Characteristics anthropometric and Motor Tests for Short Running on 100 Meters (Females)

Naser Rashiti, Nazim Myrtaj, Sabri Tahiri, Fadil Nika, Mimoza Shkodra

Characteristics anthropometric and Motor Tests for Short Running on 100 Meters (Females): *The study was conducted to determine the influence of several anthropometric and motor tests (predicting variables) on the criterion of 100 m running. The test sample was represented by 80 students of the eighth grade of the elementary school "Thimi Mitko" from Gjilan. From the obtained results, it can be concluded that the system of motor variables has statistically significant impact only on the variable of the criterion of 100 m running, at the female students.*

Key words*: short running, morphological characteristics, motor skills, 15 years old students.*

INTRODUCTION

The speed of running on the track mostly depends on rational moves, capability of running without unneeded exerting, and the runner's level of speed persistence. There is opinion that the best sprinters on 100 m finish their starting acceleration at 22-30 meters. Howerer, the analysis shows that in that period sprinter reaches 90-95% of maximum speed. The most sprinters reach the gretest speed only on 50-55 m. After that, maximum speed is kept only on 25-30 m, and after that mainly, it falls down, and that is because of the difficulty of keeping the optimal frequency and the lenght of steps at the finish of run.Running represents the main means of physical preparation, and in general of the human body.(Findak 1996) It is among the most universal means of sport preparation and it is used at all sports (Cuka. 2004). Athletic movements are basic forms of movement with the most stated phylogenetic component in which as fundamental motor knowledge are saved from the human existence until present time (Burton's Miller, 1998).But, when the sport of athletics was specialized and was enriched with more disciplines, then the workout of these disciplines got specific for each of them (Bowerman i sur. 1999). The ability of speed, although of its kinematic and dynamic structure is relatively simple, is not explained properly of its connectivity with the specific anthropological subarea (Hoffman, 1986; Tontchev, 1999). The purpose of this study is the verification and the analysis of relations of morphological and motor characteristics of the 100m running. As well, the other goal is to verify how much is the impact of motor knowledge on the result of the short running at elementary school students (15 years old students). This study is aimed at the practical implementation and the evaluation of activities for the development of speed force (blast explosive force), in order to increase students' technical results, i.e. of female students (aged 15).

EXPOSITION

Research Method

Entities sample

The sample of entities is composed of 80 students aged 16 ± 6 months of the elementary school "Thimi Mitko" (females).

The basic criterion for testing students is:

a) to be regular during the academic year at Physical Education classes

b) previously not being ill

c) not having physical or physiological deformations.

The sample of variables

The variables used to measure the morphological construction were taken from the International Biological System, while the motor from the standardized tests, and they are:

- variables from the anthropometric system, 9 in total
- variables from motor system, 6

- criterion motor variable, 1

Antropometric variables

	VARIABLES	
1	BODY HEIGHT	ALART
2	BODY MASS	APESH
3	BODY HEIGHT ON SITTING POSITION	AALAUL
4	LENGTH OF THE PLANTAR	AGJSH
5	PERIMETER OF HEAD	APKOK
6	PERIMETER OF WAIST	APBEL
7	PERIMETER OF THE THIGH	APKOF
8	PERIMETER OF STERNUM	APKAF

Predicting motor variables

	VARIABLES	
1	HIGH-JUMP FROM PLACE	MKLAV
2	JUMP IN LENGTH FROM PLACE	MKGJV
3	20 M RUNNING (HIGH START)	MV20M
4	60 M RUNNING (HIGH START)	MV60M
5	THREE STEPS JUMP	M3HAP
6	HAND TAPING	MTADO

Criterion variables

	VARIABLE	
1	100 M run (LOW START)	MV100

RESULT PROCESSING METHOD

Taking into account all these parameters, for the purpose of this research were selected the actions that mostly fit the nature of the research problem.

The research results were first processed with the common actions which provide basic information for basic statistical parameters. The results obtained by the methods mentioned above, enable us better knowledge on morphological and motor area regarding the examined students.

On the basis of these criteria, for each variable are calculated basic statistical parameters as follows:

1. Mean - arithmetical mean,
2. Min - minimum score,
3. Max - maximum score,
4. Std.Dev. - standard deviation,
5. St.error - standard error of arithmetical mean,
6. Skew - distribution symmetry,
7. Kurt - distribution extent,
8. maxD - the coefficient of Kolmogorov-Smirnov test
   K-S - Kolmogorov-Smirnov probability at 95%
9. r - the coefficient of correlation according to Pearson, and hypothesis testing on the validity of *r* at the level 0.05 of security levels,

The results of statistical processing are presented in tables, which enable us the scientific and logical interpretation of the problem. Because of the relief of the exertion, in the paper are used coded symbols or abbreviations.

In the further procedure for processing the data with regressive analysis will be analyzed the impact of anthropometric and motor predictors in athletic disciplines as a criterion.

