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ISTRAŽIVANJE METABOLIČKE DOBE I INDEKS TJELESNE MASE ZA STUDENTICE

1. INTRODUCTION

Metabolic age - this feature takes into account, the basic metabolism and all the basic physical parameters and the determining of age, which corresponds to this type of metabolism.

The aim of the research is to establish a metabolic age and the index of the body mass (Body Mass Index) for students.

Anthropometric measurement was applied. The analyzer was used for the composition of body weight (body composition analyzer, BC-420MA "Tanita") for determining the metabolic age and body mass index.

The conducted monitoring of the metabolic age reveals opportunities to improve students' motivation for healthy lifestyle.

The term "metabolic age" is prevalent in the healthcare and training (fitness). This feature takes into account the basic metabolism of all major physical performances and it determines the age, which is responsible for this type of metabolism. If the metabolic age is greater than the biological, it is a sign that one needs to improve the metabolism. Proactive physical activity builds healthy muscle tissue and reduces the metabolic age [2]. Tests on healthy human subjects shoved that increased age tends towards change of that exchange. The basic exchange increases with the physical development of the child. After getting at the age 16-17 years it begins to decline [1, 9, 10]. Scientists are still studying the concept of metabolic age [5].

Based on the data collected from the surveys on the health conditions of the population in March 2001, for every person of 18 years or more is calculated BMI. Under this measurement, the National Institute of Statistics showed eight percents share for the age group 18-24 years, with overweight [3]. This is the age at which most students belong to the student's youth.

The purpose of the present study was to determine the metabolic age and body mass index among the female college students.

Achieving the goal requires solving the following **tasks**:
1. Determine the individual values of BMI.
2. Determine the metabolic age of examined persons.
3. Analyze gained results.

2. METHODOLOGY

The subject of this study were 403 students from the Trakia University Stara Zagora - Faculty of Economics, Faculty of Medicine and Faculty of Agriculture, trained in the discipline of "Veterinary medicine", "Livestock", "Agriculture", "Fishing and aquaculture", "Ecology and environment", "Economics agriculture", "Regional planning and rural development", "Business economy", "Agricultural engineering". The average age of the people surveyed was 19,8 years.

Was applied anthropometry. Height was measured according to the standard methodology. Analyzer was used for the composition of the body weight (Body Composition Analyzer, BC-420MA 'Tanita') for determining the metabolic age and body mass index. Also was used, the international classification for the index of body mass, which is accepted by the World Health Organization - WHO [7].

3. RESULTS
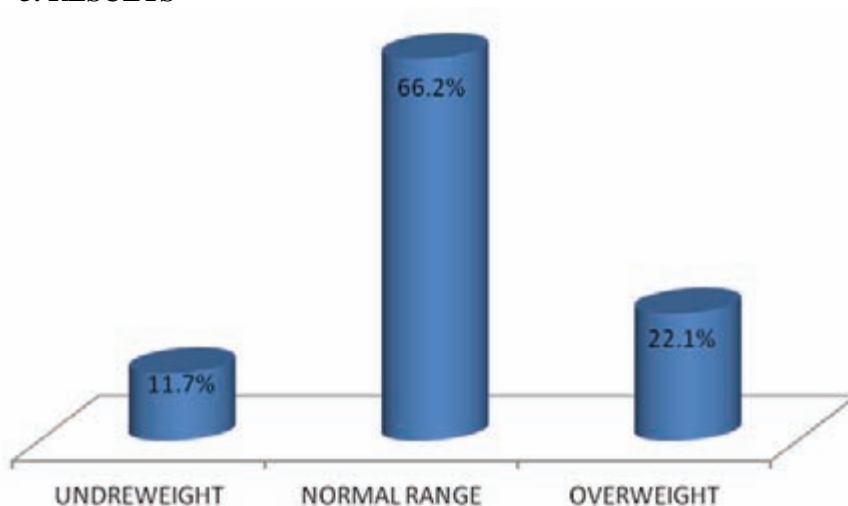
Figure 1 The relative proportion of respondents, classified by BMI

Figure 1 is covered by the relative proportion of the respondents, divided by BMI. Women's share of overweight students was 22.1%. The made comparison with the data from the health surveys of the population in Bulgaria in March 2001 (for the age group of 18 to 24years, were 8% with overweight), shows nearly three times higher relative proportion at our people surveyed.

