EFFECTS OF A THREE-MONTH PROGRAM ON SWIMMING SPEED WITH THE DOLPHIN TECHNIQUE

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ABSTRACT: The main goal of the research is to determine the effects of the three-month program on swimming speed of the dolphin technique. The swimmer in the water is in an unstable position, without firm support, which contributes to the characteristic phenomenon of weight loss, since the weight of the body is neutralized by the thrust of the water. This neutral position allows the swimmer to move with the locomotor apparatus at different intensities, without major problems and static stresses, which contributes to the harmonious development of the body (especially significant at a younger age). The sample of respondents consisted of the Association of Sports and Health "Sportivo" Sarajevo, aged 10-12 years, male. The sample of respondents for this research was 44 swimmers, clinically and psychologically healthy and without significant morphological and locomotor impairments. The research was conducted at the regular training sessions of the Sports and Health Association "Sportivo" Sarajevo at the Otoka Olympic Pool, Sarajevo. Sample of variables The selection of variables for this research was made on the basis of their measurement characteristics: validity, reliability, sensitivity, economy and adaptability and appropriateness to the age of the respondents. To evaluate the parameters of the speed of swimming with the dolphin technique: Speed of swimming at 25m with the dolphin technique - BPDT25, Speed of swimming at 50m with the dolphin technique - BPDT50 and Speed of swimming at 100m with the dolphin technique - BPDT100. In order to have a wider application, it is necessary to make additional corrections and improvements. Which means for some more significant changes in the applied variables, the content of the applied program should be additionally programmed to cause even more qualitative changes in the variables.

Keywords: *swimming , dolphin, effects*

INTRODUCION

Swimming is the ability to keep the body on the water and the ability to move through the water with adequate movements of the hands, legs and body (Madić, D., Okičić, T. and Aleksandrović, M. 2007). Due to the environment in which it takes place, swimming has special characteristics and specificities that significantly affect the morphological, functional, biomotor, psychological and intellectual development of the personality. The goal of training processes in swimming is to make appropriate positive metabolic, physiological and psychological changes in the swimmer's body, which will enable the achievement of the best competitive results (Maglischo, 2003). The swimmer in the water is in an unstable position, without firm support, which contributes to the characteristic phenomenon of weight loss, since the weight of the body is neutralized by the thrust of the water. This neutral position allows the swimmer to move with the locomotor apparatus at different intensities, without major problems and static stresses, which contributes to the harmonious development of the body (especially significant at a younger age). Swimming burns a large number of calories, from 500 to 650, depending on the intensity of swimming. In addition to strengthening the chest muscles, one hour of breaststroke swimming can burn up to 750 calories, 30 minutes of crawl swimming around 350 calories, one hour of butterfly (dolphin) swimming around 800 calories, while backstroke burns around 500. calories per hour (Trivun, M., et al. 2013). Swimming is an activity that has a positive effect in terms of developing boldness, courage, resilience and perseverance. Swimming can have significant preventive-corrective and therapeutic effects on a young child's body (Topuzov, I. 1999). The effect of swimming on heart health is as follows: swimming activates every muscle in the body, including the most important one - the heart. Swimming strengthens the heart and pumps blood more efficiently, thus improving circulation in the body. Swimming increases and strengthens the muscles of the heart, stabilizes blood pressure, improves the supply of oxygen to the heart and lungs, deepens breathing and increases lung capacity (Budimir, V. et al. 2010). Authors Chengalur & Brown, 1992; Hout-Marchand et al., 2005; Jorgić et al., 2010 tried to determine the parameters of situational motor skills that most affect the result in certain swimming disciplines and which should then be perfected. Research was done on the influence of individual segments of the race on the final result in swimming (starting swimming speed, turning speed and final speed) and it was established that the improvement of swimmers' performance is influenced by all three components of the race, and not just one of them (Thompson et al., 2004).). The main goal of the research is to determine the effects of the three-month program on swimming speed of the dolphin technique.

RESEARCH METHODS

A sample of respondents

The sample consisted of the Association of Sport and Health "Sportivo" Sarajevo, aged 10-12 years, male. The sample of respondents for this research was 44 swimmers, clinically and psychologically healthy and without significant morphological and locomotor impairments. The research was conducted at the regular training sessions of the Sports and Health

Association "Sportivo" Sarajevo at the Otoka Olympic Pool,Sarajevo.

Sample variables

The choice of variables for this research was made on the basis of their measurement characteristics: validity, reliability, sensitivity, economy and adaptability and appropriateness to the age of the respondents according to Mirvić, E., (2011).

