches of a martial arts sport that has been growing rapidly since the era (Nandana et al., 2020). Pencak silat is a manifestation of the love for beauty and mental, and spiritual tools and even in the field of achievement (Saputra, 2020). Pencak silat martial arts is native to the Indonesian nation, the main organization of pencak silat in Indonesia is the Indonesian Pencak Silat Association (IPSI) (Zubaidah,

2021). Pencak silat uses the whole body and limbs as a means of defence against attack, this pencak silat is very popular with the public (Cahyani, 2018).

Pencak silat is a sport that has three important aspects that must be mastered, namely technique, physical and mental. It aims to have good martial arts (Naufal Hilmy Al As'ad, 2021). Pencak silat is a branch of martial arts that has its roots in the Malay nation, in pencak silat competitions there are four branches, namely; match, singles, doubles and team (Latifah & Jariono, 2021). Three aspects must be prepared to achieve achievement in the sport of pencak silat, namely; physical, technical and mental (Hariyanti, 2019). Pencak silat is an effort in self-defence that is closely related to physical condition, mentality, technique and ability to kick and punch movements (Carolin, 2020). Techniques that must be mastered in the sport of pencak silat include kicks, stances and punches, techniques that require leg muscle power, namely kick and stance techniques (Kurniawati et al., 2021).

Power is a very important component of fitness in a sport, especially in pencak silat. Leg muscle power is something that an athlete must have in kicking in pencak silat (Arif et al., 2021). Leg muscle power plays an important role in the success of kicking at the target (Maulana et al., 2021), with leg muscle power for power so that it is on target far away (Saputro, 2019). Leg muscle power is the utilization or exertion of muscle power or a group of muscles in performing explosive work (Anse, 2017). Leg muscle strength is an element of the physical condition needed for all sports including pencak silat (Santoso, 2015). The role of leg strength in pencak silat, especially in the sparring category, is very large (Maksum, 2021) because kick technique is an effort or process that is carried out by using good techniques when attacking or defending to get points during matches (Maulana et al., 2021).

Based on initial observations at Persinas Asad, the strength of the leg muscles is still weak in kicking, this was proven when fighting among friends. Usually at Asad Persinas College, they practice punching techniques, kicks, blocks, stances, etc. Because of the need for a special form of exercise to strengthen leg muscle power.

One form of exercise to increase leg muscle power is using the squat jump exercise. Squat jump is a form of exercise that is used to increase leg muscle power which will also lead to an increase in the athlete's ability to kick (John Arwandi., 2020). The Squat Jump is a squat with one leg in front, jumping up until the legs are straight and returning to their original position by swapping the legs in front of the back (Ihsan, 2020). Squat jump is a form of exercise to train and improve the endurance component of leg muscle power. Physical condition is very important to support the movement of a player (Bambang

Syamsudar., 2020). The squat jump training method allows fighters to increase leg muscle strength. By applying this training method, it is hoped that all fighters can increase leg muscle power.

So from the description above, the authors are interested in conducting research with the title the effect of squat jump training on leg muscle power in martial arts athletes at the Persinas Asad Bangkalan martial arts college.

METHOD

The type of research in this proposal is a type of experimental research in which this type of research aims to determine the effect on the object being treated (Sugiono, 2019). Experimental research is a research method carried out by experiment, which is a quantitative method, used to determine the effect of the independent variable (treatment/treatment) on the dependent variable (outcome) under controlled conditions.

The research design used was pre-Experimental Designs (non-designs). According to (Sugiono, 2019) in the one-group pretest-posttest design in this design, there is a pretest, before being given treatment, thus the results of the treatment can be known more accurately because it can be compared with the conditions before being given treatment. The exercise treatment consisted of 16 regular strength training sessions twice a week, after which the last person underwent a final (post-test) test to check the effect of the strength training.

The sample is a population or group of population members that characterizes a population (Maksum, 2012). The sample used in this study were athletes at the Persinas Asad Pencak Silat College, and the sampling technique used was purposive sampling. Purposive sampling is sampling that is of interest based on population characteristics, or subjects that are characterized by characteristics that are known in advance (Maksum, 2012). A total of 14 fighters aged 14-17 years at the Persinas Asad Bangkalan pencak silat college became the object of research. The research instrument for collecting leg power test data was using a vertical jump. The normality test in this study can be carried out using the Kolmogorov-Smirnov formula, using the SPSS application. If the analysis produces a p-value greater than 0.5, the data is called normal, and if the analysis produces a p-value of 0.5, the data is called normal and not normal.

