The Influence of the Demographic Factor on the Growth and Development of Younger School-Age Girls

Uticaj demografskog faktora na rast i razvoj djevojčica mladjeg školskog uzrasta

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Abstract: *In order to determine the difference in morphological characteristics, a survey was conducted on a sample of 120 fourth-grade elementary schoolgirls from different socio-economic backgrounds in Montenegro. The total sample of respondentswas divided into two sub-samples. One sub-group consisted of 60 schoolgirls from urban and the other 60 schoolgirls of the same age from rural environment. A sample of measuring instruments consisted of 12 measures (body height, arm length, leg length, shoulder width, elbow diameter, knee diameter, body mass, upper arm circumference, lower leg circumference, skin fold of the back, skin fold of the upper arm and skin fold of the abdomen). In the process of statistical data processing, descriptiveand canonical discriminatory analysis were applied in order to identify possible differences between sub-databases. The obtained research data generally indicate the existence of statistically significant differences between sub-samples. This difference is evident in indicators of longitudinal and transversal dimensionality of the skeleton, and in contrast, the difference was not evident in indicators of volume and body weight and subcutaneous fat tissue. Girls from the urban environment were taller and had more pronounced measures in the upper and lower extremities and girls from rural areas had more pronounced measures of knee joint diameter than their peers from urban life.*

Keywords: *morphological characteristics, schoolgirls, primary school, urban and rural environment.*

Sažetak: *Na uzorku od 120 učenica četvrtog razreda osnovne škole iz različitih socio-ekonomskih sredina u Crnoj Gori, izvršeno je istraživanje u cilju utvrdjivanja razlike u morfološkim karakteristikama. Ukupan uzorak ispitanica, podijeljen je na dva subuzorka. Jedan subuzorak je brojao 60 učenica iz urbane životne sredine, a drugi 60 učenica istog uzrasta iz ruralne životne sredine. U uzorak mjernih instrumenata činilo je 12 mjera (tjelesna visina, dužina ruke, dužina noge, širina ramena, dijametar lakta, dijametar koljena, masa tijela, obim nadlaktice, obim potkoljenice, kožni nabor leđa, kožni nabor nadlaktice, kožni nabor trbuha). U postupku statističke obrade podataka, primijenjena je deskriptivna analiza i kanonička diskriminativna analiza za utvrdjivanje mogućih razlika izmedju subuzoraka. Dobijeni podaci istraživanja generalno upućuju na postojanje statistički značajnih razlika izmedju subuzoraka. Ta razlika je evidentna kod pokazatelja longitudinalne i transverzalne dimenzionalnosti skeleta, a nasuprot tome, razlika nije bila evidentna u pokazateljima volumena i mase tijela te potkožnom masnom tkivu. Djevojčice iz urbane životne sredine su imale veću telesnu visinu i imale su više izražene mjere longitudinalne dimenzionalnosti, a djevojčice iz ruralne sredine imale su više izražene mjere transferzalne dimenzionalnosti (dijametar zgloba koljena) od svojih vršnjakinja iz urbane životne sredine.*

Ključne reči: *morfološke karakteristike, učenice, osnovna škola, urbana i ruralna životna sredina.*

INTRODUCTION

Special attention should be focused on the optimal growth and development of anthropological characteristics and abilities of children in childhood. In achieving

Uvod

U dječijem uzrastu posebna pažnja treba da se usmjeri na optimalni rast i razvoj antropoloških karakteristika i sposobnosti djece. Posebnu ulogu u ostvari-

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optimal growth and development of children, a special role is played by teachers who implement the curriculum at a younger school age. The growth and development of children are influenced by endogenous and exogenous factors (Dragutinović, 2019). The growth and development of children takes place in relatively regular and predictable stages, which is not conditioned by calendar but by biological maturity. However, it should be kept in mind that there are certain differences between children in growth and development rate (Mikić, Bašinac, Begović, Pireva and Aljukić, 2016). Endogenous factors that affect the growth and development of children are biological heritage and hormones, while exogenous factors are nutrition, socioeconomic and psychological status, physical activity, climate, season and others (Mišogoj-Duraković, 2008).Overweight and obesity in childhood is a phenomenon that has been permanently accompanying us lately, and it is a global health problem to which we need to pay special attention and look for a quality solution in combating such a phenomenon. Because of overweight and obesity, children at an early age face serious health problem(WHO,2004). School age is a period when it is necessary to monitor growth and development permanently, in order to detect possible irregularities in growth and development as well as early identification of children obesity and malnutrition in time.

