

RELATIONS BETWEEN ANTHROPOMETRIC CHARACTERISTICS AND MOTOR TEST - ILLINOIS AGILITY RUN TEST

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Abstract

In the research tested 88 football players, aged 19. The following tests were used: one motoric test for agility – Illinois agility run test, and 8 (eight) anthropometric measures. The goal of the research is to check the effect that anthropometric measures have on the agility of football players. Through regressive analysis, it is established that there is statistically not significant correlation ($p=0,128$) between the agility and the system of anthropometric measures.

Key words: football players, 19 years old, anthropometry, agility.

Introduction

Football in their characteristics belong complex movements, and it belongs to the category of attractive sports. The success in the football game depends on several interrelated factors, morphological characteristics, motor skills, functional skills, cognitive abilities, conative characteristics, motivation, dynamic micro-environment, technical and tactical elements of the game and more. Of all the anthropological characteristics, morphological characteristics are important for success in a football game, because the morphological characteristics in its basis have interaction all anthropological characteristics and substantially certain endogenous and exogenous factors conditioned (Malacko, 2002).

Morphological characteristics of the specific motor skills accounted for 42% of the variability and both senior players have more power and better accuracy hitting the ball, foot and head (Siozios, 1992). Within the anthropological characteristics, dimensions of the skeleton and body forces have a positive contribution to motor skills players (Sekereš, 1985). Morphological characteristics are of particular importance for the orientation and selection in most sporting disciplines, given the fact that in the equation specifications of almost every sport, including the specific functions of each team, morphological dimensions take up one of the most important positions. For a large number of sports disciplines generally known morphological structure that most affect sports efficiency, although, no doubt, the coefficients of participation the individual morphological dimension in the equation changing

specifications in the development of techniques and tactics and the latest world achievements in a particular sport (Javorac, Smajić, Molnar, Barašić, Tomić, Stracenski, and Marković, 2015). The goal of the research is to check the effect that anthropometric measures have on the agility of football players.

Methods

The tests were conducted on 88 football players, the age of 19 (U19). They were treated by the tests: one motoric test - Illinois agility run test (IAR) for agility - as a criterion variable; and 8 (eight) anthropometric measures as a predictor system of variables.

The predictor system of variables includes: body height (BHG), Body weight (BWG), The length of the upper arm (LUA), Scope of the leg (STL), Circumference arm triceps (CAT), Back circumference subscapular (BCS), Stomach supraspinal circumference (SSC) and The leg medially circumference (LMC). For results are presented basic statistical parameters: number of acceptable respondents (N), arithmetic mean (Mean), minimal result (Min), maximal result (Max), standard deviation (Std.Dev.), skewness (Skew), kurtosis (Kurt), maximum difference between frequency (max D) and level of significance (p). The relation between the predictor system of anthropometric variables and the criteria variable is determined by the linear regressive analysis in manifest space.

Assessment - The following normative data is available for this test for 16 to 19 year olds (Davis et al., 2000):

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	<15.2 secs	15.2 - 16.1 secs	16.2 - 18.1 secs	18.2 - 19.3 secs	>19.3 secs
Female	<17.0 secs	17.0 - 17.9 secs	18.0 - 21.7 secs	21.8 - 23.0 secs	>23.0 secs

Criterion variable - Illinois Agility Run Test (IAR)

The objective of the Illinois Agility Run Test (Getchell 1979) is to monitor the development of the athlete's agility. To undertake this test you will require: Flat non-slip surface, 8 cones, Stopwatch and Assistant.

How to conduct the test

This test requires the athlete to run the red line route in the diagram below as fast as possible.

- The athlete warms up for 10 minutes
- The assistance sets up the course as detailed in the diagram
- The athlete lies face down on the floor at the "Start" cone

- The assistant gives the command "GO" and starts the stopwatch.
- The athlete jumps to his/her feet and negotiates the course around the cones following the red line route shown in the diagram to the finish
- The assistant stops the stopwatch and records the time when the athlete passes the "Finish" cone.

Results

The obtained results, presented in Table 1, suggest that the football players at school age have considerably homogeneous values in all treated variables. The results of Kolmogorov - Smirnov test, regarding the values of max D and "p", provide suggestion of homogeneous results.

Table 1. Basic statistic parameters

	N	Mean	Min	Max	Std.Dev.	Skew	Kurt	max D	p
BHG	88	1771,07	1622	1928	61,73	0,05	0,02	0,08	p > .20
BWG	88	67,41	48	86	6,98	0,03	0,37	0,09	p > .20
LUA	88	269,09	203	318	19,14	-0,50	0,76	0,08	p > .20
STL	88	357,95	300	418	19,83	-0,25	0,86	0,10	p > .20
CAT	88	77,18	38	152	21,68	1,07	1,74	0,14	p < ,10
BCS	88	78,05	50	142	16,93	0,98	1,77	0,10	p > .20
SSC	88	86,52	40	188	35,35	1,30	1,22	0,16	p < ,05
LMC	88	80,41	30	172	28,96	0,83	0,57	0,11	p > .20
IAR	88	18,07	13	26	3,15	0,43	-0,67	0,13	p < ,10

On the base of the results from the applied regressive analysis, it is established that the system of anthropometric variables has not statistically significant effect in the result achieved

in the Illinois agility run test (IAR) with multiple correlation of R=.377, and coefficient of determination RI=.142. With F- test=1,636, and 8, and 79 degrees of freedom p=0.128.

