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EFFECT OF MORPHOLOGICAL CHARACTERISTICS OF PRECISION IN BASKETBALL

1. INTRODUCTION

The need to promote a scientific field sometimes requires consideration of all aspects of its development. Desire for a better sporting success, proper growth and development conditions the monitoring of anthropometric characteristics and motor abilities of children and youth. The most common structure is explored on various dimensions, or relations between different dimensions.

We know that basketball in its structure is very complicated and complex kinesiology activity in which success depends on the influence of a large number of anthropological character and abilities, which are interconnected. The importance of the influence of individual characteristics and skills for success in the basketball game is different. It is certain that the better results achieved by the individual in which these relationships are optimal. Certainly, in the hierarchical structure occupies an important place and morphological status of the players.

The importance of body build for big time sports is not fully defined as a prerequisite for achieving top results in elite sport. However, research has shown that successful athletes show similarities in the structure and constitution of the body, and they become more pronounced with progress of the body coming in more and more categories of professional sport. Therefore, top athletes are morphologically relatively homogeneous group and, depending on the sport, it is possible to define a model that is desirable to reach in order to achieve excellent results. Anthropometric characteristics and body composition of players play a significant role in the selection of younger categories - pioneers, cadets and juniors, and as well as in senior competition.

The main goal of the game of basketball is defined as the insertion of the ball to the basket and to prevent an opponent to score and put the ball in the basket (Jukič, 1998). It can therefore be assumed that just throw the ball to the basket, inserting the skewers one of the most important factors in overall success in basketball game

2. OBJECTIVE

The main objective of this study was to determine the influence of morphological characteristics (ten variables) on situational-motor, specifically the precision (two variables) in a basketball game.

3. METHODS OF WORK

Sample of entities

The study was conducted on a sample of 71 male subjects aged, 15 years \pm 6 months, participants school basketball team “Drita“ from Gjilani, Kosovo.

Measurement of morphological characteristics and situational-motor tests and tests of precision was conducted by a group of educated experts, professor of physical education in the sports hall of the city.

All test subjects were healthy at the time of measurement, without any morphological abnormalities and were actively involved in the process of training three times a week.

Sample variables

The sample of measuring instruments for the assessment of anthropometric parameters

The sample of variables obtained on the basis of 10 anthropometric measures in the IPB, under which, among other things, possible evaluation of the three anthropometric latent dimensions (the Momirović, K. et al. 1969) as follows:

-Evaluation of longitudinal dimension of the skeleton:

- | | |
|-----------------------|--------|
| 1) Body height | - AVIS |
| 2) Leg length | - ADUN |
| 3) Arm length | - ADUR |
| 4) Foot length | - ADUS |
| 5) Length of the hand | - ADUŠ |

-To assess the volume and body weight:

- | | |
|--------------------------------|--------|
| 6) Weight of the body – damage | - ATET |
| 7) The upper arm | - AONL |
| 8) The extent of the upper leg | - AONK |
| 9) Volume of the lower leg | - AOPK |

-To assess skeletal transverse dimensionality:

- | | |
|-----------------------|--------|
| 10) Width of the hand | - ASŠA |
|-----------------------|--------|

The sample of measuring instruments for the evaluation of situational-motor skills

The subjects performed the 5x5 shots in the basket

- | | |
|---|--------|
| 1) Free throw | - MPSB |
| 2) From dribbling the distance of 5 meters jump shot from the free throw line - | MPSŠ |

Methodology of data processing

In accordance with the subject, to research the problem and applied the appropriate method of statistical analysis. For the purposes of this study were calculated central and dispersion parameters: the arithmetic mean (Mean), standard

deviation (Std. Dev.), Minimum (Min), maximum (Max) and kurtosis (Kurt) and the curvature distribution (skew).

Regression analysis was applied in order to determine the statistical significance of the impact of the entire set of predictive variables on the criterion variable and individual impact of individual predictors on the criterion variable. Analyses were made to the program SPSS 14.0.

4. RESULTS AND DISCUSSION

The analysis of the first and second table it is clear that the distribution of results in all the estimated variables did not deviate significantly from normal distribution. The curvature of the curve of distribution of anthropometric variables is extremely practical, suggesting that there is a considerable number of extreme results at either end of the distribution.

Table 1. Basic statistical parameters of prediction (morphological) variables of anthropometric characteristics

	N	Min.	Max.	Mean	Std. Dev.	Skew.	Kurt.
AVIS	71	159.10	195.80	177.9352	6.5812	.110	.392
ADUN	71	87.10	112.30	100.6076	4.7731	-.081	.153
ADUR	71	59.80	84.20	72.6172	5.4393	.074	.148
ADUS	71	23.10	29.50	26.1905	1.1444	.021	.625
ADUŠ	71	16.50	20.00	17.8167	.8558	.839	.137
ATET	71	50.20	105.10	75.0924	9.4798	.613	.960
AONL	71	22.10	33.10	27.4876	2.6427	.098	-.618
AONK	71	41.50	63.50	52.71	4.0182	-.243	.391
AOPK	71	29.60	45.50	36.4543	2.7024	.439	1.159
ASŠA	71	18.40	22.90	19.9500	1.1473	.168	-.770

Table 2. Basic statistical indicators of criterion (situational-motor) variables

	N	Min.	Max.	Mean	Std. Dev.	Skew.	Kurt.
MPSB	71	21.00	45.00	31.1045	5.97503	.310	.731
MPSŠ	71	4.00	36.00	16.8209	7.45476	1.067	.681

In table 3 shows, the system of morphological predictor variables are statistically significant effect on the criterion variable of dribbling a 5 meter jump shot from the free throw line (MPSŠ) at 0.000 and the multiple correlation is 0,381 Given that squared multiple correlation is 0.145, this means that with 14% of common variance explained criterion variable applied predictor variables.

