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Differences Between Children`S Antropometric and Physical Fitness Characteristics Urban and Rural Areas

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Abstract: *Purpose: The paper aims differences between children in urban and rural area of anthropometric characteristics and physical fitness in children aged 13 years old. Material and Methods: The sample of entities is 80 children aged 13 years old male, who are divided into two sub-groups such as 40 children from the center of Pristina and 40 children from the village Bardhosh of Prishtina. The sample of variables consists of 10 anthropometric variables and physical fitness, from those in anthropometric characteristics are variables and struck 3 of them 7 physical fitness. Results: Children from urban areas have shown better values for anthropometric characteristics, while children from rural areas have shown better performance physical fitness indicators. The T-test confirmed statistically significant differences only in the variables with body mass (p= 0.030), body mass index (p= 0.004). Courses in physical fitness have statistically significant differences in almost all variables vertical jump (p= 0.072), sit-up me worth (p= 0.000) upper-back (p= 0.009), sit and reach (p= 0.065) overhead medicine ball throw (p= 0.009). While in the body mass index (BMI) classification these body mass variables have shown significant differences (p= 0.000), body mass index (p= 0.000), standing long jump test (Mean Diff. 5.8, p= .078), sit-up (p= 0.000), upper-back (p= 0.003) and sit and reach (p= 0.050). Conclusions: We can find that children from urban areas have shown better value in anthropometric characteristics, while children from rural areas have shown better value in physical fitness.*

Keywords: *Differences, urban and rural areas, anthropometric, physical fitness, children.*

Introduction

Economic and social factors exert a greater influence on the development of somatic features than the development and function of children. It is more important to consider living in urban settlements and the number of children in the family is very important for children with good physical health (Siniarska et al., 2021).

In this case, these two factors are related to each other and constitute a very important and interesting combination. However, a type of socio-economic model can develop and modify the physical and biological development of a young human body. Many opinions from different authors analyze the above factors which emphasize the fact that depending on the area of residence, well-off families provide better conditions for the development of their children. In contrast (Mack-Inocentio et. al.,D, 2020)found no relation between the motor performance capabilities and the size of the population. Further, the results of the MOMO study conducted in Germany show that the motor performance capabilities of children and juveniles from rural and urban areas do not differ (Thomas et al., 2021) but that children and juveniles from rural areas have a twice as high chance of being physically active outdoors at least four times a week (Jarani et al.,2016). Several studies have correlated the performance level with different lifespan condition leading researchers to assess a shared protocol for testing physical performance. Indeed, since 1988 within Council of Europe (CE) the EUROFIT battery test was accepted by numerous European countries as an uniformed procedure for the assessment of health-related, functional and motor status of people. Differences within gender and manhood, intellectual disability, living areas influence (urban or rural) or sport practice have been investigated in different country (not only in Europe) (Mack-Inocentio et al., 2020). However, evidence is still inconclusive, since it was recently found that children participating in sport clubs demonstrate higher fitness indices, over a 4-year period, as compared to their non-participating peers, irrespective of living area (urban or rural) (Golle K., 2014; Tsolakis et al., 2022). According to data from the Kosovo Agency of Statistics (KAS), the population of Kosovo lives mainly in rural areas with 62%, while in urban areas with 38% (ASK, 2011). It should be noted that in the Municipality of

Pristina mainly the population is in the urban area, while a smaller number in the rural area. In this paper its main purpose is the differences between children in urban and rural area of anthropometric characteristics and physical fitness in children aged 13 years.

Methods

Participants and Study Design

The sample of subjects is 80 children who are 13-year-old male children. They are divided into two sub-groups such as 40 children from the center of Pristina and 40 children from the village of Bardhosh in the Municipality of Pristina. In this case, the children of the lower secondary school of pre-university education were evaluated, who voluntarily participated in this study. Before the study started, in coordination with the school principal and the teachers of Physical Education, Sports and Health, only 13-year-old children were selected. All participants were informed of the risks, benefits, and nature of the study before the experiment began. The statements of the parents with their consent signed by all subjects based on the Helsinki Declaration were also taken.

Anthropometric and physical testing

Anthropometric Measurements: The sample of variables consists of 10 anthropometric and physical fitness variables, of which anthropometric variables are 3 while of that physical fitness are 7 skills. Body mass is estimated in light clothing and without sneakers with an accuracy of up to 0.1 kg (Tanita BC530), while body height is estimated with a stadiometer with an accuracy of up to 1 cm (SECA, Germany). Body mass index (BMI) is a value derived from a person's mass (weight) and height. BMI is defined as body mass divided by the square of body height, and is expressed in units of kg/m2, resulting from mass in kilograms and height in meters (Lahav et al.. 2021).

