Characteristics of Strenght and Force for the Students of the Faculty of Physical Education and Sports

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Characteristics of Strenght and Force for the Students of the Faculty of Physical Education and Sports: *In order to investigate the effect of anthropometric characteristics and motor abilities on the manifestation of standing long jump and triple jump, an experimental study is conducted on a sample of 100 students of first year at the Faculty of Physical Education and Sport in Pristina. For the purposes of this study, eight tests of anthropometric characteristics were applied and ten tests of motor skills that comprised the predictor variables of the system. To estimate the vertical jump explosive strength, tests were conducted (standing long jump and triple jump). Data were analyzed by descriptive and regressive analysis. Based on the results of the research and the discussion we can confidently conclude that the applied motor tests has a significant influence on the manifestation of an explosive vertical jump power, with the students at the Faculty of Physical Education and Sport in Pristina, that is, it is possible to forecast the results of tests of explosive power on the basis of measures get from the predictor participant's system.*

Key words: *anthropometric characteristics, motor skills, explosive power, the regression analysis.*

INTRODUCTION

Undoubtedly physical activities and motor skills considered as a whole affect the results of sports achievements. Power is the most prominent and most used component in the development of sports performance, perhaps the most prominent aspect of sports training (Njaradi, 2008). The efficiency of motion is particularly dependent on the explosive force, which appears in various situations where it is necessary to develop maximum high power in the shortest possible time. Explosive power-type vertical jump is an important motor skill necessary for success in many sports, especially in sports games (Simek and assistants, 2007). Jump skills are put in place a latent explosive power of the jump type that is characteristic with fast and flexible response from the ground. The most important problem in kinesiological research is to register a valid, reliable and objective human reactions and properties, and how to measure the skills and anthropological characteristics (Bala and assistants, 2002).

Characteristics of high jump in athletics' jump shot in handball, basketball two steps, capturing high balls of the goalkeeper in soccer and various similar motor structures, is the successful transformation of the horizontal velocity in the vertical component and with one foot. There are few situations in sports where we have a stable support and can use both feet together or hands. The fact is that there are a large number of warks which have investigated the influence of anthropometric characteristics of motor skills (Kurelić N. and assistants (1975)). The basic premise of this research is based on anthropometric characteristics and motor skill measures can predict the explosive power of the vertical jump (standing long jump and triple jump), students of first year at the faculty of physical education and sport, e.t. that the system of predictive measures may have a significant impact on the manifestation of explosive power.

EXPOSITION

PROBLEMS AND GOALS OF THE RESEARCH

The problem of this research is aimed at detecting the size of the impact of motor abilities on the explosive power vertical jump (standinglong jump and triple jump) of students at the Faculty of Physical Education and Sports in Pristina. The main aim of this study was to determine the influence of some motor skills on explosive power and vertical jump of students at first year.

RESEARCH METHODS

Sample

The sample in this study was derived from a population, students at first year, and it was held by students of first year at the Faculty of Physical Education and Sports in Pristina, which at the time of study met all health and other criteria. The sample consisted of 100 students of first year at the Faculty of Physical Education and Sports, from the obtained results we can perform corresponding conclusions, which can be generalized to the whole population.

Sample variables

Analysed variables of estimating anthropometric characteristics and basic motor skills are:

	Anthropometric characteristics		
	Name of the variable		dimensionality
1	Body height	ATV	longitudinal dimensionality
2	Body mass	ATM	circular dimensionality
3	Sitting body length	ASDT	longitudinal dimensionality
4	Foot length	ADS	longitudinal dimensionality
5	Scope of the head	AOG	circular dimensionality
6	Scope of the stomach	AOT	circular dimensionality
7	The maximum diameter of the thigh	AONK	circular dimensionality
8	Medium volume of chest	AOGK	circular dimensionality
	Motor abilities		
	Name of the variable		dimensionality
1	Standing jump	MSDS	explosive power horizontal jump
2	Vertical standing jump	MSVS	explosive power vertical jump
3	Triple jump from place - MTRS	MTRS	explosive power
4	Standing long jump with the right foot	MSDD	explosive power
5	Standing ong jump with the left foot	MSDL	explosive power
6	Jumps for 30 seconds	MPVS	explosive power
7	Inclination forward on the bench	MPNK	flexibility
8	20 meter run	MT20M	explosive power
9	40 meter run	MT40M	speed
10	100 meter run	MT100M	speed power

