STUDY ON THE PHYSICAL DEVELOPMENT OF 14 YEAR A ATHLETES OF THE SCHOOL SPORT CLUB GALATI

Liliana NANU,Gabriel GHEORGHIU

"Dunarea de Jos" University of Galati, Romania

Abstract
In Romania, among the studies that have show the phenomen of acceleration in the morphological development of children (between 11 and 16 year), some of them were undertaken by Maria Cristescu and her collaborators (1992), pointing out the major influences of three determinant factors: economic, social and genetic.Meanwhile, many studies have been realized to determine the morphological potential of the population, the most studies population being the teenagers. Even if, there are authors who do not recognize the nature of crisis of puberty, it should be recognized the aspect of the transformation from child to adult – Dumitru, I. AL. (2001).Professor Mariana Cordun (2000), considers that the age of puberty is between 10 and 17 years, with large individual variation determined by several factors and she distinguishes three stages of development: prepubertal, pubertal and postpubertal.
Key words: *physical development, the School Sport Club Galati*

INTRODUCTION

In our country, the actual debut of puberty is situated between 11 and 14 years, period in which an acceleration of the growth in stature is produced, with the top average growth rate of 8,4cm/ year, after which the growth rate diminishes, reaching the final stature between 16-20 years, age after which the growth in stature ends trough the complete closure of the growth cartilages. In case of girls, along with the growing in stature and weight, it occurs the changing in proportions and the body shaping, making obvious that the predominance of the lateral side growth which is more accentuated than the linear growth, the bitrohanterian diameter development and the accentuation of fat deposits (Drăgan, I. and his collaborators, 1989). The physical growth evaluation represents an act of observation, registration and analysis of the dynamic range of the growth and development of the individuals according to individual particularities (Gagea, A. 1999).

Study aims are determined by the prominence of the physical development of 14 year athletes of school sports club who are practicing different sports branches: athletics **(A)**, dance sport **(D)**, artistic gymnastics **(G)**, weightlifting **(H)**, lawn tennis **(T)** and volleyball **(V)**.

RESEARCH TASKS: measuring, registering and analyzing the parameters of physical development of 14 year teenagers practicing different sports inside of the professional departments of School Sport Club Galati.

MATERIALS AND METHODS

Research was carried out at CSS Galati, during 5 April – 5 Julie, 2013 (3 months), in training rooms and spaces, 14 year teenagers practiced the following sports branches: athletics, dance sport, artistic gymnastics, weightlifting, lawn tennis and volleyball. The investigated group was formed from 29 female athletes aged 14 year; athletics: 7 girls; dance sport: 4 girls; artistic gymnastics: 3 girls; weightlifting: 2 girls; lawn tennis: 3 girls; volleyball: 10 girls.

EVALUATED PARAMETERS: height **(I)** – the distance between vertex and soles, measured in the position of standing up on the stadiometer; stretch **(A_V)** – the side arms opening, parallel to the ground, measuring the distance between the middle fingertips (metric tape); weight **(G_R)** – quantitative indicator of the body growth measured using scales; biacromial diameter **(D_{BA})** - it is measured with the help of the anthropometric compass, whose vertex are placed on the external side of the acromions; bitrohanterian diameter **(D_{BT})** – it is measured by using the compass, putting the tips on the trochanteric areas; thoracic diameter **(D_T)** – compass – traverse thoracic diameter **(D_{TT})** – it is measured by holding the compass poles horizontally, on the median axillary's line at the 4thrib; antero-posterior diameter of chest **(D_{TA})** – it is measured by holding a compass pole at the base of the xiphoid appendix, and the other one on the spinousapophysis of the 4th dorsal vertebra; thoracic perimeter **(P_T);** thoracic perimeter in resting position **(P_{TR})**; thoracic perimeter in deep inspiration **(P_{TI})**; thoracic perimeter in exhalation **(P_{TE})** – it is measured by using the metric tape placed behind, under the inferior angle of the blade bones, and in front at the level of the 4th rib joint with the sternum; perimeter of the upper limbs **(P_{MS})**; perimeter of the right arm **(B_D)**; perimeter of the left arm **(B_S)**; right forearm perimeter **(A_D)**; left

forearm perimeter **(A_S)** – it is measured by using the metric tape at the level of their maximum thickness; perimeter of the lower limbs **(P_{MI})**; right thigh perimeter **(C_D)**; left thigh perimeter **(C_S)**; right leg area **(G_D)**; left leg area **(G_S)**; abdominal perimeter **(P_A)** – abdominal circumference measurement evaluates regional adiposity and provides indirect information about visceral adiposity.

STATISTICAL METHODS used on the investigated group were statistically processed by using the indicators: the sum of the results, arithmetic mean, standard deviation, mean and coefficient of variation difference.

THE RESULTS have been statistically processed, using the computer and the Microsoft Excel application, and they have showed that the average height in the tested group is 161,2 cm., the average stretch is 162,6 cm and the average weight is 51,4 kilos.