Figure 2 shows data from the relative parts of the respondents, classified by the metabolic age, compared with the biological. People with metabolic age older than the biological (with a slower metabolism) are often with obesity [4, 6, 8]. Research scope of obesity at the female students, aiming to study the relation with BMI - metabolic age. At first glance shows that the relative partitions of persons with the metabolic age,

which is bigger than the biological - 41% (Fig. 2) are almost two times more than those with overweight – 22,1% (Fig. 1). The available literature did not show data sources for the study of the metabolic age at female students. If we do an analysis, however, we can let up that the female students with slower metabolism in this study are more than six times more than their counterparts (18-24 years) in Bulgaria.

This study shows an interesting fact. People with metabolic biological age older than 41% (Fig. 2), and overweight people are 22,1% (Fig. 1). This means that 18,9% to a greater or lesser extent are with lowered metabolism and accordingly with a predisposition to pass towards the group of those with overweight. In this sense, metabolic measurements appeared as a negative indicator for the prevention of overweightness.
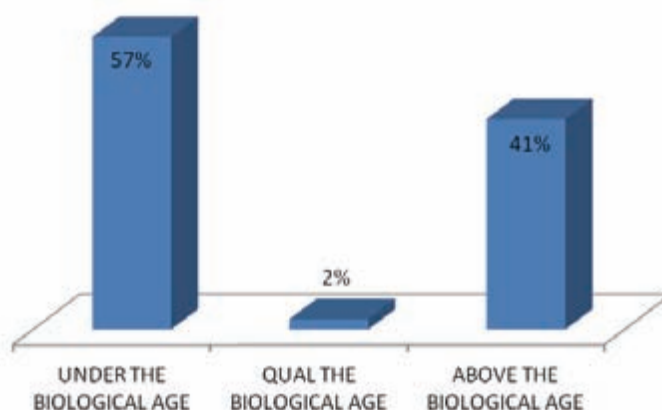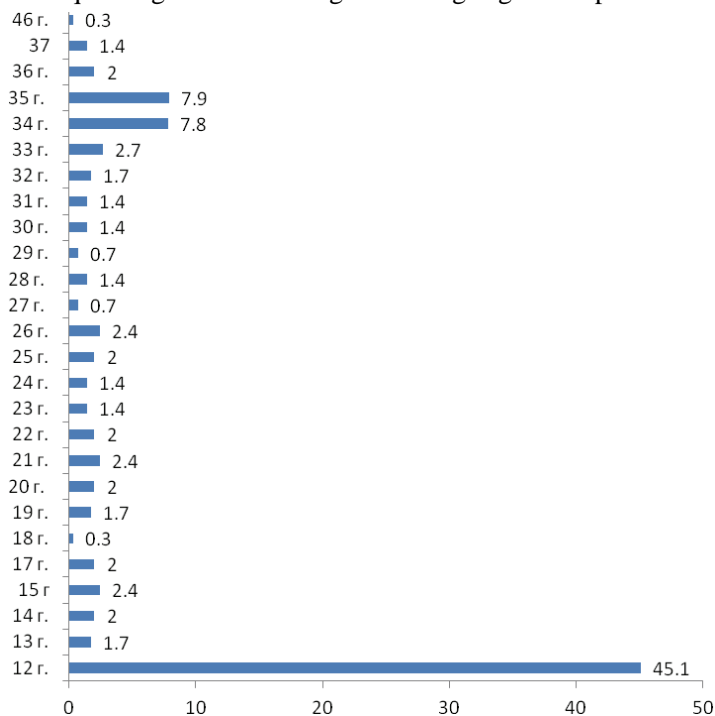

Figure 2 *The relative proportion of respondents, classified by the metabolic age, compared with the biological*
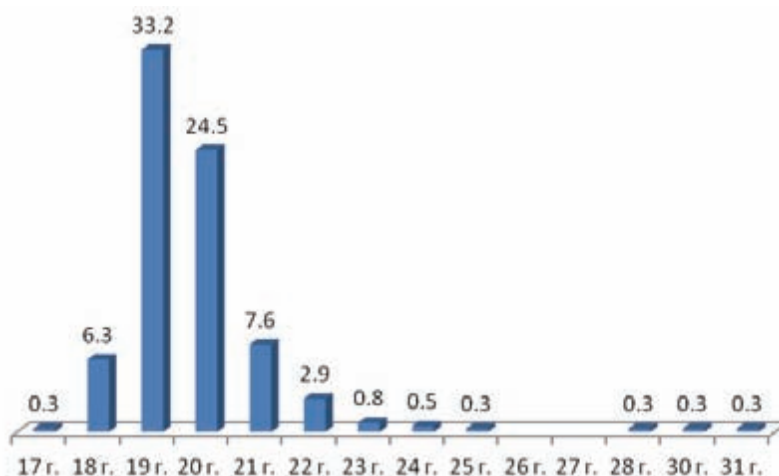
Figure 3 *The relative proportion of people surveyed, divided by the biological age*

Figure 3 shows the relative proportion of respondents, divided according to their biological age. It is obvious that the lowest biological age is 17 years and the largest is 31. The highest is the relative part of the nineteen and twenty years old female students and it is quite logical considering the average age of respondents – 19,8 years.