To estimate swimming speed parameters using the dolphin technique:

1. Swimming speed at 25m using the dolphin technique – BPDT25,
2. Speed of swimming at 50m using the dolphin technique - BPDT50,
3. Swimming speed for 100m using the dolphin technique – BPDT100.

Procedure

To ensure the regularity of this research process during planning, consents from the following institutions and individuals were used: Assistance of experts in the field of sports and physical education (verified trainers) in the implementation of the project; The decision of the Sports and Health Association "Sportivo" Sarajevo that this project can be tested and realized as part of the regular training of the club of the same name; Approval and confirmation that testing was done at the Otoka Olympic Pool, Sarajevo; All subjects had the same conditions during measurement and testing (the entire research was carried out in the morning hours, from 8 to 9:30 a.m., the temperature was from 24 to 26 degrees Celsius, the place of testing was the Otoka Olympic pool, Sarajevo; equipped with the necessary props); Before the measurement and testing process, the swimmers of the Association of Sports and Health "Sportivo" were explained in an acceptable way what awaits them during the period of the research and what is required of them in their work; The measurement was performed in 4 groups of 11 swimmers; A measurer and recorder worked at each measuring point; The team of measurers consisted of professors/masters of sports and physical education and coaches of swimming clubs who were familiar with the research project, measurement lists and how to fill them in; The swimmers of the Sports and Health Association "Sportivo" were divided into four groups, each group implemented a program with a different sequence of sports technique training for a period of 3 months. Initial testing will be done, then a three-month program will be implemented and finally the final testing will be done.

Data processing methods

In the process of data processing, based on the characteristics and size of the sample, the subject, the problem and the goal of the research, statistical methods were determined for obtaining results in the research. Using descriptive statistical methods from the SPSS 12.0 program, we will determine the basic parameters that characterize the sample: Min., minimum value, Max., maximum value, Rank, range, Sum., summary, Median, median, Mean, arithmetic mean, Std. Dev., standard deviation, Eror, standard error, Variance, coefficient of variation. The normality of the distribution of variables will be examined based on the coefficient: Skewness, curvature, Kurtosis, elongation coefficient. Differences will be determined by the T-test for dependent samples.

RESULTS

Central and dispersive parameters of the variables for the evaluation of swimming speed using the dolphin technique in the initial state.

By looking at table number 1, descriptive statistical methods were used to process the data, where it can be observed that in all variables there is no significant deviation from the normal distribution. The distributions of the subjects' abilities fit into the standards specific to the speed of swimming with the dolphin technique of boys aged 10 to 12 years and if this population is in the process of constant transformation resulting from the influence of the specific age of the subjects. Therefore, there are no significant deviations in the distribution of the results from the normal distribution for the dolphin swimming technique, which we can see from the presented table, where the current situation can generally be determined.

The presented situation can be explained by the following arguments: the specifics of the population used in the work (the Association of Sport and Health "Sportivo" aged 10 to 12 years, who were under the influence of the specific plan and program that was applied at the training sessions of the Association of Sport and of health "Sportivo")

By individual review and analysis of the variables, we can determine the following:

Dolphin swimming speed at 25 meters - BPDT25 - the arithmetic mean is (MEAN is 19.9691), the range (MIN. - MAX.) is from 16.13 to 24.80 and the standard deviation (STD. DEV.) is 2.88583.

Dolphin swimming speed at 50 meters - BPDT50 - the arithmetic mean is (MEAN is 47.4666), the range (MIN. - MAX.) is from 39.72 to 60.19 and the standard deviation (STD. DEV.) is 5.06103.

Swimming speed using the dolphin technique at 100 meters - BPDT100 - the arithmetic mean is (MEAN is 106.8186), the range (MIN. - MAX.) is from 95.50 to 125.57 and the standard deviation (STD. DEV.) is 9.32886.

By looking at table no. 1 it can be determined that a normal distribution has occurred.

Central and dispersive parameters of the variables for the evaluation of swimming speed using the dolphin technique in the final state.

Reviewing table no. 2 it can be seen that in the final measurement used in this research, it can be stated that there is no significant deviation from the normal distribution. The distributions of the respondents'

abilities fit the standards specific to the specified area. So, there are no significant deviations in the distribution of the results from the normal distribution for some of the mentioned variables. We can see this from the presented table, where the current situation can generally be determined.

