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## ANTHROPOMETRICAL STATUS AND GENDER DIFFERENCES AT 12 YEARS OF AGE

### Introduction

The assessment of growth in children is important for monitoring health status, identifying deviations from normality and determining the effectiveness of interventions[1].

The significance of timely detection of poor growth in early life resides in its association with adverse functional consequences, including poor cognition and educational performance, low adult wages, lost productivity and, when accompanied by excessive weight gain later in childhood, increased risk of nutrition-related chronic diseases[2].

Kosovo is one of the countries that do not show on the WHO map which shows the standards of rising and development of children of different ages. The aim of this study is to verify the current anthropometric status of pupils of age $12 \pm 6$ months, of both genders, as well as their comparison with the WHO standards of raising and development.

### Methods

In this study was included 62 students (42 male, 20 female), primary school "Iliria" in Prishtina. All measurements were made in the gym during June 2014. From anthropometrical tests were made: body height (BH); body weight (BW); biacromial breadth (BB); elbow breadth (EB); adipose tissue at: suprailiac skinfold (SIS); subscapular skinfold (SSS); triceps skinfold (TRS); and abdominal circumference (AC). It was expected to gain significant correlations between circular parameters, subcutaneous adipose tissue and body mass. Also is achieved significant value between body height, body weight and width parameters. Used methods for the analysis of data are the standard methods from the SPSS, respectively basic statistical parameters, Correlation method and we have compared them.

**Results**

***Table 1.*** *Basic statistical parameters for male and female – morphological status*

| | **MALE** | | | | **FEMALE** | | | |
|---|---|---|---|---|---|---|---|---|
| | Min | Max | Mean | Std. Dev | Min | Max | Mean | Std. Dev |
| BH | 140 | 175.5 | 151.81 | 8.32 | 141 | 168 | 151.98 | 6.85 |
| BW | 28 | 70 | 43.14 | 9.79 | 30.5 | 56 | 44.35 | 7.04 |
| SIS | 4 | 62 | 16.63 | 13.71 | 5 | 35 | 16.64 | 8.69 |
| SSS | 3.5 | 38 | 10.80 | 8.30 | 5 | 36 | 11.18 | 6.96 |
| TRS | 5 | 38 | 13.86 | 8.41 | 5.5 | 25 | 13.53 | 5.57 |
| AC | 50.5 | 95.5 | 67.90 | 10.06 | 53.5 | 79 | 66.25 | 7.71 |
| EB | 5.3 | 7 | 5.98 | 0.44 | 5 | 6.4 | 5.84 | 0.41 |
| BB | 29.3 | 36.9 | 33.19 | 1.84 | 23.5 | 36.5 | 32.86 | 2.97 |
| **N** | 42 | | | | 20 | | | |

Table title row: **Descriptive Statistics**

Based on the basic statistical parameters, it was noticed that there is a hete-rogenic distribution of results, especially as regards body weight with the male pupils. The distribution of results between the maximal and minimal result are 28-70 kg, with the average of 43.14 ± 9, 79 standard deviation, while with the female pupils is noticed a homogenous group, where the standard deviation is significantly lower than with the male pupils at all variables. It is characteristic the fact that except with the body breadth, in all other female variables is more developed in the sense of rising.

***Table 2.*** *Correlations between variables - males*

| | BH | BW | SIS | SSS | TRS | AC | EB | BB |
|---|---|---|---|---|---|---|---|---|
| **BH** | 1 | | | | | | | |
| **BW** | .713[**] | 1 | | | | | | |
| **SIS** | .384[*] | .858[**] | 1 | | | | | |
| **SSS** | .386[*] | .834[**] | .958[**] | 1 | | | | |
| **TRS** | .473[**] | .849[**] | .900[**] | .903[**] | 1 | | | |
| **AC** | .485[**] | .902[**] | .915[**] | .904[**] | .848[**] | 1 | | |
| **EB** | .648[**] | .815[**] | .573[**] | .509[**] | .559[**] | .649[**] | 1 | |
| **BB** | .700[**] | .774[**] | .551[**] | .506[**] | .562[**] | .647[**] | .781[**] | 1 |