**Figure 4** *The relative proportion of respondents, classified by metabolic age*

Figure 4 shows the relative partitions of people surveyed, divided by the metabolic age. These results indicate that high percentage – 45,1% of people have metabolism, according to people of age twelve years. It should be noted that during this study, these data have caused many positive reactions. As seen from Figure 1, more than half of women students with a good metabolism - total 59% (57% with metabolic age lower than the biological and 2% with metabolic age, which is equal to the biological).

Research data also reveals data that caused adverse reactions. They showed that the average age group of 19,8 years, a total of 22.2% are with the metabolic age of over 30 years, a large percentage of them (15%) have very high metabolic age (7,8% - 34 years and 7, 2 % - 35 years).

Metabolic age can provide information about the presence or absence of health habits. Awareness of metabolic age can increase the responsibility of their own health. Measurements of metabolic age attracted great interest among the surveyed people.

Detailed analysis of the distribution of metabolic age in accordance with the biological age showed interesting law compliances. At 18, 19, 20, 21, 22, 23 and 31 years was determined the difference of 15 years between the metabolic and biological age.

The data shown in Fig.5 gives impression of the largest relative share of 19 years female students – 6,8%, with a metabolic age of thirty-four years. Near them is also the relative part are the twenty years female students – 6,1%, which have a metabolic age of thirty-five years. Metabolic age thirty-three years have the eighteen years – 1,7%, to thirty-six are the twenty-one years – 1,7%, to thirty-seven to twenty-two years - 1% and forty-six are the thirty-one years – 0,3%. The difference between biological and metabolic age of 15 years is a significant and informs that the metabolism slows down at the respondents with all consequences arising from this fact.
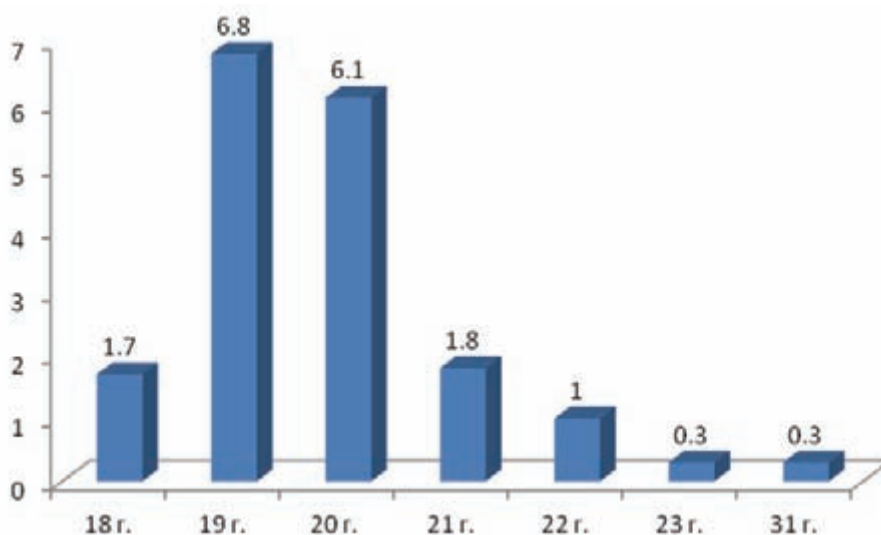
Figure 5 *The relative part of the respondents with the metabolic age 15 years greater than the biological age*

4. CONCLUSIONS AND RECOMMENDATIONS

1. Female overweight students are almost three times more than their counterparts in the country.

2. This study showed a high relative proportion of women students with a slower metabolism.

Executed monitoring of the metabolic age opens up opportunities for increasing the women's motivation for keeping healthy lifestyle.

5. REFERENCES

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RESEARCH OF THE METABOLIC AGE AND BODY MASS INDEX FOR FEMALE STUDENTS

Metabolic age - this feature takes into account, the basic metabolism and all the basic physical parameters and the determining of age, which corresponds to this type of metabolism.

The aim of the research is to establish a metabolic age and the index of the body mass (Body Mass Index) for students.

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Key words: metabolic age, female student, body mass index