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# IMPACT OF FUNCTIONAL SKILLS ON THE PERFORMANCE OF SPRINT RUNNING

*(Research note)*

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**Abstract**

*The aim of the research was to determine the impact of functional abilities on sprint running among pupils at the aged of 15 years. The sample of respondents consisted of 100 students from high school in Lipkovo, Macedonia. To the respondents were applied the following measurement instruments to assess the functionally of frequency of the pulse at rest (FPM), the pulse frequency after load (FFPO) and vital lung capacity (FVKDB). For estimating the speed of running short tracks in subjects, applied to sprint, running the 200 meters (MTP200м) and running the 400 meters (MTP400м). Three of the variables used to assess the functional space are used as a predictor variables and two variables for determination of specific motor abilities are used as predictor variables. Regressive analyses was used to determine the impact of functional skills to performance of sprint running. Based on the results of the regression analysis, it can be concluded that variables of functional capabilities have a statistically significant impact on variable running 400 meters (MTP400м) while the variable running 200 meters (MTP200м) has no statistically significant effect. Obtained results suggest that the greater will be the value of the frequency of the pulse after the load (FPPO), the better will be the result of running 400 and 200 meters and vice versa.*

**Keywords:** *functional capacity of the semen, specific motor abilities, regression of running short track.*

## INTRODUCTION

The cardiovascular system is central to the body's normal function in normal living conditions, as well as exercise. Increased muscle work can be the greatest stress exposed to the cardiovascular system (Nikolic (Николић), 2009). There are myriad tests to investigate the state of the cardiovascular system, and the most important are: frequency pulse at rest, the pulse frequency during load, maximum consumption oxygen, vital lung capacity and MND. Pulse rate at rest among athletes is not always greater or varies from 60-100 beats per minute compared with athletes where the pulse at rest is 35-65 beats per minute, which is also true for pulse rate during load. The type of exercise increasing influence of pulse frequency, while the maximum pulse beat is going on when you exercise gear or running short track (Canaj, 2004). The main objective of the research is to determine whether certain functional abilities influence on the success of the sprint among students 15 years of age. The research results of influence of motor abilities on anthropometric characteristics have theoretical and practical value to the process of exercise among students because this research will give us new scientific information about the value of specific motor tests.

## METHODS

The subject of this research are few and specific functional skills - motor skills of students aged 15 years. Based on define subject, the main goal of this study is to establish the connection between functionally abilities as a predictor system and sprint running 200 and 400 meters as criteria.

The sample population derived from male students, aged 15 ± 6 months. The survey was conducted on 100 subjects in secondary school "Ismet Jashari" - Lipkovo. The sample in this research is about functionality of capabilities and specific - motor skills or running short track. The results of this study are taken only from respondents who regularly follow classes in physical education and had participated in all motor tests.

The research used a total of 5 variables of which 3 to assess the functional abilities or prediction parameters and 2 variables to assess the specific - or motor skills as criteria variables. Following variables were used: 1.Frequency resting pulse (FPM)**;** 2. Frequency of pulse after the load (FPPO)**;**

3. A vital lung capacity (FVKBD). While variables to assess specific - motor variables are following: 4. Running 200 meters (MTP200м) and 5. Running 400

meters (MTP400м). Motor variables are chosen as representative of motor sizes from the second row in research (Kurelić, Momirovic, Stojanovic, Sturm, Radoevic, & Viskic – Stalec, 1975).

In order to establish the connection between functional variables as predictors system and specific - motor variables such criteria is applied regression analysis or the method of analysis of the impact and the relationship that belong to the analysis. The following tables show the results of basic statistical parameters of criteria or predictor variables and measures of central tendency and dispersion for each indicator: 1. The minimum score, maximum score, mean, standard deviation, and skewness, kurtosis. For data processing applied is the statistical package SPSS 22.0.

**RESULTS AND DISCUSSION**

Obtained results from the statistical analyses of applied tests are presented in Tables 1 – 5.