Research by some authors aimed to determine the existence of possible differences in anthropological characteristics and abilities between children living in different socio-economic environments, (Reilly and Dorosty, 1999; Tsimeas, Tsiokanos, Koutedakis, Tsigilis and Kells, 2005; Ozdirenc, Ozcan, Akin and Gelecek, 2005; Relly, 2007; Petrić and Novak, 2007; Aberle, Blekić, Ivaniš, and Pavlović, 2009; Horvat, Mišogoj-Duraković and Prskalo, 2009; Tinazci and Emiroglu, 2009; Cetinić, Petrić and Vidaković-Samardžija, 2011, Vasić, Vidović, Vulić, Šnjegota, Šuščević, Bojić and Baroš, 2012; Momčilović V. and Momčilović Z., 2018) indicate that differences exist and that children from the urban living environment are mostly overweight and obese.

The subject of this research is focused on the morphological characteristics of young school children, fourth grade elementary schoolgirls, in order to determine the existence of statistically significant differences between girls of the same age living in different socio-economic environments (urban and rural).

Method Of Work

Data collection for this research was performed during 2019 in six primary schools in Montenegro. In order to meet the territorial representation of the north-

vanju optimalnog rasta i razvoja djece imaju nastavnici koji realizuju program nastave u mladjem školskom uzrastu. Na rast i razvoj djece utiču endogeni i egzogeni faktori (Dragutinović, 2019). Rast i razvoj djece odvija se u relativno pravilnim i predvidjenim etapama, što nije uslovljeno kalendarskom nego biološkom zrelošću. Medjutim, treba imati u vidu da postoje odredjene razlike izmedju djece u tempu rasta i razvoja (Mikić , Bašinac, Begović, Pireva i Aljukić, 2016). Endogeni faktori koji utiču na rast i razvoj djece su biološko nasledje i hormoni, dok su egzogeni faktori ishrana, socioekonomski i psihološki status, fizička aktivnost, klima, godišnje doba i drugi (Mišogoj-Duraković, 2008). Prekomjerna težina i gojaznost u dječijem uzrastu je pojava koja nas permanentno prati u poslednje vrijeme, i to predstavlja globalni zdravstveni problem kojem treba posebno da se posvetimo i tražimo kvaliteno rješenje u suzbijanju takve pojave. Upravo zbog prekomjerne težine i gojaznosti, djeca u najranijem uzrasu se suočavaju sa ozbiljnim zdravstvenim problemima (WHO, 2004). Školsko doba je period kada je potrebno permanentno pratiti rast i razvoj da bi se na vrijeme detektovala moguća nepravilnost u rastu i razvoju te rana identifikacija gojaznosti i pothranjenosti djece.

Istraživanja nekih autora koja su imala za cilj da utvrde postojanje eventualnih razlika u antropološkim karakteristikama i sposobnostima izmedju djece koja žive u različitim socio-ekonomskim sredinama (Reilly i Dorosty, 1999; Tsimeas, Tsiokanos, Koutedakis, Tsigilis i Kells, 2005; Ozdirenc, Ozcan, Akin i Gelecek, 2005; Relly, 2007; Petrić i Novak, 2007; Aberle, Blekić, Ivaniš, i Pavlović, 2009; Horvat, Mišogoj-Duraković i Prskalo, 2009; Tinazci i Emiroglu, 2009; Cetinić, Petrić i Vidaković-Samardžija, 2011, Vasić, Vidović, Vulić, Šnjegota, Šuščević, Bojić i Baroš, 2012; Momčilović V. i Momčilović Z., 2018), ukazuju na to da razlike postoje, te da djecu iz urbane životne sredine uglavnom prati prekomjerna težina i učestala gojaznost.

Predmet ovog istraživanja je fokusiran na morfološke karakteristike djece mladjeg školskog uzrasta, učenica četvrtog razreda osnovne škole, sa ciljem da se utvrdi postojanje statistički značajnih razlika izmedju djevojčica istog uzrasta koje žive u različitim socio-ekonomskim sredinama (urbanim i rualnim).

Metod rada

Prikupljanje podataka za ovo istraživanje izvršeno je tokom 2019. godine u šest osnovnih škola na teritoriji Crne Gore. Da bi zadovoljili teritorijalnu zastupljenost

ern, central and southern regions of Montenegro, schools from Bijelo Polje, Podgorica and Bar were selected. Two schools from each municipality, one from the urban area (urban area) and the other from the rural area (rural area) were selected too.

