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### The Effect Of Resistance Band Training On Arm Strength In Beginner Swimming Of The Garuda Laut Palopo Club

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#### Abstract

This study aims to determine the effect of resistance band training on arm strength in the beginner swimming of Garuda Laut Palopo Club. The method used in this study was an experimental method which consisted of 12 people as a sample. Data collection techniques used are observation and documentation. The type of data source used is the primary data source. The results of this study indicate that the average value (mean) of the pre-test is 48.2500, and the post-test is 59.7500. std. Deviation pre-test 3.84057 and post-test 3.04884. minimum value pretest 43.00 and posttest 55.00. maximum pretest value of 55.00 and posttest 66.00. Then the probability figure obtained from sig is  $0.000 > 0.05$ , which means  $H_0$  is rejected. Thus, resistance band training significantly affects arm strength in beginner swimming at the Palopo Laut Garuda Club.

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#### INTRODUCTION

Sports in Indonesia are an essential part of forming the younger generation. Currently, many young people need to understand sports for a healthy body. Many young people are lazy to exercise and like to stay up late at night, consume alcoholic beverages, and smoke. Sport is a physical activity to strengthen muscles and

maintain a healthy body. It is undeniable that sport is currently a lifestyle (lifestyle) usually done by someone to make their body healthy and fit. A healthy lifestyle is one way to apply good habits to maintain a healthy body to avoid various diseases (Bimantara & Purnomo, 2017).

Swimming is one of the water sports that is fun and inexpensive, and healthy for the body.

This swimming sport suits any group, regardless of age or social status. So this sport is also very popular with the community. In addition, this sport can also be recognized in early childhood, such as toddler age. Apart from swimming pools, swimming can be done anywhere, such as in lakes, rivers where the currents are not too fast, and the sea. Swimming consists of various styles, including freestyle, breaststroke, backstroke, and butterfly (Styo & Hananto, 2021).

Swimming is a sport that competes for the speed of swimming athletes in swimming. The contested swimming styles are freestyle, butterfly, backstroke, and breaststroke; swimming generally is an effort to float or lift the body above the water's surface. Swimming is a type of sport that is done in water, either in freshwater or in salt or sea water (Rizkiyansyah & Mulyana, 2019).

Swimming is a sport that requires good physical condition; in swimming, some styles are often contested, such as freestyle swimming, breaststroke swimming, butterfly swimming, and backstroke swimming. Of all the styles the researchers discussed, the prevailing physical conditions in this freestyle swimming were arm muscle endurance, leg muscle explosive power, and flexibility. (Amicta & Maidarman, 2019).

Exercise is a physical training program to develop an athlete's ability to face essential matches. From several opinions of training experts, it can be defined as a process of sports activity that is carried out slowly and gradually

and has a structured training program that can develop an athlete's abilities so that the athlete's ability can continue to improve. (Putra & Witarasyah, 2019). Freestyle swimming is a style in which the body position (chest) faces the water's surface. Likewise, the position of the face was facing the surface of the water. Freestyle swimming has quite complex movements and requires good coordination of hand and foot movements. Compared with other swimming movements, freestyle swimming is a style that makes the glide faster. One factor that influences a person in swimming is the need for good and correct basic swimming techniques. The basic techniques of freestyle swimming include body position, leg movements, arm movements, breathing, and combinations of movements. (Styo & Hananto, 2021).

Exercise using resistance bands or rubber is a type of exercise that is useful for increasing arm muscle strength. This form of exercise is a physical exercise that provides an additional load to increase arm muscle strength, and the exercise portion must also be increased regularly. The function of the resistance band is to increase muscle endurance and arm strength. The use of resistance bands or elastic bands can provide success in increasing leg strength in judo athletes and strength in athletes' arm muscles (Elinopita & Setiana, 2021).

Resistance bands are an efficient and easy-to-carry fitness tool made of rubber with a hand grip as the support. Rubber resistance bands have

various elasticities; in this study, medium-sized resistance bands can be used for strength training (Naufal, 2019). Arm swing using a resistance band exercise is a form and variation of exercise that increases the speed and strength of the arm swing to form a qualified arm muscle power component due to the load placed on the hand. In addition, resistance bands are also easy to use because rubber is elastic, making it easy to adjust the swing shape (Persadanta, Sukendro, 2020).

