

RELATIONS BETWEEN SOME MORFOLOGICAL DIMENSIONS AND A RESULT ACHIVEMENT IN SWIMMING OF YOUNG SWIMMERS REPRESENTATIVES OF B&H

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Abstract

On the sample of 10 selected swimmers, members of national swimming team of Bosnia and Herzegovina was applied a system of 27 variables. 26 predictive variables of motor space and one criteria variable of result achievement were applied to determine relations between some morphological characteristics and result achievement in swimming. Leading task was to facilitate a system from predicative selection of young swimmers. While determining statistically significant relations between the criteria variable and the system of predicative variables, the SRA regression analysis led to significant prediction of the criteria. In this research the regression of the sport result in swimming undoubtedly indicate the importance of motor space. Multiple correlations were severe (0.90), and the interpretation of the criteria with 81 % was also considerably large. This means that it is possible that morphological variables make prediction of results in swimming, and that morphological constitution has direct repercussions on the swimming result. Based on the analysis of spent can be concluded that swimmers must not have any extreme morphological events, but balanced, comprehensive and homogenous composition with a somewhat less importance fat.

Key words: *morphologic, score success, relations, swimmer representatives*

Introduction

One of the areas of kinesiology, the science, belongs to the study of morphological characteristics. The study of morphological characteristics, especially in children and adolescents, is of great importance, because it was already previously known to be of great importance for the achievement of sports results in almost all branches of sports, certain morphological characteristics. The research into the morphology of dating BC According to Bali (1986), Hippocrates is still 130 years BC described two types of sports. Significant studies of morphological space starting at the beginning of the twentieth century. The first survey, referred only to some anthropometric measures was applied, and that height and body mass. These were the first steps which have been used univariate methods of statistical analysis, and more recently applied multivariate methods.

Morphological status of swimmers significantly component affects performance in swimming and causes some predisposition of the organism for swimming technique. Swimmers, perhaps more than other athletes, are conditioned by their morphological structure and adapted to work in the medium in which the anthropometric characteristics come to the personal expression. Anthropometric sizes, such as height, weight, schedule centers of gravity, center of buoyancy, depend, to a greater or lesser extent, the navigability of swimmers. So (Đedović, 2009) conducted research of 10 promising swimmers representatives of B&H, and makes certain conclusions about the influence of morphology on performance in swimming.

Gualdo-Russo & Graziani (1993) made determination of anthropometric somatotype Italian athletes (including swimmers), a sample of 1593 young athletes (717 men and 876 women).

Average somatotype was 2,7-4,7-2,7 athletes and female athletes 3,6-3,7-2,8, with a preponderance mezomorph observed in all sports. (Barzdukas, et al. 1992) observed the characteristics of growth and development of quality swimmers aged 13-16 years and determined that the biological age of the entire subsample of the study as a whole exceeds the average chronological age of about seven months. The fastest swimmers were the most difficult and possessed the highest degree of biological development. Significant correlations were observed between the results, body mass index, biological and chronological age. The most significant relation was observed between swimming performance and biological age. The oldest girl, according to the expectations of the author, and were most mature physically. (Moreno et al., 1995) were investigated included 272 swimmers quality levels in the 100 and 200 meter events front crawl technique. The subject of this study consisted of determining anthropometric and technical scale swimmers. (Stager and Babington, 1995) speak about the changes that occurred in the U.S. swimmer in the last two decades, with respect to biological maturity. The population of competitors is now older and it seems that the sport is now dominated by those who would later mature and characterized by greater body height and shoulder width.

Thus, a problem that occurs in connection with this is to find a statistically significant relationship between some morphological characteristics and results of success in swimming. Accordingly, the aim of this study consisted of determining the relation between the system variables of the morphological status (as a system of predictor variables) and system variables.

The score performance, and this is what is the result of a quantitative characteristic of a race (as a system of criterion variable), in young swimmers, representatives of B&H, to verify their connection, and is therefore a hypothesis to expect a statistically significant correlation between morphological characteristics of respondents and a results of their success in swimming.

Methods

Testing was conducted on a sample of 10 (ten) swimmers, state representatives of BiH in swimming, the participants state championships BiH 2007th.