Sample of examinee

Measurements were conducted on a sample of 120 respondents, fourth grade elementary schoolgirls, aged 10 years +/- 6 months. The total sample was divided into two subsamples: the first subsample consisted of 60 girls from the urban living environment and the second 60 girls from the rural living environment. For the purposes of this study, the sample of examinees was selected by the random selection method.

Sample of measuring instruments

In order to assess morphological characteristicstwelve measures were used: AVIS body height, ADUR arm length, ADUN leg length, ASHIR shoulder width, ADIL elbow diameter, ADIK knee diameter, AMAS body weight, AOBN upper arm circumference, AOBP lower leg circumference, AK skin fold. , skin fold of the upper arm AKNN, skin fold of the abdomen AKNT.

Statistical data processing

The data obtained by measurement, were processed by descriptive and comparative statistics. The significance of the differences between the subsamples was verified by canonical discriminant analysis. All statistical data processing was done using the Statistical Package for Social Sciences software (SPSS 20.0).

RESEARCH RESULTS

Results of descriptive analysis

Based on the performed measurements, the following tables show the parameters of descriptive statistics. All results are grouped in tables according to residential status.

sjeverne, centralne i južne regije Crne Gore, škole su odabrane iz sledecih opština: Bijelog Polja, Podgorice i Bara. Iz svake opštine odabrane su po dvije škole, jedna iz gradskog područja (urbana sredina) a druga iz seoskog područja (ruralna sredina).

Uzorak ispitanika

Mjerenja su sprovedena na uzorku od 120 ispitanica, učenica četvrtog razreda osnovne škole, starosne dobi od 10 godina +/- 6 mjeseci. Ukupan uzorak je podijeljen na dva subuzorka i to: prvi subuzorak je brojao 60 djevojčica iz urbane životne sredine, a drugi 60 djevojčica iz ruralne životne sredine. Za potrebe ovog istraživanja uzorak ispitanica bio je odabran metodom slučajnog izbora.

Uzorak mjernih instrumenata

Za procjenu morfoloških karakteristika primijenjeno je 12 manifestnih mjera: Tjelesna visina AVIS, dužina ruke ADUR, dužina noge ADUN, širina ramena AŠIR, dijametar lakta ADIL, dijametar koljena ADIK, masa tijela AMAS, minimalni obim nadlaktice AOBN, minimalni obim potkoljenice AOBP, кožni nabor leđa AKNL, kožni nabor nadlaktice AKNN, kožni nabor trbuha AKNT.

Statistička obrada podataka

Podaci dobijeni mjerenjem, obrađeni su postupcima deskriptivne i komparativne statistike.

Značajnost razlika između subuzoraka, provjerena je kanoničkom diskriminativnom analizom. Cjelokupna statistička obrada podataka je urađena pomoću softvera Statistical Package for Social Sciences (SPSS 20.0).

REZULTATI ISTRAŽIVANJA

Rezultati deskriptivne analize

Na osnovu sprovedenih mjerenja, u narednim tabelama su prikazani parametri deskriptivne statistike. Svi rezultati su grupisani u tabelama prema rezidencijalnom statusu.

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Table 1. Descriptive parameters of morphological characteristics (girls-urban living environment)

Tabela 1. Deskriptivni parametri morfoloških karakteristika (djevojčice-urbana životna sredina)

Variable	N	Range	Min.	Max.	Mean	Std. Deviation	Variance	Skewness	Kurtosis
AVIS	60	23.00	131.00	154.00	142.60	5.08	25.83	.24	.12
ADUR	60	15.00	57.00	72.00	64.70	3.90	15.25	-.06	-1.03
ADUN	60	17.00	64.00	81.00	71.20	3.88	15.06	.57	-.02
AŠIR	30	8.00	30.00	38.00	32.60	1.73	3.00	1.56	3.02
ADIL	60	3.50	6.00	9.50	7.87	.75	.57	-.17	.23
ADIK	60	3.90	8.00	11.90	9.93	.79	.62	.05	.68
AMAS	60	23.60	26.50	50.10	35.48	4.67	21.80	1.02	2.36
AOBN	60	8.00	18.00	26.00	21.20	2.00	4.01	.82	.14
AOBP	60	8.00	26.00	34.00	30.88	2.04	4.19	-.44	-.24
AKNL	60	6.10	4.20	10.30	7.81	1.76	3.11	-.26	-.91
AKNN	60	8.20	7.40	15.60	11.05	2.25	5.07	.21	-.62
AKNT	60	7.60	7.60	15.20	10.62	1.74	3.03	.63	.27

