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The Effect Of Resistance Band Exercise On Leg Muscle Strength in Volleyball

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Abstract

This study aims to determine the effect of resistance band training on leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo. The method used in this research is a one-group pre-test post-test design experiment with a quantitative approach from the results of a study that has been carried out on the effect of resistance band training on leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo. Moreover, the results of data processing with statistical analysis, the results of this study are sig values, namely $0.000 < 0.05$, which means that H_0 is rejected. Thus, resistance band training significantly affects leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo.

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INTRODUCTION

Sport is a very important activity in human life (Handoko & Gumantan, 2021). By exercising effectively, you can maintain quality and maintain fitness both physically and spiritually ((Amicta & Maidarman, 2019). Sports can also shape attitudes, personality, and human resources.

Volleyball is one of the many sports in Indonesia that children and the community favor. Through volleyball sports activities, various groups benefit, especially in terms of physical, mental, and social growth (Prihanto Arimbawa et al., 2021). With this achievement, good cooperation is needed in developing tactics to finish the match with a win (Nugrahani & Anam, 2022). Achievements such as the 2018 axapel cup 3 tournaments, the Chancellor Iain Palopo trophy, the University of Muhammadiyah Palopo real work sports week, which was coached directly by Mr. Suaib Nur, M.Pd who is also the coach of the Muhammadiyah Palopo University volleyball team who is one of the lecturers at the Muhammadiyah University of Palopo. This team needs a coaching and development process with various kinds of exercises, especially for each member of the volleyball, to provide training, directions, skills, and techniques in carrying out the volleyball training process, such as players having difficulty directing hard punches to the opponent's area, as well as a lack of confidence/ mentality. In the Palopo Muhammadiyah University team, many players, such as jumping, serving, passing,

dancing, and attacking patterns, could be more optimal. This is due to a lack of training for volleyball athletes at the University of Muhammadiyah Palopo due to the relatively busy course schedule.

Training is a sports program using training tools to improve the quality of athletes (Prayoga et al., 2022), with training elements formed and planned by trainees in one level of training (D Ananzar & J Mistar, 2022). For training, cooperation is needed, such as preventing boredom from practicing; the coach must be creative and apply variations in training (Purba & Hasibuan, 2022). *Resistance bands are one of the practical fitness sports facilities made of rubber, easy to carry anywhere* (Abimanyu Prabowo Waskito1, 2021). They are needed anywhere, so it has many benefits, such as increasing muscle mass, speed, and agility (Azlan Ali, Muhammad Salabi, 2022). Resistance bands are lightweight rubber that can train resistance and restore strength, so they are handy for every athlete (Wahono et al., 2022). Using resistance band-aids was chosen because it has the advantage of training arms and legs by increasing muscle strength and training flexibility, making athletes have more varied movements and are easy to obtain. Exercise using a resistance band-aid which forms an effective training process to properly increase leg muscle strength (Ratno & Simanjuntak, 2022). With the achievement of a goal, this resistance band exercise is needed by athletes.

Strength is an exercise in maintaining fitness to optimize the physical activity of physical movement (Putri & Jatmiko, 2022). An athlete's fitness can be viewed in terms of endurance, strength, and speed when carrying out activities so that they do not experience excessive fatigue (Wirajaya et al., 2022). Leg muscles are essential in stabilizing the energy involved by the lower limbs, which are leg muscles (Rasyid & Sari, 2022). The strength of these leg muscles greatly influences the sport of volleyball, so athletes are required to have good explosive power (Hasanuddin et al., 2022). Explosive power is the ability of the athlete's muscles to engage force optimally (Devit Wilastra¹, 2022). Leg muscle strength is needed by athletes from the University of Muhammadiyah Palopo, such as when doing smashes, blocks, passing, and setters. When that was achieved, the University of Muhammadiyah Palopo volleyball athletes felt enthusiastic about playing volleyball.

The problem in this research is. "Does resistance band training have an effect on leg muscle strength in the volleyball team at the Muhammadiyah University of Palopo?". This study aims to determine whether resistance band training affects leg muscle strength in volleyball.

The following is relevant research on physical conditions conducted by (Elinopita & Setiana, 2021) "Can resistance band training increase arm strength extracurricular volleyball at Christian Aletheia Malang Middle School". The results of the study show that the null hypothesis (Ho) is not accepted and the alternative hypothesis (Ha) can be

accepted, which means that the results of the research table value are smaller than the test scores. There is an increased chance of lower pass skills in playing volleyball through resistance band training in students VII of Aletheia Christian Middle School Malang" accepted.

Based on previous research that the effect of resistance band training can increase arm strength volleyball extracurricular volleyball at Christian Aletheia Malang Middle School, the authors are interested in examining the effect of using resistance band training on leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo.

METHODS

The type of research used is quantitative research, by providing pre-experimental experimental methods. This study used a pre-test to determine initial ability, then gave treatment to measure final ability (post-test). According to (Sugiyono, 2018), experimental research is a research method carried out to determine the effect of treatment under controlled conditions. This study uses a vertical jump as an instrument or measuring tool.

This data collection technique uses saturated sampling because the sampling technique is that all members of the population are used as samples. This is often done when the population is small, less than 30 people. (Sugiyono, 2018).