Evaluation of Physical Fitness: Assessment of explosive strength in this scope are included tests. The two tests for evaluating explosive strength were the Standing Broad Jump (SBJ) and the Vertical Jump Test (VJT). They were performed in accordance with the described protocols (Thomas, et al., 2021). Repetitive strength - Two tests have been included in this ability, such as sit-up test for 30 seconds (Sit-Up) and Upper-back test for 30 seconds (Upper-back). The tests were performed on fixed leg sit-ups, while Upper-back arms fixed on the feet resting on the ground for a time of 30 seconds. These tests measure the endurance of the abdominal, thigh and arm muscles (Richard, et al., 2020). The sit and reach were administered with a standard protocol with trained technicians using a sit-and reach box (Ayán Pérez, et al..2020). The participant sat on the floor with the legs extended, shoulder width apart, and feet flat against the box. With one hand on top of the other, the participant slowly slid the hands across the top of a ruler attached to the top of the box until maximum reach was attained. The participant completed three reaches and the best reach was recorded. Measurements were recorded to the 25 cm and converted to centimeters for analysis.

Overhead Medicine Ball Throw: Subject stands behind the starting line with feet slightly apart in line with shoulders, then he throws medicine ball overhead. Two tests are performed and the longest distance is reported in cm. This test evaluates the upper limb strength (Wenjuan et al., 2022). 10x5 m Shuttle run test (10x5): Subject is required to run back and forth as fast as possible ten times, along a 5 m course. Test is performed twice, and the best performance is chosen and expressed in decimals. This test evaluates speed of movement, agility, and coordination (Siniarska, et al., 2021; Tsolakis, et al., 2022).

Before carrying out this paper-experiment, the researchers involved in the project participated in the training to guarantee the standardization, validity and reliability of the measurements. The tests were part of the EUROFIT test batteries, validated and standardized by the European Council. In the data processing methodology was used the program SPSS version 22. In which are presented the statistical parameters and the analysis of the T-test for testing two independent groups among themselves where the statistically significant differences are presented**.** In this case the classification of body mass index (BMI) will be done.

Results

Table 1. *Anthropometric and physical fitness characteristics between urban and rural areas*

	Total (80)		Urban (40)		Rural (40)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Body mass (kg)	41.1	8.3	**43.2**	7.6	39.2	8.5
Body height (cm)	1500.9	82.7	**1507.8**	75.7	1494.1	90.0
Body mass index (kg/m^2)	18.1	2.5	**18.9**	2.46	17.28	2.47
Standing long jump test (cm)	135.6	14.7	134.0	17.1	**137.7**	11.7
Vertical jump test (cm)	19.6	4.1	17.6	3.9	**21.6**	3.2
Sit-up (sec.)	19.5	4.1	17.5	3.9	**21.4**	3.3
Upper-back (sec.)	22.9	63	21.2	6.3	**24.7**	5.1
Sit and reach (cm)	-2.5	6.9	-3.9	6.2	**-1.0**	7.5
Overhead medicine ball throw (cm)	291.9	56.4	275.6	59.6	**308**	48.5
10x5 shuttle test (sec.)	416	5.2	41.5	5.6	**41.6**	4.6

According to the inspection in table 1. in anthropometric variables and physical fitness, see that children from urban areas have higher values in anthropometric variables, while in rural areas have higher values in physical fitness. In the variable body mass in urban areas they showed an average value of 43.2 (7.6), while in the rural area it showed an average value of 39.2 (8.5), while body height in the urban area showed an average value of 1507.8 (75.7), while in the rural area it showed an average value of average 1494.1 (90.0). It should be noted that the body mass index of children in urban areas have shown value within normal limits, while in children from rural areas have shown low values of underweight. In this case it should be noted that the variable thigh circumference in children in the urban area has an average value of 45.8 (5.6), while in the rural area with an average value of 42.3 (5.4). Other variables have approximate results between urban and rural area in anthropometric space. Significant difference was shown by all tests between children from urban and rural areas, except the 10x5 shuttle test. The variable stranding long jump test in children in the rural area with a value of 137.7 (11.7) while the urban area has a value of 134.0 (17.1), while the variable vertical jump test has a value of in the rural area has a value of 21.6 (3.2), while the urban area with value 17.6 (3.9). The sit-up variable in rural areas has a value of 21.4 (3.3), while in urban areas it has a value of 17.5 (3.9), while the upper-back has a value in rural areas has a value of 24.7 (5.1), while the urban area with results 21.2 (6.3). The sit and reach variable has a value in the urban area showed a low value of -3.9 (6.2), while in the rural area with a value of -1.0 (7.5), while the variable overhead medicine 3 ball throw has a high value in the rural area of the result 308 (48.5), while in the urban area with a value of 275.6 (59.6).

