

## THE EFFECT OF INITIAL AND FINAL MEASUREMENT IN THE BODY MASS INDEX IN WOMEN

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### Abstract

The paper aims at impact the physical education (PE) curriculum between initial and final measurement at body mass index (BMI) in women. This paper is an important paper-experiment in determining the body mass index (BMI) of women as well as the impact of the curriculum of physical education (PE). Our paper-experiment entity is (N = 100) aged 13, 14, and 15 of the female gender of the primary school "Asdreni" from the village of Glogje of the municipality of Tearce-Tetovo. In this paper are included two parameters (body mass and body height) and body mass index (BMI). Through the T-test method, significant statistical values have been found between the initial and the final measurement. In the variables of this paper, the experiment shows that body height in the age group 13-14 years has a statistically significant difference, while in the age group 14-15 the distribution of values begins to stabilize. However, in body mass, all age groups have normally dispersed values. Through the body mass index (BMI) it shows that treated children have weight within normal limits. Based on the results we have presented for the paper-experiment we can conclude that the impact of the physical education (PE) curriculum is undeniable in the body mass index (BMI).

**Key words:** physical education (PE), body mass index (BMI), women.

### Introduction

The main dimensions of youth age are growth and development of the body; these two parameters accompany man from birth to maturity. In this context, physical education (PE) has become a most suitable framework for the development of programmes aimed at increasing children's physical activity (PA) levels, specifically through the application of methods that positively influence their out-of-school behaviour (Elder, J.P. et al....2010; Viira, R., et al.. 2012). The use of monitored programmes in the Physical Education (PE) curriculum successfully increases out-of-school PA and reduces BMI in 11-12-year-old students (Grao-Cruces, A., 2016). The students monitoring program directly affects in effect of curriculum on physical education (PE) as the main indicator is the increase of physical activities outside the school and the reduction of body mass index (BMI) on students who attend the physical education (PE) (Grao-Cruces, 2016). The interventions that combined physical activity and nutritional education had more positive effects in the reduction of body mass index among school-age students than when they were applied individually (Roggia Friedrich, R., et al...2012). Physical education (PE) lessons are a particularly favourable framework for the development of programmes and attitudes aimed at increasing PA and reducing sedentariness (Cothran D.J., 2010; Subramaniam P.T., 2007) by means of methods devised to influence students' out-of-school behaviours (Martínez-López, J. E. et al...2012; Trost S.G., et al....2000). Physical education is a favourable educational framework for the development of programmes aimed at

increasing physical activity in children and thus reducing sedentarism. The progressive increase of overweight students demands global control and follow-up measurement of these behaviours in both in and out of school (Martínez-López, J. E. 2012). The paper aims at impact the physical education (PE) curriculum between initial and final measurement at body mass index (BMI) in women. This paper is an important paper-experiment in determining the body mass index (BMI) of women as well as the impact of the curriculum of physical education (PE).

### Methods

Sample-Our experiment-paper bodies are (N = 100) aged 13, 14, and 15 years old of the female gender of the primary school "Asdreni" from the village of Glogje of the municipality of Tearce. The sample for this research is selected sample, but all are able to attend the lesson at the physical education class. Also, all children have completed the same tasks as foreseen in the curriculum for grades VI, VII and VIII. The entities of our work are divided into three sub-modules: The first group of entities includes 34 children aged 13 years. The second group of entities includes 33 children aged 14 years. The third group of entities includes 33 children aged 15 years. For all tested, measurements were made during the physical education classes, which were evaluated at the beginning (September) and at the end (May) of the 2018-2019. These children attend the physical education classes for three (3) classes.

Show of morphological variables: weight and Height. During the application of these two measurements, they were taken based on the author's (Mandarić S. et al 2011; Kovac; M., Strel; J., 2012).

**Statistics Analysis**

Data analysis is performed using the SPSS 21.0 version statistical software for Windows, through the T-test are presented significant values. Also calculated is the annual growth of these age groups, the annual change of the measured

parameters as well as the body mass index (BMI) analysis among the variables we have measured.

**Results**

Through the T-test method, significant statistical values have been found between the initial and the final measurement. In the variables of this paper, the experiment shows that body height in the age group 13-14 years has a statistically significant difference, while in the age group 14-15 the distribution of values begins to stabilize.

Table 1. Differences between initial and final measurement.

			Mean1	Mean2	Differences Mean	Std. Dec.	T	Sig.
13 yrs	Weight	Kg	40.94	44.65	-3.7071	2.34929	-5.904	.000
	Height	M	1520.7	1562.1	-.0414	.01994	-7.772	.000
14 yrs	Weight	Kg	48.37	51.20	-2.8300	1.74201	-8.898	.000
	Height	M	1578.0	1618.0	-.0400	.02691	-8.142	.000
15 yrs	Weight	Kg	51.27	54.49	-3.2150	2.21722	-6.485	.000
	Height	M	1603.5	1646.5	-.0430	.02658	-7.236	.000

After inspection on table no. 1 are presented the variables such as: body height and body weight between initial and final measurement on children of 13 ages. The value of the above table confirms that the variability of body height between the initial and the final measurement has a difference, while statistically are significant at the level of (p <.000). At body weight, the difference between these two measurements is slightly higher for 3.70 kg, as well as these two measurements are statistically significant at the level of (<.000).