Results presented in Table 1 regarded the basic statistical parameters of functional and motor variables such as: minimum score, the maximum score, the mean as the main indicator, standard deviation as the main indicator and main indicators of the shape of the curve distribution the asymmetry of the curve or indicator skewness, and the curvature of the curve or indicator kurtosis. In Table 1, we can conclude that the values of all anthropometric variables had major differences between the minimum and maximum results. Value standard deviations in the test (FPM, FPPO, MTP400m) on a high level, and it is about the results, which are heterogeneous or results that have high variability, while tests (FVKBD, MTP200m)

*Table 1. Basic statistical parameters of functional variables and motor abilities among 15 years old students*

| | Min. | Max. | Mean | Std. De. | Skew. | Kurt. |
|---|---|---|---|---|---|---|
| FPM | 60.00 | 144.00 | 92.4000 | 14.48580 | .287 | .765 |
| FPPO | 120.00 | 218.00 | 174.50 | 17.68495 | -.541 | 1.048 |
| FVKBD | 2.58 | 8.85 | 5.3807 | 1.37602 | .201 | -.448 |
| MTP200m | 28.39 | 52.54 | 33.9392 | 4.17989 | 1.420 | 3.164 |
| MTP400m | 67.12 | 114.48 | 85.4844 | 11.45273 | .413 | -.546 |

*Table 2. Regression analysis of variable MTR200m (Model summary)*

| R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| .255[a] | .065 | .036 | 4.10429 | .065 | 2.227 | 3 | 96 | .090 |

*Table 3. Regression analysis of variable MTR200m (Coefficients)*

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 22.752 | 5.538 | | 4.108 | .000 |
| FPM | .012 | .030 | .042 | .411 | .682 |
| FPPO | .057 | .025 | .243 | 2.287 | .024 |
| FVKDB | .010 | .319 | .003 | .032 | .975 |

*Table 4. Regression analysis of variable MTR400m (Model summary)*

| R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| .356[a] | .127 | .099 | 10.86895 | .127 | 4.640 | 3 | 96 | .004 |

*Table 5. Regression analysis of variable MTR400m (Coefficients)*

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 44.809 | 14.666 | | 3.055 | .003 |
| FPM | .122 | .078 | .154 | 1.555 | .123 |
| FPPO | .176 | .066 | .272 | 2.656 | .009 |
| FVKBD | -.256 | .845 | -.031 | -.302 | .763 |

are at a low level, indicating that discrimination is satisfactory and that the results are homogeneous, ie results had low variability. The asymmetry of the curve is low in almost all variables, while the rounded value of the curve for most variables is below 2.75, so that all these values are platykurtic, meaning that the results are distributed from the mean, except where MTP400m variable value the curve is greater than 2.75 and is around 3, which means that this value is mezokurtic character and has a normal distribution of mean.

From Table 2, which shows the regression analysis of the variable MTP200m is seen that among prediction system and criteria variable there in no statistically significant association (R = 0.255), the level of Q = 0.90, ie the connection explains the common variability with 6.5% (R2 = 0.65). The remaining 93.5% in its explanation can be attributed to some other features and capabilities of respondents who were not covered with these studies. The greatest impact of prediction system on variable criteria MTP200m has the variable of frequency pulse after the load (FPPO) (tab.3), worth 0.243 and 0.024 significance level, where this value is a positive sign which means that the impact of the variable FPPPO the variable MTP200m is positive. From this we can conclude that the greater will be the value of the pulse after the load, the better the result will be in running the 200 meters and vice versa. The values of other variables have an impact but not with statistical significance so we will not discuss them in detail.

From Table 4, which shows the regression analysis of the variable MTP400m is seen that among prediction system and criteria variable there is no statistically significant association (R = 0.356), the level of Q = 0.004, respectively connection explained common variability with 12.7% (R2 = 0.127). The remaining 87.3% in its explanation can be attributed to another dimension of anthropological status that has not been included in these studies. The greatest impact of prediction system on variable criteria MTP400m has the variable of frequency pulse after the load FPPO (tab.5), worth 0.272 and 0.009 significance level, where this value is a positive sign which means that the impact of the variable on the variable FPPO MTP400m is positive. From this we can conclude that the greater will be the value of the frequency of the pulse after the load (FPPO) the better it will result in running 400 meters and vice versa. The values of other variables have an impact but not with statistical significance so we will not discuss them in detail.

## CONCLUSION

Based on the results, it can be concluded that the functional variables as predictor variables used in this paper, have a statistically significant impact on criteria variables of running 200 meters (MTP200m) and running the 400 meters (MTP400m). From these results we conclude that athletes, in this case students of a certain age who possess good abilities as a functional frequency pulse at rest and in load and high vital lung capacity, will achieve better results in sprint running 200 meters and 400 meters with apparent explosive strength and speed. So the greater will be the value of the frequency of the pulse after the load (FPPO) the better will be the result in running 400 and 200 meters and vice versa. It can be recommended to all coaches and teachers at all sports and its development, to practice these types of functional tests and also other motor exercises in their curricula - programs and at least once or twice in the year to make measurements over anthropologic spaces in order to know better the impact of functional tests on sprint running among students or athletes.

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