Legend: Variables - variables, N - number of entities, Range - range of variation, Min. - minimum value, Max. - maximum value, Mean - arithmetic mean, Std. Dev.– standard deviation, square root of variance, Variance - variance, mean square deviation, Skewness - distortion, Kurtosis –curve

Legenda: Variable – varijable N – broj entiteta, Range – raspon varijacije, Min. – minimalna vrijednost, Max. – maksimalna vrijednost, Mean – aritmetička sredina, Std. Deviation – standardna devijacija, Variance – varijansa, prosječno kvadratno odstupanje, Skewness – koeficijent simetričnosti, Kurtosis – koeficijent zakrivljenosti

The values of the basic descriptive parameters for the morphological variables of girls in the urban living environment are presented in table 1. Based on the presented results, it can be concluded that there is a normal distribution for most of the presented variables. There is a more noticeable positive asymmetry in the variables shoulder width (ASIR) and body weight (AMAS), which means that results with lower values in the treated variables predominate.

U tabeli 1, predstavljene su vrijednosti osnovnih deskriptivnih parametara za morfološke varijable djevojčica urbane životne sredine. Na osnovu prikazanih rezultata, može se konstatovati da postoji normalna distribucija kod većine prikazanih varijabli. Izražajnija pozitivna asimetrija prisutna je kod varijabli širina ramena (AŠIR) i masa tijela (AMAS), što znači da preovladavaju rezultati sa nižim vrijednostima u tretiranim varijablama.

Table 2. Descriptive parameters of morphological characteristics (girls-rural environment)

Tabela 2. Deskriptivni parametri morfoloških karakteristika (djevojčice-ruralna životna sredina)

Variable	N	Range	Min.	Max.	Mean	Std. Deviation	Variance	Skewness	Kurtosis
AVIS	60	0.00	139.00	149.00	42.80	2.67	7.13	.83	-.09
ADUR	60	9.00	57.00	66.00	60.45	2.48	6.19	.65	-.65
ADUN	60	9.00	65.00	74.00	68.91	2.19	4.82	.51	-.22
AŠIR	60	6.00	30.00	36.00	32.79	1.48	2.19	.53	.07
ADIL	60	2.30	7.10	9.40	8.20	.54	.30	.18	.35
ADIK	60	2.80	9.40	12.20	10.56	.65	.42	.49	.12
AMAS	60	22.30	26.50	48.80	34.79	5.31	28.23	1.05	1.41
AOBN	60	12.00	17.00	29.00	22.05	2.70	7.29	.40	.34
AOBP	60	12.00	26.00	38.00	30.33	2.91	8.48	.69	.49
AKNL	60	4.60	5.20	9.80	7.58	1.22	1.49	-.10	-.81
AKNN	60	6.00	7.50	13.50	10.51	1.74	3.03	-.19	-.88
AKNT	60	7.60	7.10	14.70	10.23	1.67	2.79	.54	.34

Legend: Variables - variables, N - number of entities, Range - range of variation, Min. - minimum value, Max. - maximum value, Mean - arithmetic mean, Std. Dev.– standard deviation, square root of variance, Variance - variance, mean square deviation, Skewness - distortion, Kurtosis –curve

Legenda: Variable – varijable N – broj entiteta, Range – raspon varijacije, Min. – minimalna vrijednost, Max. – maksimalna vrijednost, Mean – aritmetička sredina, Std. Deviation – standardna devijacija, Variance – varijansa, prosječno kvadratno odstupanje, Skewness – koeficijent simetričnosti, Kurtosis – koeficijent zakrivljenosti

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By analyzing the results from Table 2, which shows the descriptive parameters of girls in rural areas, it can be concluded that the results are normally distributed. The deviation of the distribution curve to the left in the variable body mass (AMAS) has an enhanced positive asymmetry, which indicates that there is an increased grouping of results in the zone of lower values.

Analizom rezultata iz tabele 2 u kojoj su prikazani deskriptivni parametri djevojčica ruralne životne sredine, može se konstatovati da su rezultati normalno distribuirani. Otklon krive distribucije ulijevo kod varijable masa tijela (AMAS), ima pojačanu pozitivnu asimetriju koja ukazuju na to da tu postoji povećano grupisanje rezultata u zoni nižih vrijednosti.