Table 1. Central and dispersive parameters of the efficiency of the program of swimming at the speed of swimming with the dolphin technique in the initial state

Descriptive Statistics												
Variables	N	Range	Min	Max	Mean		Std. Dev.	Variance	Skew,		Kurt.	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BPDT25	44	8.67	16.13	24.80	19.969	.43505	2.88583	8.328	.074	.357	-1.780	.702
BPDT50	44	20.47	39.72	60.19	47.466	.76298	5.06103	25.614	.535	.357	-.223	.702
BPDT100	44	30.07	95.50	125.57	106.818	1.40638	9.32886	87.028	1.152	.357	-.121	.702

Table 2. Central and dispersive parameters of the efficiency of the program of swimming at the speed of swimming with the dolphin technique in the final state

Descriptive Statistics												
Variables	N	Range	Min	Max	Mean		Std. Dev.	Variance	Skew.		Kurt.	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BPDT25	44	9.21	15.19	24.40	17.477	.38215	2.53490	6.426	1.883	.357	2.217	.702
BPDT50	44	23.93	35.16	59.09	44.941	.89216	5.91793	35.022	.738	.357	.044	.702
BPDT100	44	31.13	90.33	121.46	101.602	.92253	6.11938	37.447	.034	.357	1.677	.702

Individual review and analysis of the variables can determine the following:

Speed of swimming with the dolphin technique at 25 meters - BPDT25 - the arithmetic mean is (MEAN is 17.4777), the range (MIN. - MAX.) is from 15.19 to 24.40 and the standard deviation (STD. DEV.) is 2.53490

Speed of swimming with the dolphin technique at 50 meters - BPDT50 - the arithmetic mean is (MEAN is 44.9416), the range (MIN. - MAX.) is from 35.16 to 59.09 and the standard deviation (STD. DEV.) is 5.91793

The speed of swimming with the dolphin technique at 100 meters - BPDT100 - the arithmetic mean is (MEAN is 101.6027), the range (MIN. - MAX.) is from 95.50 to 121.46 and the standard deviation (STD. DEV.) is 6.11938

Based on table no. 1 and table no. 2, it can be noted that there was a transformation of the results, and which specific results and how much the transformation took place will be determined in the following methods. It can be stated that the results showed mostly centroid grouping, and the results can be taken into further consideration.

Analysis of the results of the T-test of the initial and final state of the effectiveness of the dolphin speed swimming technique programT-test analysis (Table 3.) for dependent samples, evaluated the effects of the program on swimming speed using the dolphin technique. The results indicate positive and statistically significant differences in the variables in the transformation to swimming speed using the dolphin technique.

Table 3. Results of the T-test of the initial and final states of swimming speed using the dolphin technique

Variables		Paired Differences					t	df	Sig. (2-tailed)	η2
		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference					
					Lower	Upper				
Pair 1	BPDT25 - BPDT25F	2.491	2.723	.41064	1.66323	3.319	6.067	43	.000	0,22
Pair 2	BPDT50 - BPDT50F	2.525	4.368	.65861	1.19679	3.853	3.834	43	.000	0,15
Pair 3	BPDT100 - BPDT100F	5.215	8.389	1.26480	2.66519	7.766	4.124	43	.000	0,16

The differences between the initial and final testing are also statistically significant in the BPDT25 - BPDT25F tests t(43)= 6.067, p=.000. The mean decrease in value in this test was 2.491, while the 95 percent confidence interval extends from 1.663 to 3.319, eta squared= 0.22.

Statistically significant differences between the initial and final testing were found in the BPDT50 - BPDT50F tests t(43)= 3.834, p= .000. The average decrease in value in this test was 2.525, while the 95-percent confidence interval extends from 1.196 to 3.853, eta squared= 0.15.

The differences between the initial and final testing are also statistically significant in the BPDT100 - BPDT100F tests t(43)= 4.124, p= .000. The average decrease in value in this test was 5.215, while the 95-percent confidence interval extends from 2.665 to 7.776, eta squared= 0.16.