The purpose of the homogeneity test is to ensure that the variance of the variations from each group is the same or similar to enable an equally fair comparison (Maksum,

2012). The homogeneity test states that the data is homogeneous if the p-value > 0.05 . If not, the resulting p-value is < 0.05 , and the data is stated to be non-uniform.

Testing the hypothesis in this study using the paired sample t-test with the help of SPSS. Significantly seen at the 5% similarity level, tangka is bigger t-table H_0 fails and H_a passes, and when the number t is smaller or equal to t-table, H_0 passes and H_0 passes and when tangka is smaller or equal to t-table, H_0 passes and H_a fails.

RESULTS AND DISCUSSION

Result

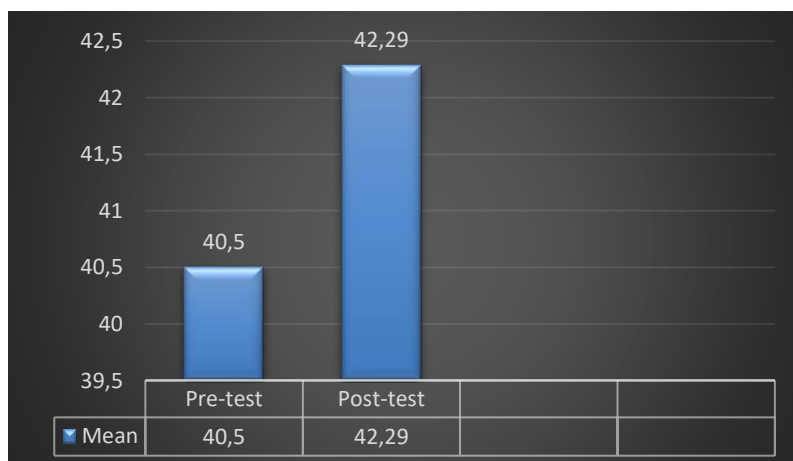
The results of the research on the leg muscle power of athletes at Persinas Asad College before and being given the squat jump exercise are described as follows:

The research results for the pretest results minimum value = 35.00, maximum value = 48.00, average = 40.50, standard deviation = 4.014, while for the posttest minimum value = 36.00, maximum value = 51.00, average -average = 42.29, standard deviation = 4.140, full results as follows:

Table 1.
Pretest and Posttest Results of Leg Power Squat Jump Group

Number	Pretest	Posttest	Difference
1	48	51	3
2	44	45	1
3	43	45	2
4	40	44	4
5	39	42	3
6	37	39	2
7	35	38	3
8	45	46	1
9	45	45	0
10	41	43	2
11	40	42	2
12	38	39	1
13	37	37	0
14	35	36	1
Mean	40,50	42,29	
Minimal	35,00	36.00	
Maksimal	48.00	51.00	

Based on the data on the atlet mentioned above, the pretest and posttest power of the athlete's limbs at the Persinas Asad Pencak Silat College before and after being given the squat jump exercise can be presented in the following



Picture 1.

Bar Diagram of Pretest and Posttest Athlete's Leg Power at Persinas Asad Bangkalan Pencak Silat College Before and After Being Given Squat Jump Training

The normality test is intended to determine whether the variables in the study have a normal distribution or not. This normality test calculation uses the Kolmogorov – Smirnov Z formula with processing using the SPSS 23 computer program. The results are presented in the following table.

Table 2.
Normality Test

Exercise Group		p	Sig	Information
Squat Jump	Pretest	0,200	0,05	Normal
	Posttest	0,200	0,05	Normal

From the results of Table 2 above, it can be seen that all data has a value of P (Sig) > 0.05. then the variable is normally distributed. The full results are presented in the attachment.

