

Pavle Malovic

**ANALYSIS OF NUTRITIONAL STATUS AND
BODY COMPOSITION OF ADOLESCENTS IN
THE LARGEST MUNICIPALITY IN THE
FORMER YUGOSLAVIA**

**ANALIZA PREHRANSKEGA STANJA IN
TELESNE SESTAVE MLADIH V NAJVEČJI
OBČINI NEKDANJE JUGOSLAVIJE**

Faculty for Sport and Physical Education, University of Montenegro, Niksic, 81400, Montenegro

Corresponding author:*

Pavle Malovic,
Faculty for Sport and Physical Education, University of Montenegro,
Podgorica, Montenegro
E-mail: pavle.m@ucg.ac.me

The manuscript contains only original material, has not been previously published, is not currently under consideration elsewhere, and will not be submitted elsewhere pending a final journal decision.

Dear Editor-in-Chief,

Obesity is characterized as one of the leading health problems facing modern society, and scientific technological advancements has led to constant progression in body mass of many of young people (Thun, Apicella, & Henley, 2000; Bukara – Radujkovic, & Zdravkovic, 2009). Sedentary lifestyle, as consequence of modern way of life, can lead to various diseases associated with the heart and coronary artery diseases, as well as a certain degree of obesity (Bajramovic, Redzepagic, Bjelica, et al., 2020). Obesity occurs as a result of an energy imbalance, i.e. higher energy intake relative to consumption (Bukara – Radujkovic, & Zdravkovic, 2009). Also, if obesity is present in early childhood, there is a tendency for the child to have problems with obesity while growing up, with the risk of early illness from non-communicable diseases, such as diabetes, high blood pressure and coronary artery disease (Lobsten, Baur, & Uauy, 2004).

The aim of this research is to determine the nutritional status and body composition of adolescents in Niksic (Montenegro), the largest municipality in the former Yugoslavia.

The total number of examinees in this study was 132, aged 15. The total sample of examinees is divided into two sub-samples. First sub-sample of the examinees consisted of 63 boys, while the second sub-sample consisted of 69 girls. For the purposes of this research, the following variables were used to evaluate anthropometric characteristics: body height, body weight, waist and hip circumference. Based on above-mentioned variables, the following anthropometric indices were formed to evaluate nutritional status: Body mass index (BMI), waist-to-hip ratio (WHR), and waist-to-high ratio (WHtR). The normative values of the above-mentioned indices for boys are as follows: healthy weight for BMI is from 16.5 to 23.7 kg/m² (5-85th percentile), WHR ratio under 1 is characterized as normal weight, but above 1 as obese. The normative values for girls are as follows: healthy weight for BMI is from 16.5 to 22.8 kg/m² (5-85th percentile), WHR ratio under 0.8 is characterized as normal weight, but above 0.8 as obese. WHtR ratio for both genders is set at 0.5, where under of that value is characterized as normal weight, but above is characterized as obese. Also, for the purposes of this research, bio-impedancemetry body composition analyzer, Jawon Medical ioi 353, was used to evaluate the level of visceral fat of respondents (V.F.A.). According to research so far, the normal value of V.F.A. for ages 10 to 15 is set at 68.57 cm² for both genders (Lee, Park, & Yum, 2012), and the normal level range is set from 1 to 9.

Based on the results, the values of the sub-sample of boys for the tested indices were: BMI - 21.39 kg/m², WHR - 0.88, while values for WHtR was 0.43. Values for the V.F.A. were 43.87cm², and level 4.2. The values of the sub-sample of girls for the tested indices were: BMI - 21.65 kg/m², WHR - 0.85, WHtR - 0.47. Values for the V.F.A. were 38.94cm², and level 4.4.

Based on the analyzed results, obtained by the descriptive statistical procedure, we can state that boys have optimal nutritional status based on anthropometric indices, as well as based on data obtained by bioelectric impedance. When it comes to girls in all parameters for assessing the level of nutrition and body composition normal values are recorded, except in the WHR ratio, where the results are slightly above the normative value, set at 0.8 (0.85). Although WHR is very useful in assessing obesity and health risks, Browning, Hsieh, & Ashwell (2010) state that this ratio is not good in its practical treatment. Namely, reducing body fat can reduce the volume of both the waist and hips, and therefore sometimes the relationship does not change much and does not give the real state of the respondents. Also, through the assessment of adipose tissue using the WHR ratio, there is the possibility of obtaining inaccurate health risk data in short and tall respondents, who have a similar level of this ratio. Based on all of the above-mentioned, it can be concluded that respondents who were involved in this study, have normal nutritional status.

As a limitation of this study, it can be said that the data was collected during the pandemic of COVID-19, and that the cessation of work of educational institutions negatively affected the sample of examinees to be higher. Also, the recommendation for future research would be to conduct the same research after the end of the pandemic of COVID-19 and to evaluate how the pandemic affected the nutritional status and body composition of examinees.

Conflicts of interest

The author declare no conflicts of interest.

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