Inside the regressive analysis is calculated:

- Correlation between predicting and criterion variables (R)
- Determination coefficient (DELTA)
- Multiple correlations (R)
- Partial correlations (Part-R)
- Beta coefficient (BETA)

RESULTS AND DISCUSSION

Basic parameters and distribution of variables

The results show that the average value of body height is 158.44 cm, while the average body weight is 48.45 kg. According to the minimum and maximum results of these two variables can be said that this group of the examinees does not represent a homogeneous group of students.

The students finish the 20 meters running for an average time of 4.07 seconds, and the longest jump of 150.77 centimeters. The criterion variable of the 100 m race is running on average for 17.14 seconds.

Only the anthropometric variable, the length of the plantar did not show normal distribution. The Testik coefficient of Kolmogorov-Smirnov is outside the normal boundaries at 99% probability.

Table 1

Basic statistical indicators of variables in anthropometric and motor area (females)

	Mean	Min	Max	Std.Dev.	St.error	Skew	Kurt	max D	K-S
ALART	158.44	139.00	170.00	5.71	.59	-.53	.58	.11	p > .20
APESH	48.45	34.00	68.00	7.48	.78	.28	-.46	.06	p > .20
ALAUL	84.24	74.00	95.00	4.50	.47	.14	-.64	.07	p > .20
AGJSH	23.30	20.00	25.00	1.08	.11	-.26	-.18	**.18**	**p < .01**
APKOK	53.65	50.00	57.00	1.59	.17	.04	-.17	.13	p < .10
APBEL	64.68	55.00	84.00	5.50	.57	.88	.93	.11	p < .20
APKOF	44.40	33.00	57.00	6.04	.63	.30	-.82	.10	p > .20
APKAF	69.77	60.00	83.00	4.64	.48	.51	.52	.09	p > .20
MKLAV	30.12	20.00	42.00	4.86	.50	.37	-.21	.13	p < .10
MKGJV	150.77	113.00	194.00	17.38	1.80	-.04	-.18	.08	p > .20
MV20M	4.07	3.63	4.91	.22	.02	.55	1.02	.07	p > .20
MV60M	11.96	9.96	13.66	.86	.09	-.31	-.46	.09	p > .20
M3HAP	414.46	300.00	540.00	52.40	5.43	.19	-.65	.09	p > .20
MTADO	3.75	3.00	4.84	.39	.04	.73	.23	.11	p > .20
MV100	17.14	15.56	19.02	.80	.08	.16	-.74	.06	p > .20

All anthropometric variables have relations between themselves. In the motor area, the variables of taping and 100m running have not shown important relation with the tests of long and high-jump.

Regarding students' sample, the relations between the two spaces are smaller. From 56 possible correlations there are only eight significant correlations. Relation is mostly realized through three steps jump with motor variables.