In swimming, especially in freestyle, muscle strength greatly determines swimming speed. Because arm movement is the key to fast, effective, and free swimming, it is necessary to do it well from the start. There are several functions of arm muscle strength in swimming, including: (1). To move the arms as rowers, (2). To move the arm, rotate it inward (3). To move the wrist and flexors of the fingers, and (3). To move the elbow extensors (Rasyid et al., 2017). Strength is a component of physical condition. Strength is the maximum work (maximal force) or torque (rotational force) the muscles produce either partially or in groups. Strength is one element of physical condition that is very important to improve physical condition components such as accuracy, agility, and speed (Bimantara & Purnomo, 2017). Muscle strength is needed in training to increase power, such as arm, back, abdominal, and leg muscles. The factors influencing an athlete to excel include physical, technical, tactical, and mental abilities. Athletes

must meet all these components to perform best (Persadanta, Sukendro, 2020).

The problem in this study is "the lack of arm muscle strength when doing hand swings in freestyle swimming". This study aims to determine whether resistance band exercises affect arm strength in the beginner swimming club Garuda Laut Palopo.

The following is relevant research conducted by (1). Miftah Qutoriki Rohmah (2018), entitled "The Effect of Chest Press Resistance Band Exercises and Push Ups on Arm Muscle Strength of Surabaya State University Students". The result of this study is that the push-up exercise significantly affects the chest press resistance band exercise. Based on the relevant research above, physical training greatly influences arm strength for swimmers, especially in freestyle. From observations made by researchers on swimmers at the Garuda Laut Palopo Club, there are still many who have not been able to maximize their physical abilities on arm strength in free swimming, so researchers are interested in trying to train swimmers using resistance bands to find out whether using resistance bands affects strength. Arm to swing in freestyle swimming.

Based on this, researchers are interested in conducting research with the title, the effect of resistance band training on arm strength in beginner swimming at the Palopo Laut Garuda Club. Researchers use freestyle swimming as a research object.

## METHOD

The research method used in this study is the experimental method. Treatment was given in data collection techniques using tests and measurements. Before the athletes are given treatment, they are first given an initial test (pre-test), then the sample will be given physical exercise using a resistance band (Kurnia Rusli, 2022). According to (Sugiyono, 2018), experimental research is a method carried out to determine the effect of treatment under controlled conditions. The population is the number of subjects or respondents the researcher selects, as many as 12 people. Sampling in this study used a saturated sample (census), a sampling technique in which all populations are sampled. The sample in this study was as many as 12 people.

Retrieval of data from this study, namely using primary data where the data was obtained directly. I am doing a pre-test to determine each athlete's strength before being given resistance band training. Then given resistance band exercises, the next stage is the post-test stage to determine the final results after doing physical exercises using resistance band training tools.

The data collection technique for this study used the 50-meter freestyle swimming speed test (Rusli et al., 2022) as follows:

### a. 50 Meter Freestyle Swim Speed Test

#### 1. Test tools and facilities:

a. The swimming pool is 50 meters long and 25 meters wide

- b. Pluit
- c. Stopwatch
- d. Ballpoint
- e. Writing paper

#### 2. Execution

After listening to the starter's whistle, the test takers line up at the pool's edge to get ready to start. As soon as the signal is taken, the test takers take a starting stance, and after the whistle sounds, the test takers immediately swim freestyle as fast as possible with a distance of 50 meters; at that moment, the stopwatch is turned on. The stopwatch was immediately turned off after the test participant touched the pool wall. Assessment: a record of the test taker's time in one trial.

#### 3. Assessment

Taking time records in one trial, namely the sample doing a 50-meter freestyle swimming speed test

The following are data analysis techniques in this study using the following formula:

- a. Data description. The formula for processing the data is as follows, Mean or arithmetic average is the number obtained by dividing the total values by the number of individuals. This mean is used to find the average of the test results data carried out by the beginner swimming club Garuda Laut Palopo,
- b. Prerequisite test, statistical test in this study is included in parametric statistics. Parametric statistics are statistical tests that require specific conditional tests.

Nothing but testing the normality of data in research that will be analyzed further. This test is carried out depending on the variables to be processed. Data normality test using Kolmogorov Smirnov with the help of SPSS 20.

Hypothesis testing uses the t-test with the help of SPSS 20 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 20

## FINDINGS AND DISCUSSION

### Findings

The results of the calculation of the data from this study, namely pre-test and post-test data on arm strength with a sample of 12 beginner swimmers, are described in descriptive statistics, which include a) several samples, b) average (mean), c) median, d) Std. Deviation, e) range, f) minimum value, g) maximum value.

	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation
Pre-test	12	12.00	43.00	55.00	579.00	48.2500	3.84057
Posttest	12	11.00	55.00	66.00	717.00	59.7500	3.04884
Valid N (listwise)	12						

Based on the table above, the number of samples in this research was 12. With an average (mean) pre-test value of 48.2500 and a post-test of 59.7500. std. Deviation pre-test 3.84057 and post-test 3.04884. minimum value pretest 43.00 and posttest 55.00. maximum pretest value of 55.00 and posttest 66.00.