Table 2. *Differences between anthropometric and physical fitness of urban and rural*

	Urban Mean/Std. Dev.	Rural Mean/Std. Dev.	Sig.	Mean Diff.
Body mass (kg)	**43.2**(7.6)	39.2(8.5)	0.030	-4.0
Body height (cm)	**1507.8**(75.7)	1494.1(90.0)	0.462	-13.7
Body mass index (kg/m^2)	**18.9**(2.46)	17.28(2.47)	0.004	-1.6
Standing long jump test (cm)	134.0(17.1)	**137.7**(11.7)	0.331	3.2
Vertical jump test (cm)	17.6(3.9)	**21.6**(3.2)	0.072	2.2
Sit-up (sec.)	17.5(3.9)	**21.4**(3.3)	0.000	4.0
Upper-back (sec.)	21.2(6.3)	**24.7**(5.1)	0.009	3.4
Sit and reach (cm)	-3.9(6.2)	**-1.0**(7.5)	0.065	2.9
Overhead medicine ball throw (cm)	275.6(59.6)	**308**(48.5)	0.009	32.7
10x5 shuttle test (sec.)	41.5(5.6)	**41.6**(4.6)	0.970	.0

According to the data presented by urban and rural areas we see that we have significant differences between the two areas. The body mass variables showed statistically significant differences in value (Medan Diff. 4.0 p = 0.030), the body mass index variables showed statistically significant differences in value (Mean diff. 1.6, p = 0.004). While the physical fitness, vertical jump test with value (Mean Diff. 2.2 p = 0.072), then sit up with value (Mean Diff. 4.0, p = 0.000,) upper back variable with value (Mean Diff. 3.4 p = 0.009), sit and reach (Mean Diff. 2.9, p = 0.065) and the variable overhead medicine ball throw value (Mean Diff. 32.7, p = 0.009).

Table 3. *Anthropometric and physical fitness based on BMI*

	Non-Overweight Mean/Std.Dev	Overweight/Obese Mean/Std.Dev	Sig.	Mean Diff.
N (%)	47	33		
Body mass (kg)	36.3 (5.2)	48.1 (6.9)	0.000	-11.78
Body height (cm)	1489.4 (84.9)	1517.3 (78.4)	0.140	-27.8
Body mass index (kg/m^2)	16.2 (1.2)	20.7(1.4)	0.000	-4.5
Standing long jump test (cm)	138.1(14.0)	132.2(15.1)	0.078	5.8
Vertical jump test (cm)	26.9(6.1	25.7(4.5)	0.365	1.1
Sit-up (sec.)	21.0(3.9)	17.6(3.5)	0.000	3.4
Upper-back (sec.)	24.5(5.1)	20.6(6.3)	0.003	3.9
Sit and reach (cm)	-3.7(7.1)	-.6(6.5)	0.050	-3.1
Overhead medicine ball throw (cm)	288.42(47.3)	297.0(67.8)	0.504	-8.6
10x5 shuttle test (sec.)	41.0(4.5)	42.4(5.8)	0.221	-1.4

After classifying the body mass index, two levels of the body mass index are categorized, such as low weight and normal weight in table 3. In this case significant differences are presented in the groups which are classified in the group of low weight with normal weight. The variable body mass has shown significant differences in value (Mean Diff. 11.78, p = 0.000), the variable body mass index has shown significant differences in value (Mean Diff. 4.5, p = 0.000). In the physical fitness, the standing long jump test has a significant difference in value (Mean Diff. 5.8, p = .078), the sit up test has a significant difference in value (Mean Diff. 3.4, p = 0.000), the upper back test has a difference significant value (Mean Diff. 3.9, p = 0.003) and the sit and reach test have significant differences in value (Mean Diff. 3.1, p = 0.050). The variables body height, leg length, arm length, wrist width, vertical jump test, overhead medicine ball throw and 10x5 shuttle test did not show significant differences between the two groups.