CHART NO:1- GRAPHICAL PRESENTATION AVERAGE
Anthropometric and motoric variables

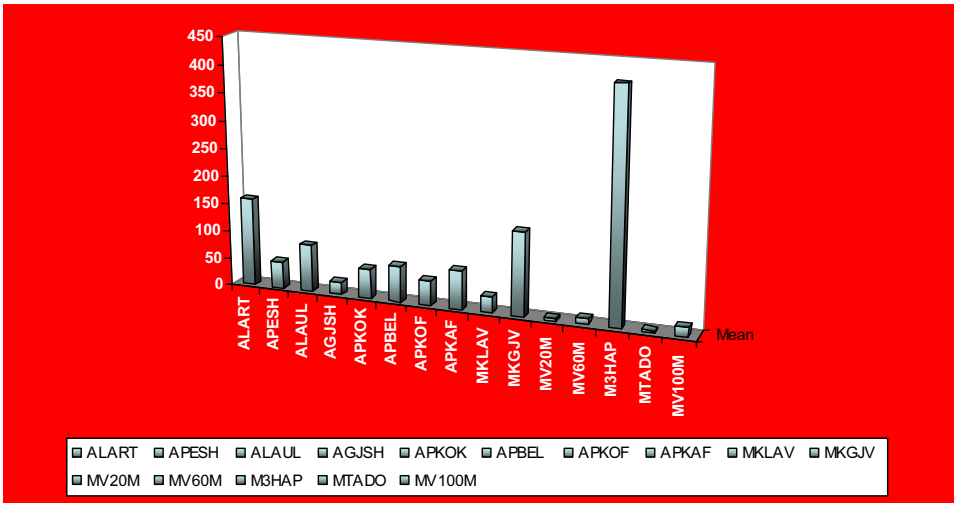

Table 2

Correlations of anthropometric and motor variables in females

VAR.	ALART	APESH	ALAUL	AGJSH	APKOK	APBEL	APKOF	APKAF	MKLAV	MKGJV	MV20M	MV60M	M3HAP	MTADO	MV100
ALART	1														
APESH	**.60**	1													
ALAUL	**.60**	**.49**	1												
AGJSH	**.60**	**.43**	**.31**	1											
APKOK	**.29**	**.39**	**.23**	**.33**	1										
APBEL	**.33**	**.78**	**.34**	**.36**	**.35**	1									
APKOF	**.43**	**.67**	**.40**	**.34**	**.28**	**.62**	1								
APKAF	**.31**	**.62**	**.35**	**.31**	**.31**	**.70**	**.46**	1							
MKLAV	.16	-.03	-.10	.16	.01	-.14	-.03	-.07	1						
MKGJV	.02	-.11	-.18	.12	-.05	**-.24**	-.15	-.08	**.46**	1					
MV20M	.08	.17	.07	-.03	.04	**.20**	**.23**	.10	**-.39**	**-.50**	1				
MV60M	-.02	.10	-.07	-.16	.08	.14	.34	.07	**-.20**	**-.50**	**.57**	1			
M3HAP	-.02	-.19	**-.25**	.07	-.09	**-.23**	**-.24**	-.09	**.40**	**.73**	**-.48**	**-.46**	1		
MTADO	.06	**.24**	-.04	-.05	.17	.17	.05	-.07	-.17	-.19	**.28**	**.26**	**-.34**	1	
MV100	.10	.15	-.08	.11	.11	.15	**.35**	.07	.11	-.16	**.38**	**.60**	**-.20**	**.22**	1

THE REGRESSIVE ANALYSIS OF CRITERION VARIABLE WITH ANTHROPOMETRIC SYSTEM OF VARIABLES

Keeping an eye on table 3, we see that the multiple coefficient of determination indicates that 19% of variability of the criterion variable can be described with the

variability of predictors. The system of anthropometric variables is important and this is confirmed by the p .018. The variable which affects the prediction of the criteria is the perimeter of the thigh and sitting body height in probability .00 and .02.

Table 3

Regressive analysis - anthropometric system with criterion variable 100m running (females)

Multiple R	Multiple R2	Adjusted R	F	p
0,44	0,19	0,11	2,48	**,018**

	correl	Partial	Beta	Std.Err.	t(84)	p-level
ALART	,10	,08	,12	,17	,69	,49
APESH	,15	-,05	-,09	,21	-,42	,68
ALAUL	-,08	**-,25**	**-,30**	,13	-2,32	**,02**
AGJSH	,11	,00	,00	,13	,02	,98
APKOK	,11	,06	,06	,11	,56	,58
APBEL	,15	-,01	-,01	,19	-,06	,96
APKOF	**,35**	**,36**	**,48**	,14	3,50	**,00**
APKAF	,07	-,03	-,04	,14	-,31	,75

Regarding females, there is one more variable which helps in predicting the criterion. Otherwise, the whole system of variables is almost the most powerful in the prognosis of 100m running.

The variable of motor system for high-jump is also shown as quite important in the anticipation of 100m running. Beta coefficient values are .27 and .59, which are important in the level of probability .01 and .00.

Table 4

Regressive analysis - the motor system with the criterion variable – 100m running (females)

Multiple R	Multiple R2	Adjusted R	F	p
0,67	0,45	0,41	11,82	,000

	correl	Partial	Beta	Std.Err.	t(86)	p-level
MKLAV	,11	**,29**	**,27**	,09	2,85	**,01**
MKGJV	-,16	,11	,13	,13	1,04	,30
MV20M	**,38**	,18	,18	,11	1,69	,09
MV60M	**,60**	**,52**	**,59**	,10	5,66	**,00**
M3HAP	**-,20**	-,02	-,02	,12	-,15	,88
MTADO	**,22**	,09	,08	,09	,88	,38

CONCLUSION

In the sample of 93 females treated by two extents: anthropometric (with 8 variables) and motor (7 variables), are treated the relations within and between the extents, the report with the 100 meters running in these areas.

From the results obtained by the descriptive statistics, we have observed body construction and locomotive abilities of these samples of females. Most of the variables have had normal distribution, whereas deviation is noticed in the length of the plantar.

The relations of the extents between them (intercorrelations) have been visible, as at the anthropometric variables as well as at motor variables.

The results show that anthropometric variables have little predictive power for the 100 meters running. This is noticed at the short path runners who have different morphology and especially different body height. Elements which are somehow more representative are the circular dimensions or the more voluminous body construct compared to athletes of other disciplines. Motor variables have great effect on the anticipation of the 100m running.

Tests that can predict 100 meters running are tests that measure speed and explosive force.

Finally, locomotive differences between genders of this age are significant, so we deal with different samples of motor skills. Thus, in the teaching process of physical education classes as well as in the exercises in athletics at this age these groups should have special treatment, but as well with younger age groups.

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For contacts:

Prof.aso.Dr.Naser Rashiti, University of Prishtina, Faculty of Physical Education and Sports, Kosovo; e-mail: naserrashiti@hotmail.com

Mr.sci. Nazim Myrtaj , Faculty of Education of Prishtina, E-mail: n.myrtaj@hotmail.com

Prof.ass.Dr. Sabri Tahiri, Faculty of Education , Kosovo.

Prof dr. Fadil Nika, Faculty of Physical Education, Tetovo, Macedonia.

Mr.sci. Mimoza Shkodra, Faculty of Physical Education and Sports, Kosovo.

The report has been reviewed.