At the age of 14, in statistical parameters were observed differences between measurements, they are also statistically significant at the level of (p <.000). In the treatment of these two parameters expressed at the age of 15 we notice that both parameters have pronounced more the values. We can mention that in the variable of body height and the difference between the initial and the final measurement is higher for 40 mm. While in the variable of body weight where the values are presented and it is shown they have begun to stabilize during this age. Shown data statistically are significant in the value of .000.

**Annual growth of 13, 14, 15 years old**

Further study was made to find the annual difference between the measured entities in our work. In table no. 2 and 3 are presented growth and development data or variable changes measured between 13 and 15 years of age.

Table no. 2 - Annual growth (13-14-15).

	13-14 years	14-15 years
Height	57.3	25.5
Weight	7.43	2.9

As we can see the most pronounced difference is between 13 and 14 years old compared to the group of 14-15 years old, with all of those what the value of the parameters has shown to us, we may say that the impact of physical education is

more pronounced in both age groups, because the changes affect how children perform tasks during the physical education class.

Table no. 3 - Annual change of age 13, 14 and 15 years.

	Height	Weight
Age 13	1520.7	40.94
Age 14	1578.0	48.37
Age 14 - 13	57.3	7.43
Age 14	1578.0	48.37
Age15	1603.5	51.27
Age 15 - 14	25.5	2.9

Annual changes measured between the ages of 13 and 14 show that the difference between these two ages for body height is 57.3 mm, while for body weight is 7.43 kg.

While for the age of 14 and 15 the difference between the two age groups for body height is 25.5 mm, however, the body weight is 2.9 kg, with this we can say: that the distribution of values deviates from the normal distribution which shows that bodily growth begins to stabilize in the second age group that we have treated with.

**Body Mass Index Analysis (BMI)**

The Body Mass Index represents the report between two morphological variables measured: Body weight (kg) and body height (m<sup>2</sup>), which is the best indicator that has found great use in assessing the body's "normal weight".

The Body Mass Index is calculated based on this formula: IMT - Body weight (kg) / Body height in square (m<sup>2</sup>).

Table no. 4 Body mass index (BMI) values.

	Min.	Max	Mean
13 yrs	17.1	24.3	20
14 yrs	17.3	26.4	20.5
15 yrs	18.0	21.5	19.5

In table no. 4 is represented the average value (X), the minimum value (Min.) and the maximum value of ( BMI) calculated for the entity aged 13, 14 and 15: of the tested that we have take for

experimentation in our paper. As we have confirmed the data in table no. 4 shows that the BMI values are "ideal weight" for the entities measured in our study.

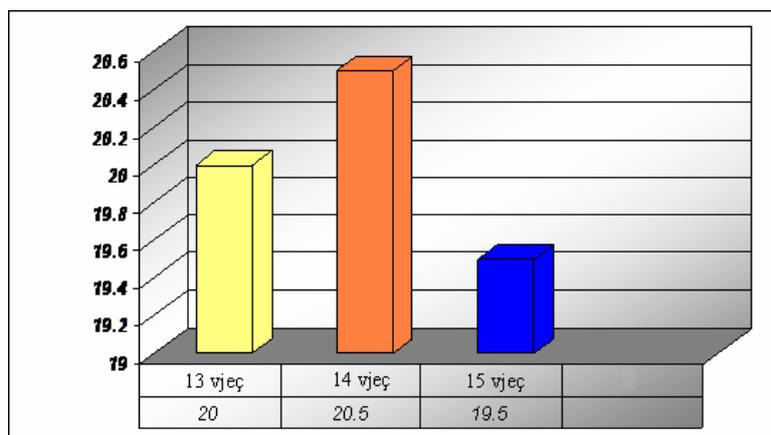


Figure 1. Graphic representation of the body mass index (BMI).

### Discussion and conclusion

However, in body mass, all age groups have normally dispersed values. Through the body mass index (BMI) it shows that treated children have weight within normal limits (Paušić J.2007; Gligorijević S. 2008). When the interventions with physical activity and nutritional education were combined, the result of the meta-analysis (n= 9,997) presented a statistically significant effect in the reduction of body mass index in school-age students, with a standardized mean difference: - 0.37 (95%CI: -0.63; -0.12)(Roggia Friedrich, R., et al..2012).Based on the results we have presented for the paper-experiment we can conclude that the impact of the physical education (PE) curriculum is undeniable in the body mass index (BMI). Adolescents experience changes on their abilities and appreciate, they understand complex situations which are need to be gained independently (Stang J.2008). On these parameters of this experiment it seems that the body height in the group of age 13 - 14 years has marked differences, while in the group age of 14-15 years the distribution of values begins to stabilize.However, the body weight in all age groups is normally dispersed. Although we have also calculated the growth values of the body where the growth and development between these parameters is presented in the same way as above.

However, the difference between the ages is reasonable after these age groups are characterized by changes in the adolescent phase (Troost S.G., et al. 2000). Although this particular phenomenon occurs, the impact of physical education on these two parameters is indisputable, but we should bear in mind that during the classes' professional work should be done on growth influence and development of these age groups that we have get for treatment. Also through BMI it shows that treated children have weight within normal limits.

As we have seen above, here we have the same values and this can prove that the impact of the curriculum on physical education is undeniable in the growth and development of youth age. Growth and development are close and close processes that are one of the most important factors for the development of the teaching process of physical education. However, the most pronounced changes are during the adolescent phase both in the inner and outer occurrence, we may say that this stage is also characterized by the influence of physical education, which are applied during kinesiological tasks and actions (Faletar L.2007;Paušić, J.2009). Adolescence age is more appropriate age when the correlation of these two phenomena is important in the development, progress and personality of the female gender in general.

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