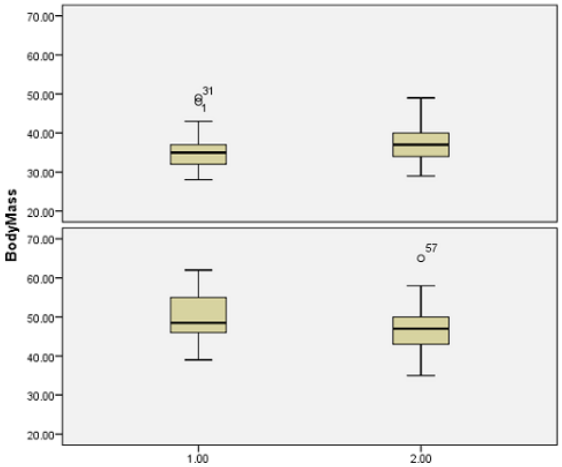

Figure 1. *Body Mass*

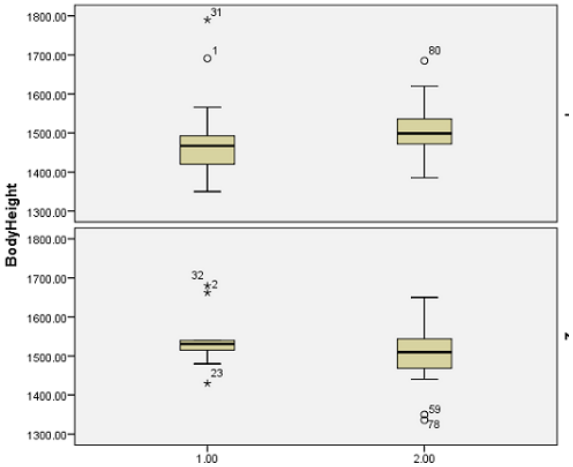

Figure 2. *Body Height*

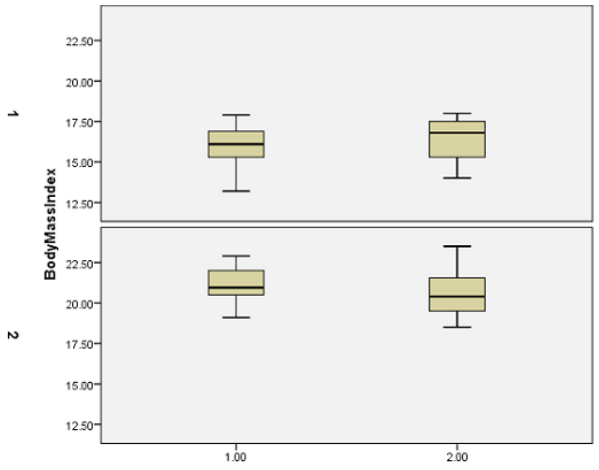

Figure 3. *Body Mass Index*

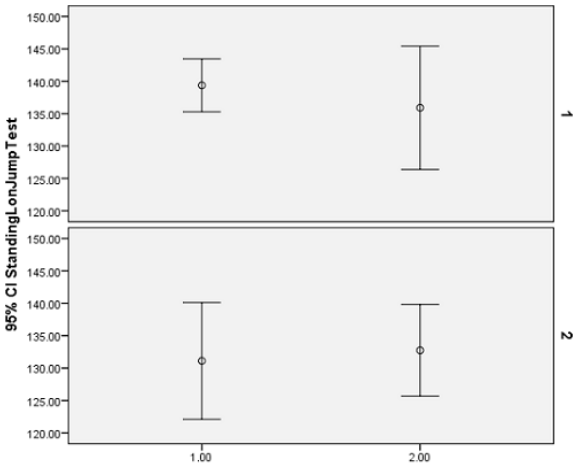

Figure 4. *Standing Lon Jump*

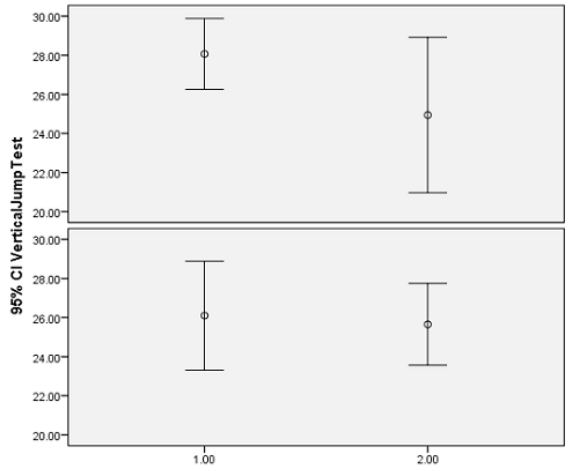

Figure 5. *Vertical Jump*

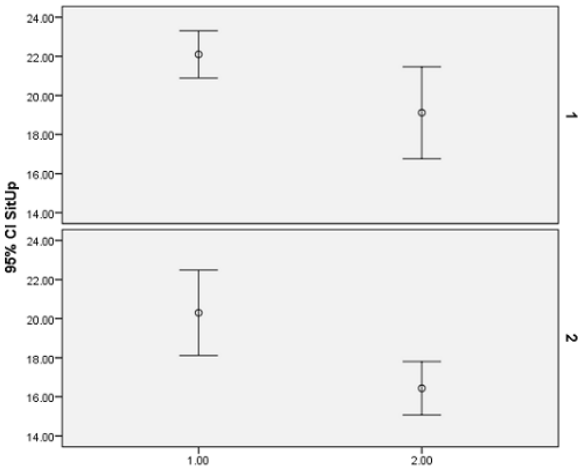

Figure 6. *Sit Up*

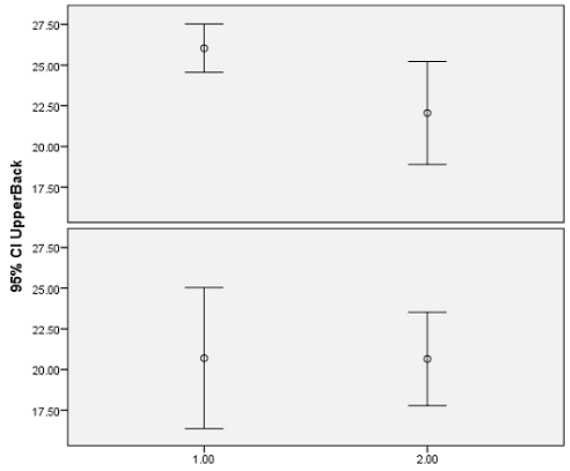

Figure 7. *Upper-Back*

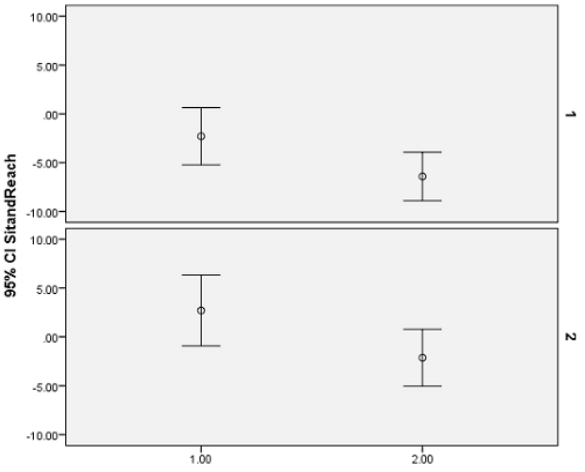

Figure 8. *Sit and Reach*

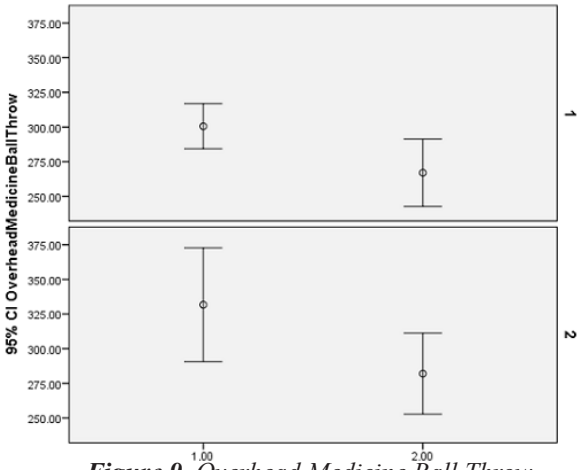

Figure 9. *Overhead Medicine Ball Throw*

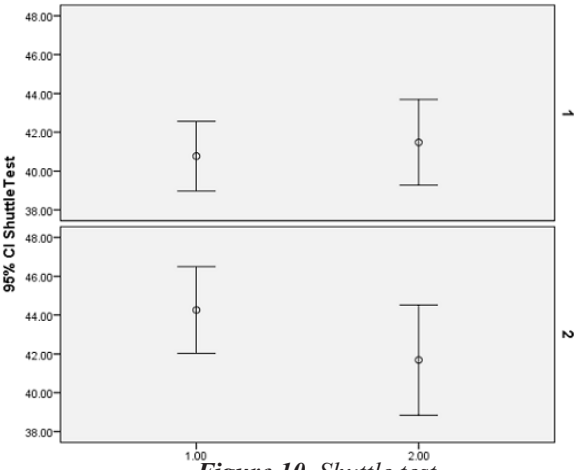

Figure 10. *Shuttle test*

Discussion

According to this paper presented it is seen that anthropometric and physical fitness characteristics of children from urban and rural areas are given. The basic characteristics and statistically significant differences between the two groups, presented as children of urban and rural areas, are also presented in detail and described. In their paper, they studied the effects of social influences in the urban environment on the motor performance skills and activity level of preschool children. It has been reported that children from urban areas are deprived of the level of physical activity and physical fitness as it is due to urban living conditions and free time of children in daily life (Greier et al., 2013). Their study analyzed the effects of social influences on the motor performance capabilities in the urban area of Berlin (Germany), but it did not analyze differences between urban and rural areas. Most studies on the motor performance capabilities in relation to the size of the population have focused on elementary school children and juveniles, while aged children have rarely been analyzed in this context. This is the objective of this study, in which a representative sample of Tyrolean kindergarten children has been analyzed for influences of rural and urban living areas on the motor performance capabilities. It is important to already detect deficits