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DETERMINING THE LEVEL OF SOMATIC DEVELOPMENT IN EIGHTH GRADE GIRLS

Ciubotaru Mihai[1]
Pricop Gheorghe[2]
[1]"Iorgu Vârnav Liteanu" Technological High School,
mihaiciubotaru11@yahoo.com
[2]Ștefan cel Mare University, Suceava, gheorghep@usv.ro

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Abstract

In the last decades, children and young people in most countries have seen an accelerated growth of some development indices, therefore the average values of the height and weight of children today are higher than in the last century, sexual maturity being earlier. After the end of the growth process, which occurs more quickly, the adult's dimensions are larger. Growth processes are characterized by the enlargement of organs, body segments and body weight. The development of the individual is highlighted by the differences that appear from a morphological, physiological and biochemical point of view. The research methods used in the confirmative study allowed us to study specialized works in the field of physical education, to observe the attitude of students during physical education classes, to evaluate the level of somatic development of girls in the 8th grade, to present, process and interpret the results obtained.

Introduction

Anthropometric evaluation is a means of estimating physical development centered on measurements of the human body, on certain segments or on the whole body. The main aspect of the anthropometric evaluation is represented by the comparison of the results from a mathematical point of view, through numbers, graphs, activity that requires precision and correctness.

"The totality of the actions aimed at a correspondence between the subject or the measured phenomenon and the unit of measurement, by applying some control samples, with the aim of collecting results or data, in order to know as precisely as possible the effects of practicing physical exercises and, in general, to the behavior of the subjects in the activity of physical education or sport" [5].

The need to know the somatic and morpho-functional parameters represents the quantification of the efficiency of the work done both by the teacher and his methods and by the subject, the measurements performed periodically, at stages or at the beginning and end of some activities present the variations in the evolution of each subject, highlighting the dynamics of the processes of growth and physical development.

After the growth period, the child can be considered an adult, reaching a somato-vegetative and psychic maturation, the organism presenting fundamental differences and a significant neuro-hormonal lability. Irregular growth and development [8] with temporary exacerbations of neuro-vegetative and psychic processes, children's growing age is divided into several periods, with particular morpho-functional and psychic aspects. All periods of growth and development are important, a special denotation has the peripuberal stage, in which the child turns into an adult. Puberty is represented by a different period of time, both in girls and in boys, in relation to hereditary or environmental factors [2,4].

Puberty [7] begins in girls at the age of 11-12 years and in boys at 12-13 years and lasts until 13-14 years, respectively 14-15 years, this period being considered a second phase of morphological maturation. Through these great transformations that the human body undergoes, a new morpho-physiological and psychological form of the future young person is determined [11].

As some authors say [1,10], the development of somatic-morpho-functional indices leads to a harmonious physical development of the human body, achieving one of the fundamental objectives of physical education.

Studying the specialized literature, I came to the conclusion that physical education, as a system of systematically exerted influences on the physical development and improvement of students' motor skills, aims at certain goals, among which the following are particularly important:

- maintaining an optimal state of health;
- optimization of harmonious and correct physical growth and development processes;
- increasing the body's general resistance capacity;
- capitalizing on the educational influences of physical education;
- providing students with a varied system of skills and abilities;

- development of motor skills;
- training the ability to work independently and accustoming students to use physical exercises outside of school as well.

The 8th grade graduate must have knowledge, skills and abilities, which they can use in social activity, especially in the direction of preserving health and increasing work capacity.

As a means of attraction for children, movement games bring a great contribution to the practice of physical exercise. The organization of the games must be led by a competent person who, through the professionalism he has acquired, can convey to the children the desire for movement and the removal of all activities such as television, computer games, etc.

Physical education is an instructive-educational process aimed at the growth, formation and cultivation of people's physical capacities. It is a deliberate process built and carried out in order to perfect the morphofunctional indices, the motor capacities, depending on the particularities of age and sex, the registration requirements and the specifics of some professions [3,6].

The learning process specific to physical education and sports aims at psychomotor development, the development of the personality and the social component of man in order to achieve personal independence, it is a process through which a certain activity is born or transforms as a reaction to a situation, provided that the essence of the change cannot be explained by the maturation of the organism, by innate tendencies to respond to different stimuli or by other temporary states of the organism [9].

In order to combat sedentarism, poor physical development, weight gain, physical exercise must be practiced in all its forms both in an organized setting and in free time. Practicing physical exercises in a correct way must take into account the following aspects: the degree of difficulty, the number of repetitions, the time allocated to the execution of the exercise, the particularities of age and sex, the level of preparation, the space for deployment.

In order to achieve the proposed objective, with regard to anthropometric measurements, we used tests whose objective was to measure height, weight, bust height, abdominal circumference, arm span and sole.

Research methodology and organization

The subjects who participated in the experiment are from the 8th grade of the "Iorgu Vârnav Liteanu" Technological High School, Liteni city, Suceava County, 18 girls, and the measurements were carried out in the gymnasium of the high school. The research methods used in the study are as follows:

Bibliographic study method – studying specialized literature and noting important and necessary information for the study.