Description of experimental procedure

For the purposes of this study a test was conducted on a sample of 100 students of first year at the faculty of physical education and sports. The program is aimed at fostering the optimal development of students' motor potential. Testing is carried out at the beginning of the school year, implementation of training programs with standard instruments which were calibrated before the measurements, and executed by educated experts, students of postgraduate studies from the Faculty of Physical Education and Sports in Pristina. Premises in which the measurement was carried out was sufficiently illuminated. Standard statistical methods were used to calculate the basic parameters of the descriptive variables: arithmetic mean (AS), the minimum value (Min), maximum value (Max), standard deviation (SD), Skewness (Skew) and Kurtosis (Kurt). The purpose of calculating the impact of the system prediction variables which are comprised of selected

and applied motor variables, on criteria variable, which makes the results of the variable standing long jump and triple jump, being applied regression analysis and calculate all necessary statistical parameters. For the statistically significant correlation coefficient values are considered those which are larger of .197 at the significance level of p = 0.05.

RESULTS AND DISCUSSION

Inspecting table 1, anthropometric characteristics and motor skills show asymmetry in the limits of normality, of eight anthropometric variables seven variables are positive, and only one has negative asymmetry. Regarding motor skills, eight of the ten variables are showing positive asymmetry in the limits of normality, of ten motor variables seven variables are positive and three are negative asymmetry. Inspecting table 1, where were presented the basic statistic parameters, it can be concluded that the results of research of anthropometrical features and results of motor tests are distributed within the limits of normality. On tables 2-5, regression analysis of criterion variables are shown in the system of predictive variables in the form of numerical information. In line with the goal of regression analysis of the research was to show how the anthropometric characteristics and motor abilities with criterion variables of students of first year at the Faculty of Physical Education, i.e., to what extent anthropometric characteristics and motor abilities can significantly influence the manifestation of criterion variables.

Table 1

Descriptive parameters of the anthropometric and motor variables

	Variables	N	Min	Max	Mean	DS	Skew	Kurt
1.	ATV	100	162.00	191.00	179.65	5.852	.014	-.120
2.	ATM	100	60.00	95.00	74.33	7.117	.452	.351
3.	ASDT	100	83.00	101.00	90.26	3.549	.571	-.079
4.	ADS	100	24.00	28.00	26.25	1.058	-.049	-.857
5.	AOG	100	55.00	59.00	56.37	1.178	.300	-.1.140
6.	AOT	100	70.00	92.00	78.64	4.758	.440	-.155
7.	AONK	100	40.00	61.00	49.50	4.130	.197	-.192
8.	AOGK	100	77.00	104.00	91.33	5.492	-.520	.380
9.	MSVS	100	38.00	60.00	47.56	4.977	.187	-.568
10.	MSDS	100	2.09	2.82	2.45	.169	-.018	-.810
11.	MT20M	100	2.80	3.82	3.33	.239	.073	-.780
12.	MPNK	100	6.00	22.00	11.97	3.574	.691	-.272
13.	MTRS	100	5.74	7.41	6.50	.427	.182	-.718
14.	MT40M	100	3.79	6.79	4.86	.630	.364	-.451
15.	MSDD	100	1.70	2.40	2.04	.147	.049	-.653
16.	MSDL	100	1.70	2.30	2.05	.138	-.586	-.343
17.	MPVS	100	23.00	61.00	42.18	8.655	.104	-.301
18.	MT100M	100	11.81	14.01	12.96	.509	-.152	-.504