For the final treatment results were included respondents who participated in the measurement and control in the competition and diagnostic testing after the championship. Morphological dimensions are undoubtedly a great influence in swimming. Anthropometric measures affect directly the buoyancy, resistance, body position in water, specific gravity, kinesthetic sense, technique, style, swimming, and motor skills, speed, muscle strength, coordination and functional ability. Morphological area is the most studied area within the anthropological premises. This is because constitutional morphological characteristics or types of entities have no small impact on the final results in many sporting disciplines. Accordingly, the choice of variables, in order to swimmers in this study can objectively describe the morphological dimensions that define them. This choice is made according to commonly accepted models of the structure of morphological space. Since the analysis involved processing the data was used SRA regression analysis (Bonacin, 2004), for determining the relationships between predictor variables (morphological variables space) and the criterion variable (score in swimming).

Table 1. Variables in morphological space

Longitudinal dimensions of the skeleton	Transverse dimensions of the skeleton	Weight and volume of body	Subcutaneous adipose tissue
AVIT-Body height	ABAK- biacromial range	ATEZ-body mass;	ANNL-upper arm skinfold
ADUR-Arm length	ADIL-diameter of the elbow	AOGK- middle thorax	ANPL- forearm skinfold
ADUN-leg length	ADRZ-diameter of the wrist	AOTR- abdominal circumference	ANTR- abdominal skinfold
ADPL-length of forearm	ADIK-diameter of the knee	AONL- upper arm circumference	ANPK- skinfold tibia
ADPK-length of leg	ADSK- diameter of hock	AOPL- volume of the forearm	ANLE- skinfolf back
ADST-foot length	ASSA- width of hand	AONK- thigh circumference	
	ASST- beam foot	AOPK- volume of tibia	
	ABIK-bicristal range		

Results and discussion

Model of this study is defined in such a way as to identify a problem that should be explored, and procedures for processing are defined only after the problem thoroughly box set. Time is no need to use irregular methods of treatment, because due to the complexity of a large number of well-known method simply inapplicable. This is especially true in a situation that is often encountered in sport, and these are small samples, where the rule entirely different statistical rules rather than in large samples.

In fact, as you know, good research can be done if the sample only one participant, but then the problem of the framework and model of data processing must be special. Precisely such a situation is in this study. With the aim of determining the relation between the two systems of variables, from one side of predictor (morphological characteristics) and a second criterion (the result) was the method applied regression analysis.

Regression variables TKET (swimming technique) in the space of morphological variables resulted in a significant criterion prediction. Multiple correlation was even 0.90, and determination of criteria, over 81%. This means that it is possible morphological variables make prediction results in swimming. Or, simpler vocabulary words, constitution have direct repercussions on the swimming results.

As shown in table 2, immediately, at first glance it is evident that the prediction, there are two variables (B). One is the whole set of morphological variables with uniform beta coefficients of the order of about 0.20, while the second sub-set of obvious fat from virtually zero beta coefficients, and as such, which fluctuate randomly around zero. This simply means that within the significant prediction of the whole set of morphological variables, body fat does not participate in the prediction, and that all other variables more or less equal no of special appropriations.

Table 2. Regression of variable TKET

VARIABLE	R	B	F (B)
AVIT	0.73	0.23	0.95
ADUN	0.65	0.20	0.89
ADPL	0.78	0.25	0.95
ADPK	0.73	0.23	0.91
ADST	0.68	0.21	0.93
ADUR	0.72	0.22	0.88
ABAK	0.84	0.26	0.88
ADIL	0.81	0.25	0.96
ADRZ	0.62	0.19	0.85
ADIK	0.66	0.21	0.75
ADSK	0.55	0.17	0.71
ASSA	0.69	0.22	0.94
ASST	0.56	0.18	0.69
ABIK	0.06	0.02	0.21
ATEZ	0.75	0.23	0.98
AOGK	0.79	0.25	0.92
AOTR	0.65	0.20	0.82
AONL	0.78	0.24	0.92
AOPL	0.83	0.26	0.94
AONK	0.44	0.14	0.77
AOPK	0.53	0.16	0.81
ANNL	0.31	0.10	0.02
ANPL	0.11	0.04	0.04
ANTR	0.05	0.02	0.24
ANPK	0.45	0.14	0.28
ANLE	0.38	0.12	0.71

<i>DLT</i>	<i>0.81</i>
<i>R</i>	<i>0.90</i>
<i>C</i>	<i>3.19</i>
<i>VARIJ.</i>	<i>15.57</i>
<i>D1</i>	<i>1</i>
<i>D2</i>	<i>8</i>
<i>F</i>	<i>19.53</i>
<i>P DOBI.</i>	<i>0.0020</i>
<i>P OCEK.</i>	<i>0.0020</i>