By numeric comparison between the biacromial diameter (35,3 cm) and the bitrohanterian diameter (29,4 cm), we observed the athletic look with large thorax and slim basin. The average of the transverse thoracic diameter is with 6,9 cm bigger than the average of the antero-posterior thoracic diameter, the normal values were also registered at the thoracic area in the following intervals: resting position 73,1 cm – inspiration 82,5 cm – exhalation 71,9 cm.

The mean difference between the perimeter of the arm and that of the forearm is 1 cm, and the mean difference the perimeter of the thigh and that of the calf/ leg is 17,8 cm.

Comparing the average values of the height measurement, the female athletes volleyball players have an average of 168,5 cm, followed in the descending order by girls who practice tennis (164,6 cm), dance sport (160,2 cm), weightlifting (156,5 cm), athletics (154,5 cm) and gymnastics (153,3 cm) – table 1.

Table 1.The mean values of the morphological indicators that were tested – 14 year girls

I. S.	Sport	Î	A_U	G_R	D_{EA}	D_{ST}	D_T		P_T			P_{ME}				P_{MI}				P_A
							D_{TT}	D_{TA}	P_{TR}	P_{TI}	P_{TE}	B_D	B_S	A_D	A_S	C_D	C_S	G_D	G_S	
x	A	154,5	159,2	43,7	33,8	27,5	24,8	18,1	71	80	69,7	20,5	20,5	20	20	45,1	45,1	30,5	30,5	62
	D	160,2	160,7	47,5	34,2	29,5	24,5	17,2	69	78	68	20,5	20,5	20,5	20,5	48,5	48,5	31,7	31,7	63
	G	153,3	151,3	47,3	33,6	27,3	25,3	17,3	70	79,3	69	22	22	20,6	20,6	48,3	48,3	30,6	30,6	64
	H	156,5	157	50	34	29,5	25	16,5	68	78,5	67	22	22	20,5	20,5	52	52	31	31	65,5
	T	164,6	167,6	54,3	36,6	29,6	26,3	19,3	75,6	84,6	74	23	23	22,3	22,3	50,3	50,3	32,6	32,6	66
	V	168,5	168,8	59,2	37,2	31,3	26,4	20,2	77,5	87,2	76,4	24,3	24,3	22,6	22,6	54,2	54,2	34,3	34,3	70,1
$\bar{X}_e$	-	**161,2**	**162,6**	**51,4**	**35,3**	**29,4**	**25,5**	**18,6**	**73,1**	**82,5**	**71,9**	**22,3**	**22,3**	**21,3**	**21,3**	**50**	**50**	**32,2**	**32,2**	**65,7**
σ	-	**0,96**	**0,26**	**1,1**	**0,50**	**0,31**	**0,41**	**0,21**	**0,99**	**0,95**	**0,94**	**0,41**	**0,41**	**0,22**	**0,22**	**0,57**	**0,57**	**0,38**	**0,38**	**0,90**
$\pm m$	-	**0,44**	**0,47**	**0,54**	**0,25**	**0,14**	**0,20**	**0,09**	**0,47**	**0,45**	**0,45**	**0,2**	**0,2**	**0,10**	**0,10**	**0,28**	**0,28**	**0,18**	**0,18**	**0,44**
Cv%	-	**0,6**	**0,59**	**2,34**	**1,44**	**1,08**	**1,61**	**1,17**	**1,37**	**1,17**	**1,33**	**1,85**	**1,85**	**1,08**	**1,08**	**1,18**	**1,18**	**1,22**	**1,22**	**1,38**

The mean values of the stretch show a difference of 17,5 cm between the female athletes who practice volleyball (the female athletes with the largest stretch in the tested group) and those who practice gymnastics (the female athletes with the lowest stretch in the tested group), being known the fact that the physical profile of the female athletes volleyball players involves high waist, with stretch, scapular-humeral belt and large biacromial diameters, compared to gymnasts, whose physical profile supposes small-medium waist and well-developed muscles in the entire body. The other female athletes, in the descending order of average stretch are: lawn tennis (167,7 cm) with a physical profile that supposes high wais , large stretch and biacromial diameter , dance sport (160,7 cm), with a somatic logline biotype, athletics (159,2 cm) with different physical abilities depending on the athletic test and weightlifting (157 cm) that supposes small-medium waist, large biacromial diameter, with long upper limbs – fig. 1.

The difference of the medium weight values measurements of the athletes from CSS Galati is ranking the volleyball players first with a weight equal to 59,2 kilos, the smallest weight being recorded by the athletes having the average 43,7 kilos – fig. 2

.