The connection of the entire system of anthropometric variables with the motor test, standing long jump (MSDS) gives the coefficient of multiple correlation RO =. 740, which explains the common variability between the system and criterion variables, with about 55%. The remaining 45% of the total variability in explaining motor test standing long jump (MSDS) can be attributed to other characteristics and abilities of the respondents, which were not taken in this study. Anthropometrical system of variables did not show significant correlation with the criterion variable, standing long jump (MSDS), whose significant measure is the Sig =. 195 . Partial correlation with the criterion variable on the level of

significance of p <0.05. showed only variable (AOGK), which increases the possibility of predicting the criterion variable standing long jump.

The connection of the entire system of motor abilities with the motor test, standing long jump (MSDS) gives the coefficient of multiple correlation RO =. 708, which explains the common variability between the system and criterion variables, with about 45%. The remaining 55% of the total variability in explaining the motor test, the standing long jump (MSDS) can be attributed to other characteristics and abilities of the respondents, not taken in this study. Motor system variables showed significant correlations with the criterion variable, jump from the place (MSDS), whese significant is Sig =0,00. Partial correlation with the criterion variable on the level of significance of p <0.05. showed variables (MTRS), and (MSDL), which increases the possibility of predicting the criterion variable standing long jump.

Table 2

Criterion regression variables - MSDS, with the system of anthropometrical variables

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.740	.548	.454	.1247	5.838	.195

	Variables	Corelations	Partial	Beta	Std. Error of Beta	Standardized Coefficients Beta	Sig
1	ATV	.190	.172	5.322E-03	.003	.185	.626
2	ATM	.089	-.031	-9.003E-04	.003	-.038	.127
3	ASTV	.123	.088	4.169E-03	.005	.088	.754
4	ADS	.038	-.067	-1.087E-02	.017	-.068	.163
5	AOG	.026	.030	4.191E-03	.015	.029	.499
6	AOT	.074	.023	8.476E-04	.004	.024	.380
7	AONK	-.132	-.227	-9.992E-03	.004	-.245	.386
8	AOGK	.165	.194	6.875E-03	.004	.224	**.019**

Table 3

Regression of the criterion variables - MSDS, with the motor system variables

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.708	.501	.451	.1250	10.035	.000

	Variables	Corelations	Partial	Beta	Std. Error of Beta	Standardized Coefficients Beta	Sig
9	MSV	-.049	-.022	-5.837E-04	.003	-.017	.831
11	MT20M	-.097	-.033	-1.737E-02	.055	-.025	.752
12	MPNK	-.081	-.030	-1.056E-03	.004	-.022	.780
13	MTRS	.341	.321	.106	.033	.270	**.002**
14	MT40M	.035	-.011	-2.426E-03	.022	-.009	.913
15	MSDD	.561	.174	.214	.128	.187	.098
16	MSDL	.614	.416	.578	.133	.473	**.000**
17	MPVS	-.095	-.108	-1.615E-03	.002	-.083	.306
18	MT100M	.014	.115	2.811E-02	.026	.085	.276

The connection of the entire system of anthropometric variables with motor test, the triple standing jump (MTRS), gives a coefficient of multiple correlation RO =. 323, which explains the common variability between the system and criterion variables, with about 11%. The remaining 89% of the total variability in explaining the triple standing jump (MTRS), can be attributed to other characteristics of respondents who were not taken in this study. Anthropometric system variables did not show significant correlation with the

criterion variable (MSDS), whose significant is Sig.=.240. Partial correlation with the criterion variable on the level of significance of p <0.05. showed only variable (ASTV=.038), which increases the possibility of predicting the criterion variable of triple standing jump.