Results of comparative analysis

Results of discriminant analysis of morphological characteristics of girls in urban and rural environment

Rezultati komparativne analize

Rezultati diskriminativne analize morfoloških karakteristika djevojčica urbane i ruralne životne sredine

Table 3. *Specific roots of morphological characteristics of girls in urban and rural environment*

Tabela 3. *Karakteristični korijeni morfoloških karakteristika djevojčica urbane i ruralne životne sredine*

Eigenvalues				
Function	**Eigenvalue% of**	**Variance**	**Cumulative%**	**Canonical Correlation**
1	1.89	100.0	100.0	.81

Legend: *Function- canonical function, Eigenvalue- characteristic roots% of Variance- percentages of variance, Cumulative% - Cumulative percentages of variance, Canonical Correlation- canonical correlation*

Legenda: *Function- kanonička funkcija, Eingvalue- karakteristični korijeni, % of Variance- procenti varijanse, Cumulative %- kumulativni procenti varijanse,Canonical Correlation- kanonička korelacija*

The table below shows an isolated canonical discriminant function (Table 3). Here, the discriminant function shows the correlation of variance both among subsamples and within subsamples, as well as the canonical correlation (.81), which indicates that the isolated function among subsamples is significantly high.

U prikazanoj tabeli nalazi se izolovana kanonička diskriminativna funkcija (tabela 3).Ovdje je diskriminativna funkcija prikazala povezanost varijansi među subuzorcima i varijanse unutar subuzoraka, kao i kanoničku korelaciju (.81), koja ukazuje na to da je među subuzorcima izolovana funkcija značajno visoka.

Table 4. *Wilks' Lambda morphological characteristics of girls from urban and rural living environment*

Tabela 4. *Wilksova Lambda morfoloških karakteristika djevojčica urbane i ruralne životne sredine*

Wilks' Lambda				
Test of Function(s)	**Wilks' Lambda**	**Chi-square**	**df**	**Sig.**
1	.35	55.18	12	.00

Legend: *Test of Function (s) - function test, Wilks' Lambda- contribution of independent variables to discriminative function, Chi-square- Hi square test, df- degrees of freedom, Sig.- statistical significance*

Legenda: *Test of Function(s)- test funkcije, Wilks' Lambda- doprinos nezavisnih varijabli diskirminativnoj funkciji, Chi-square- Hi kvadrat test, df- stepeni slobode, Sig.- statistička značajnost*

The results of the canonical discriminant analysis presented in Table 4 show that there are statistically significant differences in the examined morphological characterstics in girls with respect to residential status. It is noticed that the statistically significant discriminant function at the level of Sig. =. 00.Using Wilks' Lambda, it is observed that the discriminant strength of the morphological characteristics presented by the test is high (.35), and the value of the Chi-square test (55.18) confirms that

Prikazani rezultati kanoničke diskriminativne analize u tabeli 4 pokazuju da postoje statistički značajne razlike u ispitivanim morfološkim karakteristika kod djevojčica s obzirom na rezidencijalni status. Uočava se da je statistički značajna diskriminativna funkcija na nivou Sig.=.00. Pomoću Wilksove Lambde uočava se da je diskriminativna jačina morfoloških karakteristika prikazanih testom visoka (.35), a vrijednost Hi kvadart testa (55.18) potvrđuje da postoje razlike između ispitanika.

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there are differences between the subjects. The obtained results support the fact that morphological characteristics contribute to discrimination with regard to the residential status of girls.

Dobijeni rezultati idu u prilog činjenici da morfološke karakteristike doprinose diskriminaciji s obzirom na rezidencijalni status djevojčica.

Table 5. *Coefficients of standardized canonical discriminant function of morphological characteristics of girls in urban and rural living environment*

Tabela 5. *Koeficijenti standardizovane kanoničke diskriminativne funkcije morfoloških karakteristika djevojčica urbane i ruralne životne sredine*

Variable	Function 1
AVIS	.52
ADUR	-1.45
ADUN	.59
AŠIR	.46
ADIL	-.08
ADIK	.59
AMAS	-.76
AOBN	1.10
AOBP	-.64
AKNL	.35
AKNN	-.19
AKNT	-.21

Legend: *Variables- variables, Function 1- coefficients of standardized canonical function*