### Normality Test

The normality test is carried out to determine whether the data to be tested is usually distributed.

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test	.218	12	.120	.921	12	.297
Post-test	.283	12	.009	.887	12	.107

a. Lilliefors Significance Correction

Based on the table above, it can be seen that if the sig pre-test and post-test values are > 0.05, then the data is usually distributed; because the data is normally distributed, it can be continued.

**Homogeneity Test**

The homogeneity test aims to ensure that the variants of each group are the same or similar so that comparison can be made relatively.

**Test of Homogeneity of Variances**

Swimming ability			
Levene Statistic	df1	df2	Sig.
1.592	1	22	.220

Based on the table above, it can be seen that the results of sig 220 > 0.05 mean that the variance of the data is the same (homogeneous).

whether or not there is an effect on the results of resistance band training on the athlete's arm muscle strength that research subjects have carried out. The t-test is meant to use the paired sample t-test in statistical calculations, namely the paired sample difference test.

**T-Test**

The t-test calculation in this study uses the SPSS application, which aims to determine

**Paired Samples Test**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pretest - posttest	-11,500	3,503	1,011	-13,726	-9,274	-11,372	11	,000

**Discussion**

Based on the table above, it can be seen that the probability number of the sig is 0.000 > 0.05, which means Ho is rejected. Thus,

resistance band training has a significant effect on arm strength. From the results of research, analysis, and data studies that have been carried out, it can be seen that the average value of

resistance band exercises is 48.2500 in the pre-test and 59.7500 in the post-test. Referring to these results, there is an increase from the pre-test to the post-test; there is a significant effect on the strength of the arm muscles and the results of the paired sample t-test.

This study provides resistance band exercises to swimmers to increase arm strength in swimmers at the Palopo Laut Garuda Club. By providing training using a resistance band tool, it provides new knowledge in terms of training freestyle swimming speed for swimmers. This can be seen from the results of swimming speed, which shows an increase in an athlete's swimming speed because strength is one of the components supporting an athlete's speed. Because the strength of the swimmer's arm is very influential in the athlete's speed during the race.

According to Juvianti Br Sembiring and Muhammad Faisal Ansari Nasution (2022) in the journal *The Effect of Resistance Band Exercise Variations on Arm Muscle Strength in Male Swimming Athletes Age 12-13 Years Sailfish Swimming Club Medan in 2021*. This study aims to determine the effect of resistance band training variations on arm muscle strength in male swimming athletes aged 12-13. By using a purposive sampling technique, the total sample is eight athletes. The research was held from July to September 2021 with a frequency of 18 meetings, and this exercise was held three times a week. This study used the experimental research method of one group pretest-posttest design using

an expanding dynamometer or a pull-and-push dynamometer. The test instrument in this study was a test of arm muscle strength. The variables in this study were resistance bands as the independent variable and arm muscle strength as the dependent variable, from the research that has been carried out on the influence of variations in resistance band exercises on arm muscle strength in male athletes from the Medan Sailfish Swimming Club.

Moreover, the data processing results with statistical analysis were obtained: hypothesis, that  $t = 11$  and  $t_{table} = 1.90$ , then  $t_{count} > t_{table}$ . Thus,  $H_0$  is rejected. Variation Thus, it can be concluded that resistance band training variations significantly affected arm muscle strength in athletes' men's swimming after 12-13 years at sailfish swimming club Medan in 2021.

According to the results of the previous research above, there are several differences and similarities in the research carried out, namely in the location, title, sample, and object being studied. In contrast, the similarities from the previous research above used the experimental method and looked for influence on strength using resistance bands.

From this study, it was stated that the test results stated that there were differences in Pre-test and Post-test scores in resistance band training for beginner swimming at the Palopo Laut Garuda Club. When comparing the average number of average scores before giving resistance band training (pre-test), a value of

48.2500 is obtained, while the average number of final test scores after giving training (post-test) is 59.7500. and obtained a tcount value of 11.372 and  $p(\text{sig}) = 0.000$ , thus the data is declared significant.

## CONCLUSION

Based on the results of research conducted on the beginner swimming of Garuda Laut Palopo Club, it can be concluded that the average value of the pre-test is 48.2500, and the post-test is 59.7500. Then the probability figure obtained from sig is  $0.000 > 0.05$ , which means  $H_0$  is rejected. Thus, resistance band training significantly affects arm strength in beginner swimming at the Garuda Laut Palopo club, which means that the program can increase arm strength and swimming speed.

