

## SCIENTIFIC WORK REVIEW

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### SOMATOTYPE OF ACTIVE AND PASSIVE STUDENTS

#### Abstract

*The aim of the research paper is to determine differences in the somatotype of active and passive students. The method consists of the collection of relevant literature in the period from 2000 to 2010, the tabulation and further analysis. The conclusion is that somatotype of active and passive students shows differences in relation to sex, age, type and intensity of physical activity, lifestyle, genetic predisposition. Recommendations would be related to the increase of physical activity of students by engaging them in fitness clubs or places that provide appropriate conditions for practice. The most common choice of physical activities with students should be running, swimming, tennis and cardio-vascular fitness.*

**Key words:** *somatotype, students, physical activity, newspapers of sport science, fitness, running, swimming.*

#### 1. INTRODUCTION

The complex study of the characteristics of the body of man and development characteristics include their morphological, physiological, biochemical, immune-biological and psychological traits. The individual characteristics of the organism make the constitution.

Body constitution and body composition are largely determined by the level of physical activity. The ratio of muscle and fat mass is an important indicator of the level of readiness to achieve maximum results in a physical activity, but it is also an indicator of health risk, especially when it comes to the increased level of fat mass and potential complications that it carries (Hausman, DiGirolamo, Bartness, Hausman & Martin, 2001; Greenlund & Nair, 2003).

The study aims to determine differences in somatotype of physically active and inactive students.

#### 2. METHOD

Research data found for the purposes of this review research paper were collected through electronic browsers such as Google, Google Scholar, and Pub Med., Collection of works of the international public meetings, journals in the field of sports science, as well as relevant literature that could respond to the task.

The used terms for electronic browsing in the Serbian language are: somatotype, active, passive, students, physical inactivity, international public meetings, newspapers of sport science, fitness, running, swimming, tennis, cardio-vascular fitness.

In this paper the descriptive method is used.

#### 3. RESULTS WITH DISCUSSION

The results are shown in Table 1. The table shows data on the first author, year of publication, the sample of respondents (the number and gender), in short, the relationships that have been tested in the work itself and research results and conclusions of the topics that authors have dealt with. The table includes 7 scientific papers for the period from 2000. to 2010.

**Table 1.** Scientific Papers for the period from 2000 to 2010.

First author and publication year	The sample of respondents		Program that was completed	The results of the research	Conclusion
	Number	Gender			
Jović i sar. (2010)	117	Athletes and non-athletes	For the study 10 anthropometric variables are measured.	The results showed that there were significant differences between the two components of body constitution.	It can be concluded that students belong to both generations of endomorph-mesomorph constitutional type
Ripari et al. (2008).	40	Men, non-athletes	Determination of relative strength and maximal ergometer test.	Softer SAS has found lower BMI at ectomorphs VO2max of muscle strength of lower values in endomorphs	Somatotypes of male athletes show a significant difference in physical exercise with determination of a somatotype constitution.
Rahmawati et al. (2007)	247	Male	19 student badminton players, 74 volleyball players, 96 football players, 51 non-athletes.	ANOVA analysis showed a great heterogeneity among student athletes and student non-athletes.	Badminton students and volleyball players, have a mesomorph and ectomorph type, while football players have a balancing mesomorph.
Fobair et al. (2006)	36	24 men 12 women	The new technique of using quantitative distortions in a digital image.	Somatotype analysis points to the connection of physical abilities with bodily functions.	It has been confirmed that the new method involves the gender specifics, perception and the component of personal characteristics.
Bayios et al. (2006)	518	women	20 anthropometric parameters, calculation of the body composition and somatotype components	Volleyball players were the tallest among the three groups of athletes, and they had the lowest level of body fat.	More data is needed to define anthropometric profiles of women athletes at the international level.
Robinson & Ferraro (2004)	108	53 women athletes 55 non-athletes	Participants were measured by using a scale of bodily dissatisfaction with the emphasis on weight, personal view of the body, the type of body composition.	Analysis of the results showed that non-athletes expressed more dissatisfaction than any group of athletes.	It was concluded that there is a connection between playing sports for women and their image of their own body.

Bolonchuk et al. (2000)	63	Male athletes and non-athletes.	Total free fat (FFW), the total potassium in the body (TBK), body mass of the cells (BCM).	Ectomorphs have less free fat than expected and they had a different response of functional systems during exercise.	Ectomorphs compared to endomorphs and mesomorphs have deficits of FFW and BCM, which point to the differences in functional capacity.
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*BMI: body mass index; FFW-total free fat; TBK-total potassium in the body; BCM-body weight of the cells.*

The table shows 7 original scientific papers from 2000 to 2010. The aim of this study was to determine the extent to which various physical exercises affect the academic success of students and female students.

The largest number of student athletes of both sexes have an endomorph-mesomorph body type constitution. Mesomorph component was dominant in most of the surveyed students.

Similar results were obtained in a population of students of physical education in Nis measured in 1997 and 2008. The students of both generations belong to an endomorph-mesomorph constitutional type, with a note that the students measured in 2008 have a stronger endomorph component resulting from a larger body mass and less body height (Jovic, Đurašković, Pantelic and Čokorilo, 2010).

Rahmawati, Budiharjo & Ashizawa, (2007) in their study on a sample of athletes and student non-athletes, concluded that all three groups of athletes and students were different.

Student athletes who are climbers, show an endomorph type of constitution (Puletic & Stankovic, 2014). Bulgarian gymnasts, men and women seniors, show a mesomorph type of constitution (Massidda, 2013). A mesomorph type of constitution is the most common in athletes, claims Vučetić, Matković & Šentija (2008). Athletes who are long distance runners are more ectomorphs with a certain amount of mesomorph muscles.

Athletic disciplines (except throwing) require a body composition in which the emphasis is placed on more muscle mass and less adipose tissue corresponding a mesomorph type, and ectomorph when it comes to long-distance runners.

Battinelli (2000) indicates that the measured values in men athletes in terms of weight are at endomorph and mesomorphs higher than in ectomorphs (who had less weight). Especially endomorph and mesomorph are boxers and judokas, because kinds of sports activities in these sports use specific weight values for certain categories of athletes.

Reference values for somatotype of women athletes (racing and throwing disciplines), gymnasts are less endomorph than canoeists, rowers and swimmers. Mesomorphs are superior to endomorphs and ectomorphs in terms of strength, speed and agility. Strength and speed are the basic skills of mesomorphs.

The results indicate that active students compared to passive students at sports universities have a higher body weight and about the same body height, higher values of BMI, belonging to an endomorph-mesomorph constitutional type.

Determination of somatotype constitution is an important starting point for selecting the type of physical activity or sport that is suitable for a particular student (woman or man) non-athletes (Ripari, Di Blasio, Di Iorio, Albanese, D'Anastasio & Capasso, 2008).

#### 4. CONCLUSION

There is a strong correlation between the percentage of fat and an endomorph type of constitution.

Part of the obtained differences in results can be attributed to different lifestyles of physically active and passive students in terms of momentum, regular diet, genetic and other factors that affect body composition.

Determination of a somatotype constitution is an important starting point for selecting the type of physical activity or sport that suits a particular psycho-physical type of student athletes or non-athletes.

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