DISCUSSION

The main objective of this study was to determine the effects of the three-month program on swimming speed of the dolphin technique. It should be emphasized that the fastest progression in swimming speed was expected with the dolphin technique. Marković, V., (2012). In his research, he analyzed the variances of the dolphin technique through the buttocks of five Olympic competitions of top swimmers. Determined which values of the researched variables change the most throughout the analyzed period, namely: KREZ (final result), UBP (total swimming speed), VP50 (passing time at 50m), VOKR and VFIN (turn and finish time). Leko G., Grčić-Zubčević N. and G, Sporiš, (2006). They apply specific swimming tests on dry land and in water, which requires a good knowledge of swimming technique on the part of the examinee. The aim of the work was to examine whether the swimming results of the student population, i.e. to determine whether these standard swimming tests (dynamometry in water and swimming ergometer on dry land) can be used to measure an unselected swimming population. Only the dynamometry test measured in the water in the place proved to be a successful predictor of results on shorter sections, i.e. 25 meter crawl, 50 meter crawl and 50 meter dolphin. In the 300-meter crawl, not a single predictor stood out as significant, while in the 50-meter dolphin section, the dynamometry test 1 dolphin passage also stood out as significant. It is noted that it leads to the conclusion that the ergometry test on dry land is completely inappropriate for testing an unselected swimming population. Zenić, N. and N. Grčić-Zubčević, (2005). The sample of subjects consisted of kinesiology students, the control group was taught swimming in three heterogeneous groups that initially did not significantly differ from each other in swimming abilities. Based on the initial swimming results, the experimental group was divided into three homogenized groups (subjects with below-average, average and above-average swimming abilities) using taxonomic analysis, and swimming lessons were carried out in the groups thus formed. The sample of variables consisted of 6 variables for the assessment of swimming abilities, namely: crawl 25, 50 and 300 meters (K25, K50, K300); backstroke 50 meters (L50); dolphin 50 meters (D50) and breaststroke 100 meters (P100). Given that when working with heterogeneous groups, the same group contains subjects with extremely good and extremely poor swimming abilities, the teacher is forced to apply the contents of the work, which, considering the volume of work, are average. Given that the correct selection of load volume is the basis of progress in all abilities, including swimming, it is clear why the experimental program achieved better results than the control program. When looking at individual variables, the following can be applied: the biggest changes occurred in the variables: 25m swimming speed using the dolphin technique, 50m swimming speed using the dolphin technique and 100m swimming speed using the dolphin technique. These results indicate that continuous work on improving technique is of great importance for swimming speed. When swimming with an incorrect technique, all the negative influences of the forces in the water appear, most notably frontal resistance. By correcting and bringing the technique to all biomechanical principles for performing techniques, the resistance in the water is reduced so that swimmers gain speed. The following can be concluded: If they improved the conditions and increased the number of trainings, the result would be undeniably better, Include a greater number of different experts (physiotherapists, nutritionists, etc.), A greater number of competitions with participation in increasingly difficult competitions and Planned vacations for competitors. It should be said that the water temperature, which was from 24 to 26 degrees Celsius, had an effect on such a good level of transformation processes, because the swimmers did not lose energy to heat the water. They felt comfortable in the water, and spent a lot of time practicing the mentioned techniques, which is certainly another reason for the progress and efficiency of swimming in this research. It can be concluded that in this research there was a great influence of the swimming program on the set of variables. The reason for this is precisely that this technique is the last to be mastered and therefore at the beginning of the program swimmers are not so motorically prepared with this technique. However, this technique is the most beautiful and he likes to swim so that in the training process there is a motivation to perform the dolphin technique as correctly and quickly as possible. The age of the subjects should be taken into account, they are young swimmers aged 10 to 12, who are more suited to short sections dominated by maximum movement speed. It can be said that the respondents in this research reached their maximum speed when it comes to swimming speed using the dolphin technique at 25 meters. In the other variables of the dolphin technique, there was positive progress, and to an unexpected extent. It should be said that this is a good basis for achieving good results in older categories with the dolphin technique.

CONCLUSION

The purpose of the conducted research was to determine the effects of the three-month program on swimming speed of the dolphin technique. Twelve

tests were applied that evaluated the swimming speed of the dolphin technique. Based on the results of descriptive statistics, it could be concluded: By looking at the values of the arithmetic means of the initial and final testing, a positive shift can be observed in most variables. All variables in the initial and final measurement by descriptive statistical methods, it is possible to notice that in all variables there is no significant deviation from the normal distribution. The distributions of the subjects' abilities fit the standards specific to the speed of swimming with different techniques of boys aged 10 to 12 years, and if this population is in the process of constant transformation resulting from the influence of the specific age of the subjects. By analyzing the results of the T-test for the dependent sample, the following conclusions were reached: The following should be concluded: If the conditions were improved and the number of trainings increased, the result would undoubtedly be better. by participating in more and more difficult competitions. These results indicate that continuous work on improving technique is of great importance for swimming speed. When swimming with an incorrect technique, all the negative influences of the forces in the water appear, most notably frontal resistance. By correcting and bringing the technique to all biomechanical principles for performing techniques, the resistance in the water is reduced so that swimmers gain speed. This shows us how important it is to adopt the correct technique. The impact of the program was expected due to the fact that the biggest indicators of difference are when swimming in larger sections. Better results are achieved by improving swimming technique and eliminating negative influences. Based on the results of the applied swimming program, we can conclude that the content of the program influenced the set variables. In order to have a wider application, it is necessary to make additional corrections and improvements. Which means for some more significant changes in the applied variables, the content of the applied program should be additionally programmed to cause even more qualitative changes in the variables.

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