The method of anthropometric measurements – to assess the morphological type and degree of physical development of the students, we used the following anthropometric measurements: height, weight, bust height, abdominal circumference, arm span, sole length.

Statistical method – gathering the results obtained with the purpose of analysis and interpretation from a mathematical point of view, establishing the position of the individual within the normal limits of development.

Graphical and tabular method – presentation of data after collection and measurement were presented in a form appropriate to the stage and needs of the research.

Results and their interpretation

The confirmatory study was carried out during the 2021 – 2022 school year, where two measurements were made. Initial testing was conducted at the beginning of the year in September 2021, and final testing in June 2022.

The indicators used to evaluate somatic parameters were height (cm), body weight (kg), bust height (cm), abdominal circumference (cm), arm span (cm) and sole length (cm).

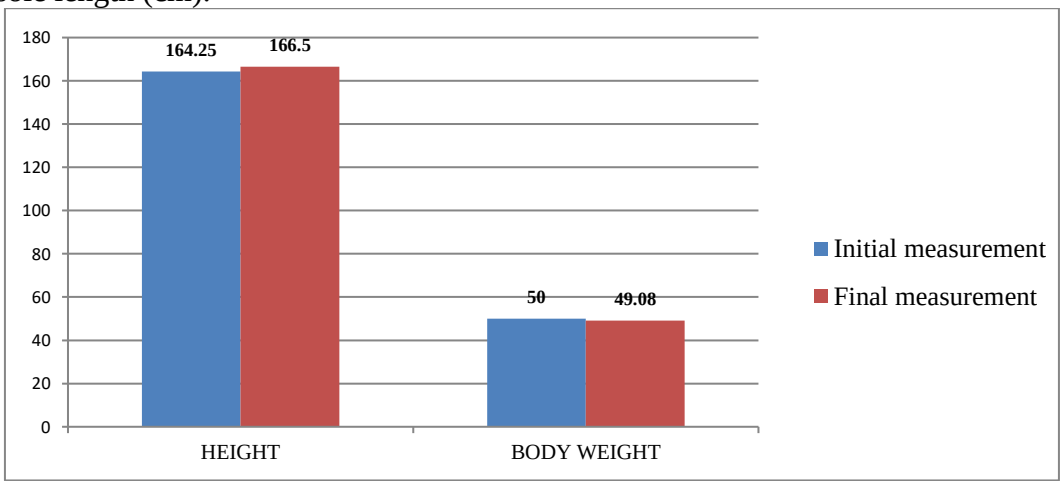

Fig. 1.1. Comparative analysis of anthropometric results for height and body weight

Analyzing the anthropometric results at the initial measurement, at the waist, we have an average value equal to 164.25cm and at the final measurement 166.5cm, with a difference of 2.25cm. Moreover, for the somatic parameter body weight, we realize a difference of almost one kg, starting at the initial testing with the value of 50kg reaching 49.08kg at the control testing (Fig. 1.1.).

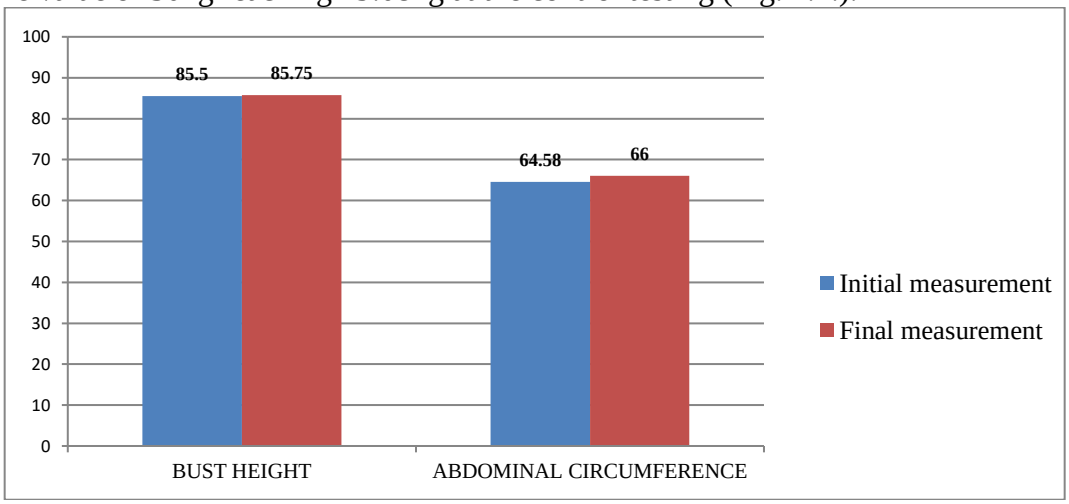

Fig. 1.2. Comparative analysis of anthropometric results in bust height and abdominal circumference

Figure 1.2. shows us the average of the results for bust height and abdominal circumference. Between the two tests, we have insignificant differences in the height of the bust, starting from 85.5cm and reaching 85.75cm, while in the abdominal perimeter we have a difference of 1.42cm, having at the initial measurement 64.58cm and at the final test 66cm.

