



The Effect of Training Paddle and Training Rubber Resistance on The Speed of 50-meter Freestyle Swimming of South Sulawesi Swimming Athletes

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Abstract. Swimming is a type of water sport, apart from beautiful diving, synchronized swimming, and water polo. The sport of swimming has become popular in quantity. This has been indicated by the increasing number of swimming associations in big cities and regions in Indonesia. The aim of this study was to determine the effect of training using paddles and training using rubber resistance on 50-meter freestyle swimming speed. This research was an experimental study with 20 swimming athletes as subjects, 10 subjects who did paddles training and 10 other subjects who did rubber resistance training. The training was carried out in 16 sessions during the research. The results showed that there was an effect of paddles training on 50-meter freestyle swimming speed with a difference value of 2.156 and indicated in the significant category. The results of rubber resistance training also showed that there was significant effect of 2.036. at 50-meter freestyle swimming speed. By the results of this analysis, it can conclude that there are effects of paddles training and rubber resistance training on 50-meter freestyle swimming speed.

Keywords: Paddles Training, Rubber Resistance Training.

1 Introduction

Swimming is a sport that is popular in Indonesia. The development of swimming can be seen from the existence of championships at regional, city and national levels. These developments show that swimming is also a concrete manifestation of efforts to increase the nation's honor and dignity, in order to realize the nation's ideals. Swimming is a sport that can be taught to all ages, both children and adults. Babies aged several months can also be taught to swim¹. Swimming is a sport carried out in water, therefore it requires the ability to glide, float, regulate breathing in order to be able to perform several skills in activities in the water². Freestyle swimming is very popular among students because it is not difficult to learn. However, when learning freestyle swimming, students are taught by sports educators by talking, there is practically no game material or special style in it so students get tired quickly and are not interested in learning freestyle swimming. As a result, the goal of learning to swim freely was not achieved perfectly³.

Paddle training is a training aid that is attached to the palms of both hands with the aim of increasing endurance when paddling on the water. Regardless of speed, swimmers who use paddles have great endurance/endurance, to be able to paddle quickly they must have strong and trained arm muscles⁴. Freestyle swimming speed is also related to weight training. Lack of power in the pedalling phase will reduce speed in gliding. Lack of power when pedalling (in arm movements) will result in reduced speed. For this reason, increasing freestyle swimming speed is also needed⁵.

Training using a resistance band aims to increase speed, it can be done by pulling the resistance band using your feet continuously. This tool is a wide and long ribbon made of rubber. This tool can be attached on the foot to increase resistance on the foot⁶. Resistance

band is part of resistance training equipment by using elastic rubber with handles as support. Each rubber certainly has a different level of elasticity, in this study was used the mini band type, which is shaped like thin and can be with easy to adjust the load, can be folded horizontally and vertically with Light type (medium) 30cm x 5cm x 0.35 x 20cm with a load of 5 kg. Exercises using this tool are basically to increase muscle strength and further resistance bands can also be improved in function to train muscle power which is certainly very beneficial for every soccer athlete⁷.

2 Research Methods

This research is a quantitative descriptive experimental study using two independent variables, namely paddle training and training using rubber bands. The independent variable in this study is the 50-meter freestyle swimming speed. The population in this study were all Makassar City swimming athletes and 20 of them were taken as research subjects. Subjects were divided into 10 paddle training groups and 10 people training using rubber resistance bands. The instrument used by researchers was a 50-meter freestyle swimming speed test referring to the Kirkendall, Gruber, Johnson: 1980 swimming test instructions with a reliability value of 0.69 and a validity value of 0.95, as well as using a stopwatch as a tool to measure the time required by athletes from start to finish distance of 50 meters⁸, this study measured pre and posttest before and after the training.

3 Results and Discussion

Table 1. Descriptive analysis of paddle training and rubber resistance training

Variables	N	Range	Min	Max	Sum	Mean	Std. Deviation
Pretest <i>paddle</i>	10	6	35	41	375	37.55	2.414
Posttest <i>paddle</i>	10	6	32	38	354	35.39	2.379
Pretest <i>rubber resistance</i>	10	16	33	49	416	41.58	4.765
Posttest <i>rubber resistance</i>	10	15	31	46	395	39.54	4.533

The table above explained the comparison of paddle training and rubber resistance training to the speed of 50-meter freestyle swimming of South Sulawesi swimming athletes. The explanation is as follows: data from the results of the paddle training group (Pretest) from 10 total samples obtained values range 6, minimum 35, maximum 41, sum (total) 375, mean (average) 37.55 standard deviations 2.414, data results of paddle training group (Postest) from 10 number of samples obtained range value 6, minimum 32, maximum 38, sum (total) 354, mean (average) 35.39 standard deviation 2.379, data results of rubber resistance training group (Pretest) from 10 number of samples obtained range value 16, minimum 33, maximum 49, sum (total) 416, mean (average) 41.58 standard deviation 4.765, data results of rubber resistance training group (Postest) from 10 number of samples obtained

range value 15, Minimum 31, maximum 46, sum (total) 395, mean 39.54 standard deviations 4.533.