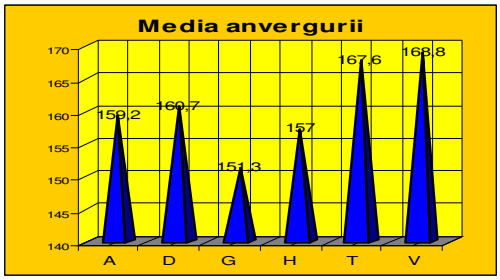


Fig. 1 The difference of the magnitude averages

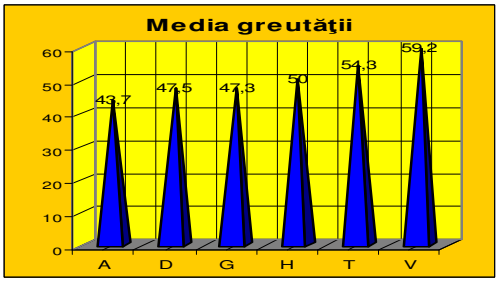


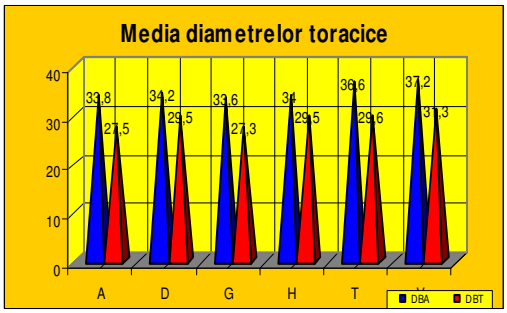
Fig. 2 The difference of the weight average

The value of the biacromial diameter are higher than the medium values of the bitrohanterian diameter, to all measured athletes, the highest value being recorded to the athletes who practice volleyball (37,2 cm), and the smallest to gymnastics (33,6 cm). The difference of the general averages between the biacromial diameter and bitrohanterian diameter of the athletes from CSS Galati is 5,9 cm.

The transverse thoracic diameter and the antero-posterior diameter present normal, medium value, the difference between them being 7 cm for all the tested athletes; the biggest difference between the two measurement being recorded to weight lifters – 8,5 cm – fig. 3.

The thoracic perimeter is resting position, in deep inspiration and in forced exhalation, presents a medium difference of the thoracic elasticity of over 9 cm – fig. 4.

The perimeters of the superior members (arm and forearms) and of the inferior members (thighs and legs) present identical value of the segments of the measured sportsmen, the highest difference between the averages of the arms and forearms being recorded to weight lifters (1,5 cm) but also the averages of the thighs and legs (21 cm).



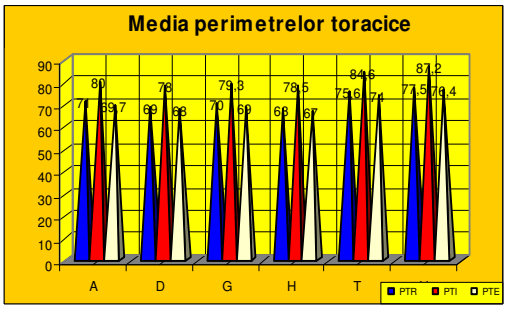


Fig. 3 The difference of the thoracic diameters Fig. 4 The difference of the averages of the thoracic perimeters

The abdominal perimeter indicates the greatest value for the athletes who practice volleyball (70,1 cm), decreasingly, being followed by the athletes who practice lawn tennis (66 cm), halters (65 cm), gymnastics (64 cm), dance sport (63 cm) and athletics (62 cm).

CONCLUSIONS

1. The recorded results highlight the fact that there are the differences into the morphological development of the teen athletes aged 14 year, the difference being determined by the sports that they practice.
2. The most significant difference in physical development of the teen athletes are recorded between the athletes who practice sport games and those who practice individual sports (gymnastics, halters and athletics).
3. The body scale is greater than the height because of the age of puberty, when the segmentary growing is differentiated.
4. Bitrohanterian diameter, of tested girls, is inferior to the biacromial diameter.
5. The thoracic perimeter indicates an optimal elasticity of the chest for this age.
6. The research's results require responsible activities taken by teacher trainers in order to ensure a harmonious and physical evolution of the athletes that the teachers have to guide to.

REFERENCES

1. Cordun M., (2000). *Kinetologie medicală,* Editura ALL, Bucureşti, pag.22-45.
2. Cristescu M. şi colab., (1992). *Aspecte ale creşterii şi dezvoltării adolescenţilor,* Editura Academiei Bucureşti, pag.44-79.
3. Dragnea A., (2002). *Măsurare şi evaluare,* Editura Universităţii Piteşti, pag. 21-27.

4. Drăgan, I. şi colab. (1989). *Selecţia şi orientarea medico-sportivă,* Editura Sport-Turism, Bucureşti, pag. 54-82.
5. Demeter A., (1990). Drăgan, I., *Sport şi sănătate,* Editura Sport-Turism, Bucureşti, pag. 112-198.
6. Dumitru I. Al., (2001). *Personalitatea-atitudini şi valori*, Editura de Vest, Timişoara, pag. 38-49.
7. Epuran, M., (1992). *Metodologia cercetării activităţilor corporale*, A.N.E.F.S., Bucureşti, vol. I-II, pag. 111-146.
8. Gagea A., (1999). *Metodologia cercetării ştiinţifice în educaţie fizică şi sport,* Editura Fundaţiei "România de Mâine", Bucureşti, pag. 28-50.
9. Haag A., (1985). *Testarea condiţiei/ pregătirii fizice; EUROFIT – baterie experimentală//* Revista Educaţia fizică în şcoală, C.C.F.S., vol. LXI, Bucureşti, pag. 32-37.