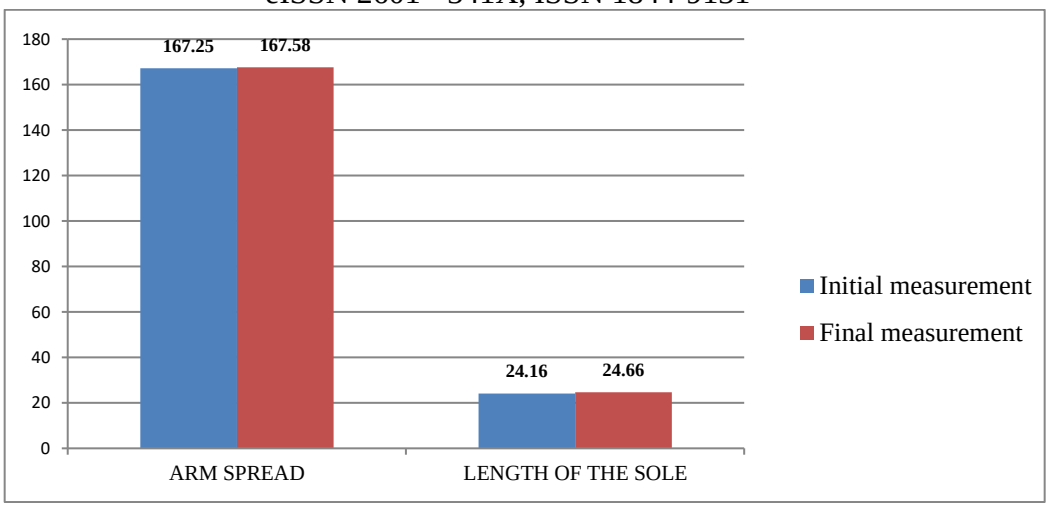

Fig. 1.3. Comparative analysis of anthropometric results for arm span and foot length

Regarding the arm span, we can state that there is a small difference of 0.34 cm between the two measurements. For the anthropometric parameter, the length of the sole, we obtain an average value of 24.16cm at the initial test, while at the final measurement we have an average of 24.66cm.

The obtained data are centralized in table 1. and graphically represented for interpretation

Table 1. Initial anthropometric testing, eighth grade, average age 14 years

Name	Height		Body weight		Bust height		Abdominal circumference		Arm span		Foot length	
	T^I	T^F	T^I	T^F	T^I	T^F	T^I	T^F	T^I	T^F	T^I	T^F
A.A.	173	174	52	54	95	96	66	68	175	175	24	24
A.A.	170	174	61	29	88	89	68	69	170	171	25	25
C.A.	159	166	52	50	83	83	68	68	166	166	23	24
C.C.	166	167	49	50	88	88	62	63	169	169	24	24
C.N.	163	164	52	52	84	84	68	69	162	165	25	25
D.A.	170	175	48	52	89	89	62	64	171	171	25	25
D.B.	176	178	50	55	90	91	63	68	180	180	25	26
D.V.	166	168	49	54	84	84	67	68	162	162	22	23
E.M.	157	158	44	43	81	81	59	59	158	158	24	24,5
E.O.	156	156	48	50	80	80	67	69	167	167	25	25,5
G.A.	155	155	45	48	79	79	63	65	163	163	24	25
I.A.	160	163	50	52	85	85	62	62	164	164	24	25
I.G.	176	178	50	55	90	91	63	68	180	180	25	26
L.D.	166	168	49	54	84	84	67	68	162	162	22	23

M.M	157	158	44	43	81	81	59	59	158	158	24	24,5
O.A.	156	156	48	50	80	80	67	69	167	167	25	25,5
V.A.	155	155	45	48	79	79	63	65	163	163	24	25
V.V.	160	163	50	52	85	85	62	62	164	164	24	25
A_a	**21**	**23**	**17**	**24**	**16**	**17**	**7**	**10**	**22**	**22**	**3**	**3**
X	**164,25**	**166,5**	**50**	**49,08**	**85,5**	**85,75**	**64,58**	**66**	**167,25**	**167,58**	**24,16**	**24,66**
+/-S	**7,00**	**7,70**	**4,30**	**7,08**	**4,66**	**4,99**	**3,08**	**3,33**	**6,16**	**6,03**	**0,93**	**0,80**
Cv%	**4,26**	**4,62**	**8,6**	**14,42**	**5,45**	**5,81**	**4,76**	**5,04**	**3,68**	**3,59**	**3,84**	**3,24**

Conclusions

Following the comparative analysis and interpretation of the results of the indicators of anthropometric development, obtained by the girls from the 8th grade, between the two measurements, a low to medium level results. Significant differences in height, a decrease in body weight and small differences in the other tests can be observed.

We believe that it is necessary to introduce a program that contains specific means for physical development. In addition to physical exercise, we recommend a healthy diet.

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