The homogeneity test is useful for testing the similarity of the sample, that is, whether the sample variance is uniform or not taken from the population. Homogeneity rule if $p > 0.05$. then the test is declared homogeneous if $p < 0.05$. then the test is declared not homogeneous. The results of the homogeneity test of this study can be seen in the following table:

Table 3.
Homogeneity Test

Group	Df ₁	Df ₂	Sig	Information
Pretest	1	26	1,000	Homogeneity
Posttes	1	26	1,000	Homogeneity

From Table 3 above it can be seen that the pretest and posttest values sig $p > 0.05$ so that the data is homogeneous.

The hypothesis in this study was tested using the paired t-test and independent t-test using SPSS 23. and the sig value is less than 0.05 (Sig < 0.05). Based on the results of the analysis obtained the following data.

Table 3.

T-test of Pretest and Posttest Results of Leg Muscle Power in the Squat Jump Group

Group	Mean	t-test for Equality of Means				
		t ht	t tb	Sig	Difference	%
Pretest	40,50	5,623	1,099	0,00	1,00	2,472%
Posttest	42,28					

From the results of the t-test, it can be seen that the t-count is 5.623 and the t-table (df 6) is 1.099 with a significant p-value of 0.00. Because the t-count is 5, 623 $>$ t table 1.099, with a significant value of 0.00 < 0.05 . So the results show that there is a significant difference. Thus the alternative hypothesis (H_a) which reads "There is a significant effect of squat jump training on increasing the leg muscle power of Pesilat at Persinas Asad Bangkalan College", is accepted.

Discussion

Based on the analysis of the t-test, it can be seen several things to conclude whether there is an increase in the leg muscle power of the fighter at the Pesilat Perisinas Asad Bangkalan school after participating in the squat jump training method for 14 meetings. The research results are discussed in detail as follows:

Based on the results of the study, showed that there was a significant effect of squat jump training on increasing the leg muscle power of fighters at Persinas Asad College. The effectiveness of increasing the leg power of fighters at Persinas Asad Bangkalan after being given squat jump training is 4.4%. The results of this study are also in line with the theories about squats. Among these theories (Fahey, 2005) states that squat training is one of the multi-joint exercises that can increase lower body strength which impacts can improve performance in sports. These results are reinforced by (Saudini., 2017) results of his research showing that there is a significant effect of squat training on increasing leg muscle power.

Squat training is a type of weight training to increase strength development, especially in the leg muscles, and weights are the basic basis of the exercise. This squat exercise is done by burdening the organs of the body with a barbell with intensity, sets, frequency and duration of exercise which can cause a training effect in the form of

increased strength, explosive power, and muscle endurance. By increasing strength, explosive power and muscle endurance, physical abilities will generally increase (Riadi, 2010).

Squat jump is an exercise that aims to train the Hamstring muscles (biceps femoris) from the back of the upper leg, the gluteus maximus. The implementation of squat jump training is the position of one foot forward and one foot back. Lower the body, then jump into the air. While in the air, switch foot positions, so that the hind foot is now in front and vice versa. Land on your toes, then bring your weight back to your heels. Immediately bend your knees to reduce the danger that arises (Clark, 2008).

Squat Jump is an exercise to increase explosive power for the leg muscles, especially the gluteals, hamstrings, quadriceps, and gastrocnemius muscles. This squat jump exercise has a slightly longer amortization phase, so the resulting energy production is a bit wasted, resulting in not too much explosive power. If the amortization phase is prolonged, it will hinder the stretch reflex and a lot of energy production will be wasted (Markovic., 2007).

CONCLUSIONS AND SUGGESTIONS

Based on data analysis, description, test results, and discussion, it can be concluded that there is a significant effect of squat jump training on increasing leg muscle power in fighters at Pencak Silat Persinas Asad Bangkalan College, with t count 5.623 and t table 1.099, and the value significance of $0.00 < 0.05$, and a percentage increase of 2.472%.

Based on the conclusions above, the research results imply that the research results can be used as material for consideration for pencak silat trainers in making appropriate training programs to increase athletes' leg power. Thus the training will be effective and will get results following what the coach has implemented. Based on the results of the research, the trainers and other researchers are given the following suggestions:

1. For the next trainer to carry out the canteen so that he can fully control the activities carried out by the sample outside of training.
2. Researchers who intend to continue or replicate this research are advised to exercise tighter control in the entire series of experiments
3. Researchers who wish to conduct further research they can make this research information material and can research with a larger and different number of populations and samples.

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