Table 2. Regressive analysis in the manifest space

Regression Summary for Dependent Variable: IAR (malsor.sta)						
R= ,37702928 RI= ,14215108 Adjusted RI= ,05528030						
F(8,79)=1,636 p<,128 Std.Error of estimate: 3,0586						
	BETA	St. Err. of BETA	B	St. Err. of B	t(79)	p-level
Intercpt			3,47	15,40	0,23	0,82
BHG	0,02	0,15	0,00	0,01	0,14	0,89
BWG	0,30	0,24	0,14	0,11	1,27	0,21
LUA	0,10	0,15	0,02	0,02	0,66	0,51
STL	0,02	0,14	0,00	0,02	0,13	0,89
CAT	0,15	0,18	0,02	0,03	0,85	0,40
BCS	-0,03	0,15	-0,01	0,03	-0,18	0,86
SSC	-0,40	0,18	-0,04	0,02	-2,23	0,03
LMC	-0,01	0,15	0,00	0,02	-0,05	0,96

Conclusion

The research was conducted on a sample of 88 football players aged 19 (U19). They were tested with: one motoric test - Illinois agility run test (IAR) for agility, as a criterion variable; and 8 (eight) anthropometric measures as a predictor

system of variables. On the base of the used linear regressive analysis in the manifest space, the following conclusions can be provided - the predictory system of anthropometric measures are noticed to have not statistically significant influence on the criterion variable Illinois agility run test, for agility.

References

Davis, B., et al. (2000). *Physical Education and the study of sport*. 4th ed. Barcelona: Harcourt.
 Javorac, D., Smajić, M., Molnar, S., Barašić, A. H., Tomić, B., Stracenski, M., & Marković, S. (2015). Razlike u morfološkim karakteristikama između fudbalera pionira i učenika osnovnih škola. [The differences in morphological characteristics between football pioneers and primary school students. In Bosnian.]. *Journal of the Anthropological Society of Serbia Niš*, 50, 33-38.
 Malacko, J. (2002). *Sportski trening*. [Sports training. In Serbian.]. Novi Sad: Faculty of Physical Education.

- Martinez, A.E., Penaloza, R., Lara-Padilla, E., & Berral, J.F. (2014). Relation of Anthropometric Profile and Performance in Competition for Mexican High School Football Players on the Offensive Squad. *Int. J. Morphol.* 32 (3), 1051-1059.
- Molnar, S., & Smajić, S. (2008). Relacije između sistema morfoloških varijabli i sistema bazično motoričkih varijabli dečaka u fudbalskoj školi. [Relations between the system of morphological variables and the system of basic motor variables of boys attending football school. In Serbian.]. Anthropological Society of Serbia, 43, 324-328, Novi Sad: Faculty of Sport and Physical Education.
- Sekereš, S. (1985). *Relacije morfoloških karakteristika i motoričkih sposobnosti mladih fudbalera u SAP Vojvodini*. Magistarski rad. [Relations between morphological characteristics and motor abilities of young footballers in SAP Vojvodina. Master's thesis. In Serbian.]. Novi Sad: Faculty of Physical Education.
- Siozios, S. (1992). *Relacije između sistema morfoloških karakteristika, motoričkih sposobnosti i specifično motoričkih sposobnosti fudbalera uzrasta od 15 do 18 godina*. Magistarski rad. [Relations between the system of morphological characteristics, motor abilities and specific motor abilities of football players 15-18 years old. Master's thesis. In Serbian.]. Novi Sad: Faculty of Physical Education.
- *** Makenzie, B. (2000). *Illinois Agility Run Test* <https://www.brianmac.co.uk/illinois.htm>

ODNOS IZMEĐU ANTROPOMETRIJSKIH ZNAČAJKI I MOTORIČKOG TESTA - ILLINOIS AGILITY RUN TESTA

Sažetak

U istraživanjima je testirano 88 nogometaša u dobi od 19 godina. Koristili su se sljedeći testovi: jedno motoričko ispitivanje za agilnost - Illinois test za agilnost i 8 (osam) antropometrijskih mjerenja. Cilj istraživanja je provjeriti učinak antropometrijskih mjera na agilnost nogometaša. Kroz regresivnu analizu utvrđeno je da između agilnosti i sustava antropometrijskih mjera nema statistički značajne korelacije ($p = 0,128$).

Ključne riječi: nogometaši, 19 godina, antropometrija, agilnost.

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