Legenda: *Variable – varijable, Function 1 – koeficijenti standardizovane kanoničke funkcije*

Table 6. *Coefficients of non-standardized canonical discriminant function of morphological characteristics of girls in urban and rural living environment*

Tabela 6. *Koeficijenti nestandardizovane kanoničke diskriminativne funkcije morfoloških karakteristika djevojčica urbane i ruralne životne sredine*

Variable	Function 1
AVIS	.12
ADUR	-.44
ADUN	.18
AŠIR	.28
ADIL	-.13
ADIK	.82
AMAS	-.15
AOBN	.46
AOBP	-.25
AKNL	.23
AKNN	-.09
AKNT	-.12
(Constant)	-16.79

Legend: *Variables- variables, Function 1- coefficients of non-standardized function*

Legenda: *Variable – varijable, Function 1 – koeficijenti standardizovane kanoničke funkcije*

From the previous tables (Tables 5 and 6), it can be noticed that the greatest contribution to the overall discrimination is given by the following variables: arm length (ADUR = -1.26), upper arm circumference (AOBN = 1.10), body weight (AMAS = -. 76) and lower leg circumference. (AOBP = -. 64), which have the highest values of the coefficient.This means that they have the greatest impact on the contribution of differences between girls with regard to residential status. High odds also have: leg length (ADUN), knee diameter (ADIK), body height (AVIS) and shoulder width (ASHIR). The variables skin fold of the upper arm (AKNN = -. 19) and diameter of the elbow (AOBP = -. 08) gave the least contribution to the discriminant function.

Iz prethodnih tabela (tabela 5 i 6) može se primijetiti da najveći doprinos ukupnoj diskriminaciji daju sljedeće varijable: dužina ruke (ADUR=-1.26), obim nadlaktice (AOBN=1.10), masa tijela (AMAS=-.76) i obim potkoljenice (AOBP=.64), koje imaju najveće vrijednosti koeficijenta, što znači da one najviše utiču na doprinos razlika između djevojčica s obzirom na rezidencijalni status. Visoke koeficijente imaju još: dužina noge (ADUN), dijametar koljena (ADIK), visina tijela (AVIS) i širina ramena (AŠIR). Varijable kožni nabor nadlaktice (AKNN=.19) i dijametar lakta (AOBP=.08) su dale najmanji doprinos diskriminativnoj fukciji.

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Table 7. *Structure of discriminant functions of morphological characteristics of girls in urban and rural areas*

Tabela 7. *Struktura diskriminativnih funkcija morfoloških karakteristika djevojčica urbane i ruralne sredine*

Variable	Function 1
ADUR	-.47
ADIK	.32
ADUN	-.26
ADIL	.18
AOBN	.13
AKNN	-.09
AKNT	-.08
AOBP	-.08
AKNL	-.05
AMAS	-.05
AŠIR	.05
AVIS	.01

Legend: *Variable- variables, Funtion 1- structural coeffi-cients*

Legenda: *Variable- varijable, Funtion 1- srukturalni koefici-jenti*

Structural coefficients (Table 7) indicate which variables define the discriminant function. It is easy to see from the table that the range of coefficients is moving from-.47 to .32. The greatest contribution was made by the variables: arm length (ADUR = -. 47), knee diameter (ADIK = .32) and leg length (ADUN = -. 26). Other variables had small values of discriminant function, indicating that girls do not differ much at the level of morphological characteristics with respect to residential status. The smallest contribution to discrimination was given by the variables shoulder width (AŠIR = .04) and body height (AVIS = .01).

Strukturalni koeficijenti (tabela 7) nam ukazuju koje varijable definišu diskriminativnu funkciju. Iz tabele lako je uočiti da se raspon koficijenata kreće od-.47 do .32. Najveći doprinos su dale varijable: dužina ruke (ADUR=.47), dijametar koljena (ADIK=.32) i dužina noge (ADUN=-.26). Ostale varijable su imale male vrijednosti diskriminativne funkcije, što ukazuje da se djevojčice ne razlikuju puno na nivou morfoloških karakteristika s obzirom na rezidencijani status. Najmanji doprinos diskriminaciji su dale varijable širina ramena (AŠIR=.04) i visina tijela (AVIS=.01).

