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Research Article

IMPACT OF SWIMMING TECHNIQUE IN STUDENTS PERFORMANCE

Abedin Ibrahimi[1], Vildane Jashari[1], Edon Ibrahimi[1], Arlind Ibrahimi[2]

[1]Faculty of Physical Culture and Sport, AAB College, Prishtina
[2]Faculty of Physical Education, University of Tetova – Mr. Sc. student

Abstract

The morphological status is an important factor for achieving results in many sports, including swimming. By using certain anthropometric measures we gain a clearer picture of the impact that anthropometric parameters have on either the overall development of athletes or the competitive results in specific swimming discipline.
The main aim of this paper was to follow the progress of swimming technique of students in the 25m discipline as a result of the swimming course.
Another aim was to verify the possible impact of some anthropometric parameters of the upper and lower limbs and body mass on the 25 m results of swimming.
Methods: The research sample has included 50 male 19-25 year-old students, who attended studies at the Faculty of Physical Culture and Sports at AAB College in Prishtina.
For estimating anthropometric features, six variables were obtained that are indicative of the longitudinal and transversal dimension of the upper and lower limbs, as well as the body mass variable. Whereas the motor skills were evaluated from the swimmers score of 25 meters distance.
The measurements were made at the semi-Olympic Zenith swimming pool near Prishtina during the swimming course throughout February-May 2018. The result was measured by hand chronometer and was accurately read 0.1 seconds.
Results: The average student body mass was 77.48 kg, whereas in the 25-meter distance, students had an average of 24.03 seconds in the first measurement, while in the second measurement they improved the score by 1.76 seconds (22.27 sec).
There was a statistically valid difference between the first and the second measurements (t = 12,382, sig = .000). The result from the first measurement, (mean = 24.03 sec) is lower than the second measurement (mean = 22.27 seconds).
Discussion: To show the impact of morphologic variables in the result of swimming in short distance (25 m) multiple linear regression was used. Based on the results of linear regression (tables 5&6), predictive system of morphologic variables (R-.313, sig=.748) has no impact in the result of swimming in short distance (25 m). This could have come as a result that the several individuals had only the minimal level of technique knowledge and their motoric abilities are not like in elite swimmers and the size of the sample is not great (only 50 entities).

Introduction

The morphological status is an important factor for achieving results in many sports, including swimming. By using certain anthropometric measures we gain a clearer picture of the impact that anthropometric parameters have on either the overall development of athletes or the competitive results in specific swimming discipline.. It is known that the morphological status of man is under the high influence of the inheritance coefficient.714-.857 (Markoviq, V, et al., 2010). The parameters of the upper and lower limbs have the pronounced influence on the result in swimming. For female adult swimmers age, height and arm span were correlate with performance of sprint distances. For female adult swimmers, age, height, and arm span were correlated with performance (Pelayo P., et al, 1996), for males this was not the case. Other studies, however, have found a positive and significant correlation between bodz siye measures and stroke length in adult males (Grimston SK, et al., 1986).
Meskovska (2000) argues that the body height has more impact in swimming results (Baxter-Jones AD, et al. 1995; Malina RM, 1994), than the body weight, and the greatest influence on the swimming result has starting time

reaction, the returning speed and finishing time. Swimming result could vary also from propulsion length, which depends of upper and lower limbs. Markovic, Z., et al. (2010) stated that the morphological status of the athlete is a significant component which impacts functional abilities and affects the predisposition of the organism for certain sports activities like in swimmers. Swimmers, perhaps even more than other athletes, are extremely conditioned by their morphological traits, which come to the fore in a special way. These reports though may differ amongst non-professional athletes, as is the case with this research, subject of which are students of the Faculty of Physical Culture of AAB College in Prishtina. The research deals with the student's progress of motor performance in swimming. The influence of the program content of the Swimming course on improving the outcome of the 25m Semi Olympic pool was researched.

Aim of the paper

The main aim of this paper was to follow the progress of swimming technique of students in the 25m discipline as a result of the swimming course.
Another aim was to verify the possible impact of some anthropometric parameters of the upper and lower limbs and body mass on the 25 m results of swimming.