Table 4

Regression of the criterion variables - MTRS with the anthropometric system variables

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.323	.105	.026	.4219	1.329	.240

Variables		Corelations	Partial	Beta	Std. Error of Beta	Standardized Coefficients Beta	Sig
1	ATV	.179	.116	9.100E-03	.008	.125	.267
2	ATM	.092	.075	5.557E-03	.008	.093	.477
3	ASTV	.233	.216	2.653E-02	.013	.220	**.038**
4	ADS	.057	.027	1.124E-02	.043	.028	.795
5	AOG	.074	.047	1.655E-02	.037	.046	.656
6	AOT	.087	.010	9.558E-04	.010	.011	.923
7	AONK	-.069	-.097	-1.064E-02	.011	-.103	.354
8	AOGK	-.067	-.123	-1.102E-02	.009	-.142	.239

Table 5

Regression of the criterion variables - MTRS system with motor variables

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.450	.292	.221	.3773	4.122	.000

Variables		Corelations	Partial	Beta	Std. Error of Beta	Standardized Coefficients Beta	Sig
1	MSVS	-.066	.057	4.459E-03	.008	.052	.590
2	MSDS	.341	.321	.970	.301	.383	**.002**
3	MT20M	.085	.178	.280	.163	.156	.089
4	MPNK	-.261	-.271	-2.923E-02	.011	-.244	**.009**
5	MT40M	-.202	-.265	-.169	.065	-.249	**.011**
6	MSDD	.155	.095	.355	.390	.122	.365
7	MSDL	.054	-.144	-.603	.437	-.195	.172
8	MPVS	-.171	-.184	-8.307E-03	.005	-.168	.079
9	MT100M	-.050	-.004	-2.714E-03	.078	-.003	.972

The connection of the entire system of motor abilities with the motor test, the triple standing jump (MTRS), gives a coefficient of multiple correlation RO=.450, which explains the common variability between the system and criterion variables, with about 29%. The remaining 71% of the total variability in explaining the motor test, the triple standing jump (MTRS), can be attributed to other characteristics and abilities of the respondents, which were not taken in this study. Motor system variables showed significant correlations with the criterion variable (MTRS), whose significant is Sig .=000. Partial correlation with the criterion variable on the level of significance of p <0.05. showed variable (MSDS =. 002), (MPNK =. 009) and (MT40M =. 011), which increases the possibility of predicting the criterion variable triple standing jump. In the discussion we can conclude that the result is directly proportional to the MSDS result AOGK, MTRS and MSDL, so that respondents with good results in these tests, have better test results in the MSDS. Also can confirm that

it will get better results in the motor test, MSDS, those respondents who have shown very good results in the test MTRS and MSDL. Also, we can conclude that the result MTRS is directly proportional to the result of ASTV, MSDS, MPN and MT40M, so that respondents with good results in these tests, have better results in the test MTRS. Also can confirm that it will get better results in the motor test, MTRS, those respondents who have shown very good results in the test MSDS, MPN and MT40M.

CONCLUSION

Based on the results, this study can conclude the following: anthropometrical characteristics, applied in the system of predictive variables, have no statistically significant impact on the event, standing long jump and triple jump, on students of first year at the faculty of physical education and sports. On the basis of motor abilities of this research we can conclude the following: motor skills, applied in the system of predictive variables,statistically significantly affect the event, standing long jump and triple jump, on students at first year of the faculty of physical culture and sports. Based on the obtained correlation, the share of motor variables in explaining the criterion variable is big, and the assumption of this research is acceptable. Motor abilities, applied in the system of predictive variables, significantly affect the results of motor test standing long jump and triple jump, as the criterion variable. In the test regression analysis standing long jump and triple jump from place, highlighted a statistically significant multiple correlations with criterion variables applied on predictive system variables. This confirmed that the implemented system predictive variables significantly associated with the results achieved in the performance of the respondents test MSDS, and MTRS in the form of specific motor model. Implemented system, according to obtained results, is a good prediction for the vertical jump test results applied in this study. Based on the obtained results, the system of predictive variables, variables that are characterized by explosive power and speed power better predict the results of tests applied in the vertical jump.

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The report has been reviewed.