The data collection technique used is

testing and measurement because the collected data is used to test the hypotheses that have been given. Tests and measurements are data collection techniques that will be used during the implementation of the research.

The formula to be used in processing the data is as follows. The mean or average count is the number obtained by dividing the sum of the values by the number of individuals. This mean is used to find the average of the test results data conducted by volleyball athletes at the Muhammadiyah University of Palopo.

This study included parametric statistics. Parametric statistics are statistical tests that require specific provisions. In this study, there is a normality test to test data that will be analyzed further. This test is carried out depending on the variable to be processed.

Data normality test using Kolmogorov Smirnov with the help of SPSS 2.

Hypothesis testing uses the t-test with the help of SPSS 23 by comparing the mean. If the calculated t value is less than the t table, Ha is rejected; if the t count is greater than the t table, Ha is accepted. Test the research hypothesis using SPSS 23.

FINDINGS AND DISCUSSION

Findings

The results of the calculation of leg muscle strength pre-test and post-test data from a sample of 12 athletes are described with descriptive statistics, which include: a) several samples, b) average (mean), c) median, d) Std. Deviation, e) range, f) minimum value, g) maximum value.

Data Description

Descriptive Statistics							
	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation
pretest kekuatan	12	9	40	49	546	45.50	3.060
posttest kekuatan	12	13	54	67	747	62.25	3.494
Valid N (listwise)	12						

From the table above, it can be seen that the number of research subjects totaled 12 subjects. With an average (mean) pre-test value of 45.50 and a post-test value of 62.25. Std deviation pre-test 3.060 and post-test 3.494. The minimum pre-test value is 40, and the post-test is 54. The maximum pretest value is 49 and the posttest is 67.

The normality test is carried out to determine whether or not the data is normal. The table above shows that the pre-test and post-test data have a value of ρ (Sig.) > 0.05. The variables are normally distributed, so the data is normally distributed so it can be continued.

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pretest kekuatan	.188	12	.200*	.908	12	.202
posttest kekuatan	.138	12	.200*	.924	12	.317

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Calculation of the t-test in research using the SPSS application, which aims to determine whether or not there is an effect on the results of the resistance band on the

athlete's leg muscle strength that research subjects have carried out. The t-test uses the paired sample t-test in statistical calculations, namely the paired sample difference test.

Paired Samples Test

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
				Paired Differences				
1 pretest kekuatan - posttest kekuatan	45.50	5.379	1.553	-20.168	-13.332	-10.787	11	.000

Based on the data in the table above, it can be seen that the probability number of sig is 0.000 <0.05, which means that Ho is rejected. Thus it can be concluded that resistance band training has a significant effect on leg muscle strength. From the results of research, analysis, and data studies that have been done before, it can be seen that the average value of resistance band exercises is 45.50 for the pre-test and 62.25 for the post-test. Referring to these results, there was an increase from the pre-test to the post-test results. There was a significant effect on leg

muscle strength from the paired sample t-test results.

Discussion

The physical conditions of volleyball athletes that must be met include strength, speed, flexibility, and endurance. This study provides resistance band training to athletes to increase leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo. Training can provide new knowledge in training leg strength in athletes. In this study, the researchers focused on strength

training. A volleyball athlete's leg muscle strength is the ability of the volleyball athlete's leg muscle strength to work while playing volleyball. Leg muscle strength is a person's ability to expel all the potential or strength that exists in the limbs.

The effect of resistance band training on increasing leg muscle explosive power. The method used is descriptive quantitative, using a research design in the form of two experimental designs that carry out exercise treatment for six weeks from the data tested with independent samples t-test. The test was used to determine the difference between the two groups. There is a significant effect of the punch resistance band exercise on increasing the explosive power of the arm muscles. There is a significant effect of the punch dumbbell exercise on increasing the explosive power of the arm muscles. There is no significant difference between the punch resistance band and punch dumbbell exercises in increasing the explosive power of the arm muscles (Purwadinata & Wijono, 2020).

Hypothesis testing shows a significant effect of resistance band training on increasing leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo. The results of this study were influenced by the training program given in doing the exercises and the level of athlete motivation when practicing. This shows that resistance band training can be one of the maximum achievements of athletes to improve their knowledge and skills of athletes can be adequately achieved.

CONCLUSION

Based on the results of the data analysis, it is known that the number of research subjects is 12. With an average (mean) pre-test value of 45.50 and a post-test value of 62.25. Std deviation pre-test 3.060 and post-test 3.494. The minimum value of the pre-test is 40, and the post-test is 54. The maximum pretest is 49 and the posttest is 67. In the normality test, the pre-test and post-test data have a value of p (Sig.) > 0.05 , so the variables are normally distributed. The data is usually distributed then it is continued. So a t-test was conducted with the results obtained sig, namely $0.000 < 0.05$. This can be seen from the sig value, $0.000 < 0.05$, which means H_0 is rejected. Thus it can be concluded that resistance band training has a significant effect on leg muscle strength. This resistance band exercise aims to increase leg muscle strength in volleyball athletes at the Muhammadiyah University of Palopo.

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