Table title row: **Correlations MALE**

**\*\*. Correlation is significant at the 0.01 level (2-tailed).**

**\*. Correlation is significant at the 0.05 level (2-tailed).**

***Table 3.*** *Correlations between variables - females*

| | BH | BW | SIS | SSS | TRS | AC | EB | BB |
|---|---|---|---|---|---|---|---|---|
| | **Correlations FEMALE** | | | | | | | |
| **BH** | 1 | | | | | | | |
| **BW** | .585** | 1 | | | | | | |
| **SIS** | -0.024 | .709** | 1 | | | | | |
| **SSS** | -0.176 | .499* | .791** | 1 | | | | |
| **TRS** | -0.088 | .666** | .894** | .843** | 1 | | | |
| **AC** | 0.388 | .906** | .783** | .706** | .786** | 1 | | |
| **EB** | .577** | .663** | 0.264 | 0.202 | 0.392 | .557* | 1 | |
| **BB** | 0.421 | 0.326 | 0.176 | -0.068 | -0.107 | 0.287 | 0.222 | 1 |

**\*\*. Correlation is significant at the 0.01 level (2-tailed).**

**\*. Correlation is significant at the 0.05 level (2-tailed).**

In the tables 2 and 3, are obtained high correlative values between the tests of circular parameters and tests of subcutaneous adipose tissue with the body weight, and between the body height, body weight and the breadth parameters on the level 0.01 of significance.

### Discussion

The findings show that female, almost in all measured variables, are more developed at this age. This can be noticed in the variables of body height, body weight and subcutaneous adipose tissue, while in the variables of abdominal circumference and body breadth is noticed that male are more developed (differentiated). This fact is also confirmed by the following authors: Group, W. M. (2006), WHO, (2007), and Baghianimoghadam, et al. (2012), which made a comparison with the WHO data where the indicators of rising and development of this age confirm the same in the variables of body weight and height. But, comparison of the such a symbolic sample of this research with the WHO data shows an approximate trend of rising and development of children included in the research, and the difference is as follows: Female pupils, age 12 in this research – body height=151.97 cm<OBSH=151.2 – 156.00 cm, the male pupils of the age 12, body height=151.80 cm<OBSH=149.1 – 155.40 cm, which means the difference is minimal.

Based on the data of correlations, it is noticed that male gender obtained higher correlative values in the level of significance 0.01 between the variables of height and the body weight and breadth, as well as between the body weight and all other variables which have realized high correlative values between themselves. Such a situation is not the same at the female gender. High correlative values have been achieved between the body height and body weight, and the elbow breadth. The body weight has achieved high correlative value with the variables of adipose tissue and the elbow breadth. But, the characteristics for the female pupils of this age are the variables of

biacromial breadth, which did not achieve high correlative value with none of other variables. Based on this, we can conclude that the sample of our research shows that we have children developed in accordance with the world standards, but within the surveyed group, differences, especially in the parameters of adipose tissue, are very much expressed. This may be a result of dynamic changes and economic categories of the population. In the next research, we will increase this sample numerically and in the aspect of geographical outreach within the Kosovo.

### Acknowledgement

This work is part of a research which is expected to be continued with much bigger sample, and intends to extract results of different ages, which will present standard values of rising and development of the population in Kosovo. In addition, the future orientations will be focused on identification of health of the Kosovo population based on the age and to find out possible health problems among the various ages aiming to avoid them as earlier as possible. This research is expected to have interdisciplinary character, which means it will include experts from various field.

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*The aim of this study is to verify the current anthropometrical status of the pupils of the age 12, as well as to compare it with the standards of raising in accordance with the WHO standards. In the study were included 62 pupils (42 male and 20 female). The anthropometric tests were done in height, weight, biacromial and elbow breadth, subcutaneous adipose tissue at the : suprailiac skinfold; subscapular skinfold; triceps skinfold, as well as the abdominal circumference. The results showed that there was a heterogenic distribution of results, especially in the body weight, where the distribution between the minimal and maximal results is 28-70 kg, with the average 43, 14 ± 9, 78 of standard deviation with the male pupils, while with the female pupils was noticed more homogenous group and the standard deviation was significantly lower than with the female pupils in all variables. The findings show that almost in all measured variables female pupils are more developed at this age, especially the body high, body weight and subcutaneous adipose tissue, while as regards the abdominal circumference and body breadth, the male pupils are more developed. Comparison of symbolic sample of this research with the WHO data shows an approximate trend of raising and development of children which were included in this research, and the difference is as follows: Female pupils age 12, body height=151.97 cm<OBSH=151.2 – 156.00 cm, male pupils of the same age included in the research, body height=151.80 cm<OBSH=149.1 – 155.40 cm, which means the difference is minimal.*

**Key words:** *anthropometric status, standards for raising, differences, gender*