Table 8. *Centorides group morphological characteristics of a girl of urban and rural environment*

Tabela 8. *Centoridi grupa morfološke karakteristike djevojčice urbane i ruralne životne sredine*

Geupa	Function 1
Girls city	-1.35
Girls village	1.35

Legend: *GROUP- subsamples of canonical discriminant function, Function 1- group centroid coefficients*

Geupa	Function 1
Djevojčice – grad	-1.35
Djevojčice - selo	1.35

Legenda: *GRUPA- subuzorci kanoničke diskriminativne funk-cije, Function 1- koeficijenti centroida grupa*

Table 8 shows the results on the position of the centroids of the groups ranging from -1.35 to 1.35, which indicates that the subsamples differ statistically significant in the canonical discriminant function. Girls from urban environments achieved better results in a number of variables of morphological characteristics: arm length (ADUN = -. 47), leg length (ADUR = -. 26), as well as values of skin folds, lower leg circumference and low bodyweight. On the other hand, girls from rural areas had higher results with the variables: knee diameter (ADIK = .32), elbow diameter

U tabeli 8 se nalaze rezultati o položaju centroida grupa koji se kreću od -1.35 do 1.35, što ukazuje da se subuzorci statistički značajno razlikuju u kanoničkoj diskriminativnoj funkciji. Djevojčice iz urbanih životnih sredina su ostvarile bolje rezultate u većem broju varijabli morfoloških karakteristika: dužina ruke (ADUN=-.47), dužina noge (ADUR=-.26), kao i vrijednosti kožnih nabora, obima potkoljenice i mase tijela koje su niske. S druge strane djevojčice iz ruralnih životnih sredina imale su veće rezultate kod varijabli: dijametar koljena

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(ADIL = .18), lower leg circumference (AOBP = .13), and the smallest differences, were shown by the shoulder width variables. (ASHIR = .04) and body height (AVIS = .01).

Discussion

Based on the presented research results, it can be concluded that there are differences between younger school-age students who come from different demographic backgrounds in Montenegro. Specifically, it has been shown that the environment (urban and rural), as one of the exogenous factors, may affect the growth and development of schoolgirls to a lesser extent, especially in a sensitive period such as younger school age.

It was found that there are statistically significant differences in the applied morphological variables. The difference was evident in some indicators of longitudinal and transverse dimensionality of the skeleton. Variables for estimating longitudinal skeletal dimensionality (arm length and leg length) were more pronounced in girls from urban living areas and variables for estimating transverse skeletal dimensionality (knee diameter) in girls from rural living areas.

The longitudinal dimensionality of the skeleton is mostly determined by hereditary factors and the influence of the environment. Girls living in urban areas have better living conditions, hygienic and psychosocial conditions and consume food that is quite enriched with additives of hormonal matter. It can be said that it is a series of interrelated environmental factors that influenced the faster growth of certain body segments of girls from the urban environment compared to girls from the rural environment.

In the indicators of body mass and volume and subcutaneous adipose tissue, which were the subject of monitoring in this study, no differences were recorded between girls in urban and rural environment, which was confirmed in studies by other authors (Cetnić et al., 2011). Many studies (Janssen and LeBlanc, 2010; Boreham and Riddoch, 2001) have shown that continuous physical activity, as an exogenous factor, plays an important role primarily in children's health and thus in regulating body composition, body mass and volume in some segments.

On this basis, it can be concluded that both girls from urban and rural environment who are of the same age, have a similar lifestyle that directly affects the level of physical activity and which is represented through physical education classes and free children's play. Therefore, there is an indirect influence on the anthropological characteristics of girls, in this case on the subcutaneous adipose tissue, weight and body volume, and for these reasons no differences were observed in the treated

(ADIK=.32), dijametar lakta (ADIL=.18), obim potkoljenice (AOBP=.13), a najmanje razlike su pokazale varijable širina ramena (AŠIR=.04) i visina tijela (AVIS=.01).

Diskusija

Na osnovu prezentiranih rezultata istraživanja, može se konstatovati da postoje razlike između učenica mladjeg školskog uzrasta koje potiču iz različitih demografskih sredina u Crnoj Gori. Tačnije, pokazalo se da životna sredina (urbana i ruralna), kao jedan od egzogenih faktora, u manjoj mjeri može uticati na rast i razvoj djevojčica, pogotovo u osjetljivom periodu kao što je mladji školski uzrast.