in the development of motor performance capabilities, since children can be influenced very early and no relevant pre-existing impairments exist at this young age (Ketelhut, et al., 2006). Body mass index and body fat percentage are slightly higher in the urban boys and girls but they do not differ significantly. Urban children perform significantly better in the 20 m dash, standing long jump and timed sit-ups. Urban and rural boys and girls do not differ significantly in the flexibility. This study determined if selected levels of urbanization affected the physical fitness status of children in Croatia. The results suggest that the differences in children's health-related physical fitness profiles are dueto the level of urbanization (Ujevic, et al., 2013; Tian, et al., 2021). In contrast, a Turkish study reports, among other things, that no significant differences were found in the cardiopulmonary and motor fitness between the urban and rural group, but the flexibility (SAR and side bending) and muscle endurance (dynamic sit-ups) were significantly higher in the rural group. In addition, flexibility and muscle endurance were significantly higher in the rural children. The significantly lower flexibility, muscle endurance, and strength of urban children might indicate a lower habitual physical activity level(Tinazci,et al., 2009). For example, among Cypriot urban and rural young people, there were significant differences for the standing broad jump, sit-ups, 20m shuttle run, and hand grip tests; there were no significant differences for flamingo balance, sit and reach, plate tapping and speed shuttle run tests (Tinazci,et al., 2009). Onthe other hand, one study conducted in Greece did not findany difference for the measured physical fitness components (flexibility, muscular fitness, cardiorespiratory, and speed and agility) among rural and urban young people (Tsimeas, et al., 2005). A research realized in Croatia showed that children from urban areas show better results in the fitness test 20 m dash, standing long jump and timed sit-ups. Urban and