3.1 Normality Test

Before carrying out a comparison test between paddle training and rubber resistance training variables on 50 meter freestyle swimming speed in South Sulawesi swimming athletes, a normality test was carried out before statistical analysis.

Table 2. Normality test results

Variables	Statistics	df	Sig.	Description
Pretest <i>paddle</i>	0.172	10	0.200*	Normal
Post-test <i>paddle</i>	0.139	10	0.200*	Normal
Pretest <i>rubber resistance</i>	0.179	10	0.200*	Normal
Post-test <i>rubber resistance</i>	0.137	10	0.200*	Normal

The Table 2 showed the results of data normality testing using the Kolmogorov Smirnov test. It showed that the paddle training ability (Pretest) obtained a statistical value of 0.172 and a probability level value of 0.200 ($P > 0.05$), so it could be said that the data follows a normal distribution, the data of the paddle training ability (Posttest) obtained a statistical value of 0.139 and a probability level value of 0.200 ($P > 0.05$), so it can also be said that the data follows a normal distribution. Data from rubber endurance training (Pretest) obtained a statistical value of 0.179 and a probability level value of 0.200 ($P > 0.05$), so the data follows a normal distribution. For data on the results of rubber endurance training (Posttest), statistical value of 0.137 was obtained and a probability level value of 0.200 ($P > 0.05$) and showed that the data is normally distributed.

3.2. Homogeneity Test

The homogeneity test was also carried out as a requirement for the correlation test in the experimental design with a variance comparison test at the $\alpha = 0.05$ level. In both groups of variable data, the value of paddle training and rubber resistance training on the speed of 50 meter freestyle swimming in South Sulawesi swimming athletes between training groups showed the following results:

Table 3. Homogeneity test results

	Levene Statistic	df1	df2	Sig.
Based on Mean	2.027	3	36	0.127
Based on Median	1.307	3	36	0.287
Based on Median and with adjusted df	1.307	3	23.022	0.296
Based on trimmed mean	1.963	3	36	0.137

Based on the output above, it is known that the significance value (Sig) based on the mean is $0.127 > 0.05$ so it can be concluded that the data variance is the same or homogeneous.

3.2 Hypothesis Test

Hypothesis testing was carried out to determine the comparison of paddle training and rubber resistance training on 50-meter freestyle swimming speed in South Sulawesi swimming athletes. Test the hypothesis using the t-test showed from this following table.

Table 4. Test results paired sample test group variables

Variables	Uji-t			Deviation	Description
	t-test	Df	Sig.		
Pretest– Posttest Paddle exercise group	11,658	9	0,000	2,156	Sig
Pretest– Posttest Rubber resistance exercise group	12,396	9	0,000	2,036	Sig

Based on the results of the analysis in Table 4, the results of statistical tests obtained the t test value between the pretest and posttest of the paddle training experimental group on 50 meter freestyle swimming speed in South Sulawesi swimming athletes which had a calculated t value of 11.658 because there was an increase in the posttest result value $P = 0.000$ ($P < 0.05$) which is significant, seen from the average value (Table 1) of the pretest speed time record = 37.55 and the average posttest speed value = 35.39. Based on the statistical test results, the t-test value between the pretest and posttest for the rubber resistance training experimental group was 12.396 because there was a significant increase in the posttest results, $P = 0.000$ ($P < 0.05$), seen from the average value. -average pretest speed time = 41.58 and average posttest score = 39.54.

4 Conclusion

Based on the results obtained, it can be concluded that there is a significant influence on each paddle exercise and resistance rubber exercise carried out by swimming athletes on the 50-meter freestyle swimming speed. The resulting influence also shows statistical differences. A suggestion that can be given from the results of this research is for swimming coaches or trainers to include paddle and resistance rubber training in athletes' swimming training to increase speed.

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