Utvrdjeno je da postoje statistički značajne razlike kod primijenjenih morfoloških varijabli. Razlika je bila evidentna u pojedinim pokazateljima longitudinalne i transverzalne dimenzionalnosti skeleta. Varijable za procjenu longitudinalne dimenzionalnosti skeleta (dužina ruke i dužina noge) dominantnije su bile izražene kod djevojčica iz urbanog životnog područja, a varijabla za procjenu transverzalne dimenzionalnosti skeleta (dijametar koljena), kod djevojčica iz ruralnog životnog područja.

Longitudinalna dimenzionalnost skeleta je najvećim dijelom odredjena naslednim činiocima, a zatim i uticajem životne sredine. Djevojčice koje žive u urbanoj sredini, imaju bolje uslova za život, higijenske i psihosocijalne prilike, te konzumiraju hranu koja je u priličnoj mjeri obogaćena aditivima hormonske materije. Može se reći da je to niz uzajamno povezanih faktora sredine koji su uticali na brži rast pojedinih segmenata tijela djevojčica iz urbane u odnosu na djevojčice iz ruralne životne sredine.

U pokazateljima mase i volumena tijela te potkožnog masnog tkiva, koji su bili predmet praćenja u ovom radu, nijesu zabilježene razlike izmedju djevojčica urbane i ruralne životne sredine što je potvrdjeno i u istraživanjima drugih autora (Cetnić i sar.,2011). U mnogim istraživanjima (Janssen i LeBlanc, 2010; Boreham i Riddoch, 2001) dokazano je da kontinuirana fizička aktivnost, kao egzogeni faktor, ima važnu ulogu prije svega na zdravlje djece, a samim tim i na regulaciju sastava tijela, mase i volumena tijela na pojednim segmentima.

Na osnovu toga, može se konstatovati da djevojčice u ovom uzrastu, iz urbane i ruralne životne sredine, imaju sličan zivotni stil koji utiče direktno na nivo fizičke aktivnosti, a koji je zastupljen kroz nastavu fizičkog vaspitanja i u slobodnoj dječijoj igri. Samim tim vrši se indirektan uticaj na antropološka obilježja djevojčica, u ovom slucaju na potkožno masno tkivo, masu i volumen tijela, te iz tih razloga nijesu zabilježene razlike u tretiranim pokazateljima. Međutim, s obzirom na to da je ispitivano dvanaest

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indicators. However, since twelve variables were examined, such data indicate that there are no significant differences in terms of overall morphological status in girls of the same age but different residential status.

Conclusion

Based on the obtained results of this research, it was shown that a statistically significant difference was observed in a small number of analyzed morphological variables, which are under the influence of hereditary traits. In most of the analyzed variables, which are not predominantly influenced by hereditary traits, no difference was found. Thus, the growth of girls is regulated by the action of various influences. These influences can be endogenous and exogenous. Endogenous influences are primarily heredity (genetic factor), sex and endocrine glands, and exogenous influences are socio-economic conditions, nutrition, climate, physical activities, etc. These results can be explained by a similar lifestyle of girls of this age from urban and rural environments. The results of this research confirm the results of the previous research conducted by (Badža, 2007).These facts should indicate the importance of the influence of exogenous factors for the proper growth and development of girls, regardless of the environment in which they are.

varijabli, ovakvi podaci ukazuju na to da kod djevojčica istog uzrasta, ali različitog rezidencijalnog statusa ne postoje značajnije razlike u pogledu cjelokupnog morfološkog statusa, što je vidljivo iz tabele 7.

Zaključak

Na osnovu dobijenih rezultata ovog istraživanja pokazalo se da je kod manjeg broja analiziranih morfoloških varijabli, koje su pod uticajem naslednih osobina, uočena statistički značajna razlika. Kod većine analiziranih varijabli, koje nijesu dominantno pod uticajem naslednih osobina, nije ustanovljena razlika. Dakle, rast djevojčica je regulisan djelovanjem različitih uticaja. Ti uticaji mogu biti endogeni i egzogeni. Endogeni uticaji su prije svega nasledje (genetski fator), pol i endokrine žljiezde, a egzogeni uticaju su socio-ekonomske prilike, ishrana, klima, fizičke aktivnosti i sl. Ovakvi rezultati mogu se objasniti sličnim načinom življenja djevojčica ovog uzrasta iz urbane i ruralne životne sredine. Rezultati ovog istraživanja potvrdjuju rezultate predhodnog istraživanja koje je proveo (Badža, 2007).

Navedene činjenice treba da ukažu na važnost uticaj egzogenih faktora za pravilan rast i razvoj djevojčica, bez obzira na životnu sredinu u kojoj se nalaze.

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