This research is supported by numerous studies including (Volčanšek, 1979; Lomen, 1996), if the influence of anthropometric measures on the efficiency of swimming proved to be positive especially when it comes to longitudinal dimensionality, and the volume of the body. The definition of models of swimmers based on morphological indicators, we could say that the boys uniform morphologically, and they have a very balanced morphologically complex that is largely responsible for the result, and in which adipose tissue is not a particularly important indicator. One might conclude that it is morphologically very well integrated athletes. In this context it is important to mention that in fact all the variables with statistically significant correlation with the result of swimming, then, this time confirming the previously established importance of the dimensionality of the body in swimming (Safarijan, 1969; Kreml, 1974; Bulgakov & Vorontsov, 1977, Matković, 1977; Zahorjević et al., 1982; Lomen, 1996).

Finally, it is predicted over 81% tells us that the selection, modelling and implementation process of transformation, one cannot ignore this fact, and that certainly we must take account of what swimmers include a long-term training. Perhaps most importantly, on the basis of these results is that morphologically speaking, swimmers should not have any extreme morphological manifestations, but balanced, homogeneous, integrated system, with somewhat less significance adipose tissue.

Conclusion

The research expectations, because according to the results obtained can be concluded that, based on indicators of morphological characteristics can affect the result in swimming, and also at selection clearly take account of what young athletes include the swimming sport. In accordance with the results, we can confirm the hypothesis that states that the expected statistically significant correlation between morphological characteristics of respondents and a results of their success in swimming. Among individual variables, no one is not particularly emphasized (longitudinal skeleton dimensionality, Transverse skeletal dimensions, weight and volume of the body, with all the individual variables), but appear as a homogeneous, integrated system, each individual significantly participates in the creation of the final result. Only the lower values shown for the variables of subcutaneous adipose tissue (5 predictor variables: skinfold of upper arm, forearm skinfold, abdominal skinfold, skinfold of lower leg and back), which means that they participate to a lesser extent in connection with the results.

* * *

Since a complete survey conglomerate of various determinants of success in swimming objective requires a whole team of experts in various scientific disciplines, this research aspires only partially to the questions within a small segment of the conglomerate, in terms of establishing relationships only some morphological characteristics with the results in swimming. One of the main results, are responsible for success in swimming can be considered optimal morphological structure that seeks a specific model, swimming, or a very specific set of colored morphologically differentiated in a way that ensures optimal operation in an extremely specific medium. Wish the author for improvement of swimming as a sport and improving training methods, and considering that the scientific work of the result of many consultations, the author has been an honour and pleasure to such scientific work of a small contribute to and incorporate part of himself in such a general human knowledge (Popo, 2009).

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RELACIJE IZMEĐU MORFOLOŠKIH DIMENZIJA I REZULTATSKE USPJEŠNOSTI U PLIVANJU KOD MLADIH PLIVAČA REPREZENTATIVACA BIH

Sažetak

Na uzorku od 10 selekcioniranih plivača, reprezentativaca BiH, primijenjen je sustav od ukupno 27 varijabli. Od toga 26 varijabli morfološkog prostora (kao sustava prediktorskih varijabli) i jedna varijabla rezultatske uspješnosti (kao kriterijska varijabla), sa ciljem da se utvrde relacije između morfoloških karakteristika i postizanja rezultatske uspješnosti u plivanju, što bi umnogome olakšalo sustav selekcioniranja mladih plivača. Prilikom utvrđivanja statistički značajnih relacija između kriterijske varijable i sustava prediktorskih varijabli, SRA regresijska analiza dovela je do značajne predikcije kriterija. Multipla korelacija je visoka, i iznosi 0.90, a objašnjenost kriterija preko 81 %. To znači da je moguće morfološkim varijablama vršiti predikciju rezultata u plivanju. Ili, jednostavnijim riječnikom rečeno, konstitucija ima direktne reperkusije na plivački rezultat. Na osnovu provedene analize može se zaključiti, da morfološki gledano, plivači ne smiju imati nikakve ekstremne morfološke manifestacije, već uravnotežen, homogen i cjelovit sustav uz nešto manji značaj masnog tkiva.

Ključne riječi: morfologija, rezultatska uspješnost, relacije, plivački reprezentativci

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