Method of work

The research sample has included 50 male 19-25 year-old students, who attended studies at the Faculty of Physical Culture and Sports at AAB College in Prishtina.

Variables sample
For estimating anthropometric features, six variables were obtained that are indicative of the longitudinal and transversal dimension of the upper and lower limbs, as well as the body mass variable. Whereas the motor skills were evaluated from the swimmers score of 25 meters distance.
The measurements were made at the semi-Olympic Zenith swimming pool near Prishtina during the swimming course throughout February-May 2018. The students attended practice lessons two times per week (45 minutes session length) with main aim to learn basics of swimming technique. The result was measured by hand chronometer and was accurately read 0.1 seconds.
Morphologic variables:
Arm length, Hand length, Leg length, Foot lengths, Hand width, Foot width, Body weight, Pre-test 25 m and Post-test 25 m.

Table 1. Descriptive statistics of morphologic and motor variables

	N	Minimum	Maximum	Mean	Std. Deviation
Arm length	50	69	92	77,84	4,582
Hand length	50	17	21	18,69	1,136
Leg length	49	11	112	98,19	13,297
Foot lengths	49	24	29	27,07	1,194
Hand width	47	9	12	10,44	,630
Foot width	49	8	12	9,23	,754
Body weight	49	58	102	77,48	9,168
Pre-test 25 m	48	17	30	24,03	3,134
Post-test 25 m	49	17	30	22,27	3,272

Table 1 gives the basic statistical parameters: mean, minimum result, maximum result and standard deviation for anthropometric and motor variables. Based on the results of the descriptive statistics, it is seen that in most variables results were homogeneous. except for the body mass variable, which notes a large range between the minimum value (58 kg) and the maximum value (102 kg), and the motor variables in the 25m distance, where there is a noticeable difference between the minimum and maximum score (13 seconds), but this difference can be justified by the fact that there were individuals who could swim such a distance for the first time. Generally, the variables as a whole do not have a large distribution tendency, which also indicates the standard deviation values that are not high.
The average student body mass was 77.48 kg, whereas in the 25-meter distance, students had an average of 24.03 seconds in the first measurement, while in the second measurement they improved the score by 1.76 seconds (22.27 sec).

To prove whether the difference from the first and second testing is statistically valid, paired T test for dependent samples was used (Table 2&3). The result from Table 3 shows that there is a statistically valid difference between the first and the second measurements (t = 12,382, sig = .000). The result from the first measurement, table 2 (mean = 24.03 sec) is lower than the second measurement (mean = 22.27 seconds), so it can be concluded that this performance improvement has come under the influence of improving the technique.

Table 2. Paired Samples Statistics

		Mean		**Std. Deviation**	**Std. Error Mean**
Pair 1	**Pretest 25 m**	**24,032**	**8**	**3,134**	**,452**
	Posttest 25 m	**22,218**	**8**	**3,282**	**,474**

Table 3. Paired sample test

		Mean	*Std. dev.*	*Std. Err. mean*	*t*	*df*	*Sig. (2-tailed)*
Pair 1	Pretest 25 m Posttest 25m	1,820	1,019	,147	12,382	47	,000

Table 4. Correlation between morphologic and motor variables

	Pretest 25 m	Posttest 25m
Arm length	,109	,121
Hand length	-,117	-,038
Leg length	,152	,155
Foot lengths	-,017	-,022
Hand width	-,031	,070
Foot width	,006	,040
Body weight	-,116	-,060

Table 4 shows Pearsons correlation between pre-test and post-test with morphologic variables. According to the results there was no correlation between the results of swimming in 25 m distance and the morphological variables.