rural boys and girls do not differ significantly in the flexibility. Also, in the research of (Tsimeas, et al., 2005; Ozdireç, et al., 2005) is determined that children from urban areas achieve better results in certain fitness tests than their peers who live in rural areas. Regarding the impact of anthropometric indicators and physical fitness on body mass index in children living in urban and rural areas in the Republic of Kosovo, we can distinguish that in children of urban areas the impact of statistically significant body mass index (BMI) has the variables body mass, body height and 10x5 shuttle test while in rural children have influence with statistical significance on the body mass index (BMI) have the anthropometric variables mass and body height. Tested the impact of some motor skills on body mass index and some subcutaneous adipose tissue and concluded that motor skills have no statistically significant effect on the variables body mass index, triceps adipose tissue and adipose tissue.

CONCLUSION

In general, this usually seems to have a marked difference in anthropometric characteristics and physical fitness in urban and rural areas. In this case children from urban areas have shown better values in anthropometric characteristics, while children from rural areas in physical fitness have shown better values in all tests. Statistically significant differences were also observed in the variables body mass. While other variables did not show statistically significant differences. In physical fitness significant differences in almost all variables, except the test standing long jump test and 10x5 shuttle test. After classifying the body mass index, the two levels of body mass were categorized, such as low weight and normal weight, in this case we have significant differences in these variables body mass index. We can find that children from the urbane area have shown better values in anthropometric characteristics, while children from rural areas have shown better values in physical fitness.

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