## REFERENCES

- Amicta, B. S., & Maidarman. (2019). Tinjauan Kondisi Fisik Pada Mahasiswa Mata Kuliah Renang Pendalaman FIK UNP. *Jurnal Pendidikan Dan Olahraga*, 2(1), 203–208.
- Bimantara, Y., & Purnomo, M. (2017). Pengaruh Latihan Resistance Band Leg Press dan Resistance Band Lyisng Leg Press terhadap Kekuatan Otot Tungkai. *Journal Mahasiswa UNESA*, 1–7.
- Elinopita, T., & Setiana, I. (2021). Apakah Latihan Resistance Band Dapat Meningkatkan Kekuatan Lengan Siswa Ektrakurikuler Bola Voli SMP Kristen Aletheia Malang. *Jurnal Pendidikan Jasmani Khatulistiwa*, 2(1), 9. <https://doi.org/10.26418/jpjk.v2i1.4710>
- Juvianti Br Sembiring, M. F. A. N. (2022). *Pengaruh Variasi Latihan Resistance Band Terhadap Kekuatan Otot Lengan Pada Atlet Renang Putra Usia 12-13 Tahun Sailfish Swimming Club Medan Tahun 2021*. 21(1), 65–73.
- Kurnia Rusli, A. N. A. (2022). *Perbedaan Pengaruh Latihan Berdiri Menggunakan Karet Terhadap Kecepatan Renang Gaya Bebas*.
- Naufal, A. (2019). *Pengaruh Latihan 8 Minggu Dengan Resistance Band Di Periode Khusus Terhadap Power Tungkai Atlet Taekwondo*.
- Persadanta, Sukendro, R. (2020). *Pengaruh Resistance Band Exercise Terhadap Power Otot Atlet Muay Thai*. 1, 23–29.
- Putra, & Witarsyah. (2019). *Pengaruh Latihan Dayatahan Kekuatan Otot*



- Lengan dan Otot Tungkai Terhadap Kecepatan Renang Gaya Dada 50 Meter. *Jurnal Pendidikan Dan Olahraga*, 2(1), 51–56. <http://jpdo.ppj.unp.ac.id/index.php/jpdo/article/view/217>
- Rasyid, H. Al, Setyakarnawijaya, Y., & Marani, I. N. (2017). Hubungan Kekuatan Otot Tungkai Dan Kekuatan Otot Lengan Dengan Hasil Renang Gaya Bebas 50 Meter Pada Atlet Millennium Aquatic Swimming Club. *Jurnal Ilmiah Sport Coaching and Education*, 1(1), 71–85. <https://doi.org/10.21009/jsce.01106>
- Ratno, P., & Simanjuntak, A. H. (2022). Pengaruh Latihan Latihan Resistance Band Terhadap Kecepatan Tungkai Atas Renang 50 Meter Gaya Bebas Pada Atlet 10 -15 Tahun Aquatic Swimming Club Medan. 21(2), 219–224.
- Rizkiyansyah, A., & Mulyana, B. (2019). Pengaruh Media Papan Luncur dan Pull Buoy Pola Metode Drill terhadap Hasil Belajar Teknik Dasar Renang Gaya Bebas. *Jurnal Kepelatihan Olahraga*, 11(2), 112–123. <https://doi.org/10.17509/jko-upi.v11i2.20311>
- Rohmah, M. Q. (2018). Pengaruh Latihan Chest Press Resistance Band Dan Push Up Terhadap Kekuatan Otot Lengan Mahasiswa Universitas Negeri Surabaya. *Jurnal Prestasi Olahraga*, 1(4), 1–16. <https://jurnalmahasiswa.unesa.ac.id/index.php/jurnal-prestasi-olahraga/article/view/26211>
- Rusli, K., Abadi, A. N., Glasser, J. P., Bebas, G., & Pendahuluan, A. (2022). Terhadap Kecepatan Renang Gaya Bebas.
- Sembiring, H., & Wiyaka, I. (2021). Korelasi Kekuatan Otot Lengan Dan Otot Tungkai Dengan Kecepatan Atlet Renang. *Jurnal Olahraga Dan Kesehatan Indonesia*, 1(2), 75–83. <https://doi.org/10.55081/joki.v1i2.302>
- Styo, Dp., & Hananto, R. (2021). Pengaruh Pelatihan Rope Pushdown Menggunakan Alat Resistance Band Dan Naik Turun Bangku Terhadap Kecepatan Renang Gaya Bebas 50 Meter Putra Sidoarjo U 15 The Effect of

*Rope Pushdown Training Using Resistance Bands and Up and Down Benches on the Speed of 5. 7(1), 48–58.*

Sugiyono. (2018). *metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R dan D.*