Table 5. Regression model

Model	*R*	*R Square*	*Adjusted R Square*	*F*	*Sig.*
1	,313	,098	-,064	.605	.748

Table 6: Regression Coefficients

Model	B	Std. Error	Beta	t	Sig.
(Constant)	13,816	14,853		,930	,358
Arm length	,190	,175	,255	1,088	,283
Hand length	-,933	,683	-,310	-1,366	,180
Leg length	,134	,179	,157	,751	,457
Foot lengths	-,395	,549	-,141	-,720	,476
Hand width	1,207	1,041	,229	1,159	,254
Foot width	-,060	1,257	-,012	-,048	,962
Body weight	-,049	,070	-,138	-,711	,482

a. Dependent Variable: swimming test result

To show the impact of morphologic variables in the result of swimming in short distance (25 m) multiple linear regression was used. Based on the results of linear regression (tables 5&6), predictive system of morphologic variables (R-.313, sig=.748) has no impact in the result of swimming in short distance (25 m). This could have come as a result that the several individuals had only the minimal level of technique knowledge and their motoric abilities are not like in elite swimmers and the size of the sample is not great (only 50 entities).

Discussion and Conclusions

Based on the results of the descriptive statistics, we conclude that in variable body mass there is a large range between the minimum value (58 kg) and the maximum value (102 kg), and the motor variables in the swim distance 25m, where there is a noticeable difference between the minimum and maximum score (13 seconds), but this difference can be justified by the fact that there were individuals, who did swim for the first time and others who could have had some knowledge of basic swimming technique. The average student body mass was 77.48 kg, whereas in the 25-meter distance students had an average of 24.03 seconds in the first measurement, while in the second measurement they improved the score for 1.76 sec (22.27sec).

To prove whether the difference from the first and second testing is statistically valid, paired T test for dependent samples was used (Table 2&3). The result from Table 3 shows that there is a statistically valid difference between the first and the second measurements (t = 12,382, sig = .000). The result from the first measurement, table 2 (mean = 24.03 sec) is lower than the second measurement (mean = 22.27 seconds), so it can be concluded that this performance improvement resulted upon improving of the technique. Swim result from post-test has been improved from the pre-test and was verified as statistically significant.

The result of this research has not shown any correlation with morphologic variables that is not the case of other researches (Markovic, V., et al. 2010); Dimitrić, G., et al., 2016); (Ahmetovic, 1995). Also we could not find any impact of morphologic variables in the result of swimming in short distance (25m). The reason could be the small size of the samples and the knowledge of participants in this sample about swimming were poor as their level of motor abilities and physical preparation was weak.

Taking into consideration the limitations conditioned by the sample size and general level of knowledge about swimming technique we can conclude the following.

- Based on obtained results students improved their swimming result in short distance after attending a three month swimming course and the improvements occurred as a result of improving the swimming technique.
- Swimming result in 25m distance did not have any correlation with morphologic variables.
- Predictor system of morphologic variables has no impact on the swimming result on 25 meters.

References

[1]. Pelayo P, Sidney M, Kherif T, Chollet D, Tourny C. Stroking characteristics in freestyle swimming and relationships with anthropometric characteristics. J Apl Biomech: 12(2): 197-206.

[2]. Ahmetovič, Z.i Matkovic, I. (1995). Teorija plivanja. Novi Sad: Sportska asocijacija Novog Sada.

[3]. Baxter-Jones A.D. et al. (1995). Growth and development of male gymnasts, swimmers, soccer and tennis players: a longitudinal study.

[4]. Dimitrič, G. Cokorilo, N. Bogdanoski, M. (2016). Relations between Anthropometric Characteristics and motor abilities of 14-15 U female swimmers on 50m result for each technique. Sport Mont Journal, Volume 14, number 3, p.37-40.

[5]. Grimson, S.K. Hay, J.G. (1986). Relationships among anthropometric and stroking characteristics of college swimmers. Med Sci Sports Exerc:18(1):60-8.

[6]. Malina R.M. (1994). Physical and biological maturation of young athletes. Exerc Sport Sci Ver, 22:389-48

[7]. Markovič, V. and Ugarkovič, D. (2010). Sport Science and Practice, Vol. 1, nr. 2, pp. 173-191.

[8]. Meškovska, N., et al. (1997). Regresiona analiza na relevantnite parametri za uspešnost vo disciplina 200 delfin'ženski na OI vo Atlanta 1996. Skopje: Fizička kultura 1-2, 11-15