Based on studies of the morphological variables, it can be concluded that the most statistically significant effect on the variable of dribbling in a distance of 5 meters jump shot from the free throw line (MPSŠ) have morphological variables: body height (AVIS), leg length (ADUNA) arm length (ADURO), foot length (ADUS), the upper arm (AONL) and calf circumference (AOPK).

Obtained from these data, it can be concluded that better results in the performance of situational-motor test, or test the accuracy of dribbling the distance of 5 meters jump shot from the free throw line (MPŠŠ) in the patients who had a higher level (AVIS), had longer feet (ADUNA), who had longer hands (ADURO), greater length of the foot (ADUS), the higher the upper arm (AONL) and larger volume of lower leg (AOPK). This can be explained by the fact that the successful execution of a jump shot from the free throw line for those players who have a greater longitudinal dimension, with greater muscle mass of arms and lower legs and with a larger area of support.

Table 3. Regression analysis of situational-motor variables from dribbling the distance of 5 meters jump shot from the free throw line (MPŠŠ)

Model	R	R Square	Adjusted R Square	F	Sig.
1	.381	.145	.113	4.561	.000

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
AVIS	.215	.094	.285	2.186	.029
ADUN	-.335	.117	-.285	-2.844	.004
ADUR	-.451	.149	-.300	-3.018	.002
ADUS	.399	.182	.174	2.197	.028
ADŠA	.257	.173	.093	1.500	.134
ATET	.082	.056	.166	1.466	.143
AONL	-.445	.152	-.256	-2.920	.003
AONK	-.109	.094	-.106	-1.148	.251
AOPK	.584	.166	.584	3.506	.000
ASSA	-1.082	.616	-.135	-1.754	.080

The analysis of table 4 can be seen, the system of morphological predictor variables are statistically significant effect on the criterion one free throw in the bin (MPŠŠ) at 0.000. Multiple correlation was 0, 355 ($R_o = 0.355$) and squared multiple correlation is 0.126, this means that 13% of the total variance of predictor variables can explain the morphological criterion variable free-throw into the basket (MPŠŠ).

Morphological analysis of individual predictor variables, we can conclude that a statistically significant effect on the variable with two morphological variables: length of the hand (ADUS) and width of the hand (ASSA).

Based on the obtained data we can conclude that all those respondents who had more length and width of the hand had better results in the value criterion variables free throw in the basket.

Table 4. Regression analysis of situational-motor variables free throw (MPSB)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
AVIS	-.000	.002	-.037	-.283	.776
ADUN	.001	.002	.044	.442	.658
ADUR	-.002	.003	-.086	-.861	.390
ADUS	-.006	.004	-.130	-1.619	.106
ADŠA	.008	.003	.149	2.374	.018
ATET	.000	.001	.037	.323	.746
AONL	.001	.003	.048	.544	.586
AONK	.000	.002	.029	.310	.756
AOPK	.001	.003	.040	.449	.653
ASSA	.045	.013	.262	2.374	.001

5. CONCLUSION

In a sample of 71 male subjects aged, 15 years \pm 6 months, participants school basketball team “Drita”, from Gjilani, authors have tested a set of ten tests of morphological parameters, a set of predictor variables and tests of situational-motor ability (two tests of precision) as the criterion variable. The research was aimed to determine the effect, that the relationship between some morphological characteristics and situational-motor skills-and throw the ball into field goal position and the jump shot after dribbling. From the data obtained by regression analysis can be concluded that the better performance of situational-motor test, or test the accuracy of dribbling in a distance of 5 meters jump shot from the free throw line (MPSŠ) in the patients who had a higher level (AVIS), had longer feet (ADUNA), who had a longer hand (ADURO), greater length of the foot (ADUS), the higher upper arm (AONL) and larger volume of lower leg (AOPK).

The system of prediction of morphological variables are statistically significant effect on the criterion one free throw in the bin (MPSŠ) at 0.000.

Morphological analysis of individual predictor variables, we can conclude that a statistically significant effect on the variable with two morphological variables: length of the hand (ADUS) and width of the hand (ASSA).

The results of this research allow the creation of a foundation that allows for complex and quality assessment and comparison of these and other characteristics and abilities of pupils and youth in order to achieve better results in basketball.

6. LITERATURE

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Basketball in its structure is very complicated and complex activity in which kinesiology success depends on the influence of a large number of anthropological traits and abilities, which are interconnected. Therefore, the aim of this paper is to determine the influence of morphological characteristics as anthropological characteristics of situational-motor, or the accuracy of the basketball game. The survey was conducted in 71 male subjects aged, 15 years \pm 6 months, participants school basketball team "Drita" from Gjlani, Kosovo. The sample of variables obtained on the basis of 10 anthropometric measures in the IPB, under which, among other things, three possible estimates of latent anthropometric dimensions of two tests of situational-motor skills and precision.

Regression analysis was applied in order to determine the statistical significance of the impact of the entire set of predictive variables on the criterion variable and individual impact of individual predictors on the criterion variable. Analyses were made to the program SPSS 14.0.

From the data obtained by regression analysis can be concluded that the better the performance of situational-motor test, or test the accuracy of dribbling in a distance of 5 meters jump shot from the free throw line (MPŠŠ) in the patients who had a higher level (AVIS), had longer feet (ADUNA), who had a hand longer (ADURO), greater length of the foot (ADUS), the higher the upper arm (AONL) and larger volume of lower leg (AOPK).

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Key words: *basketball, Regression analysis, morphological variables, the criterion variable*