

**STATISTICAL STUDY ON THE ANTHROPOMETRIC PROFILE  
OF THE GYMNASIUM CYCLE STUDENTS FROM “IORGU  
VÂRNAV LITEANU” HIGHSCHOOL, LITENI**

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**Key words:** pupils, gymnasium, anthropometry, measurements, exercises.

**Abstract:**

One of the most important concerns of man is to establish the physical dimensions of the human body.

Anthropometric evaluation is a method of quantifying growth and physical development based on body measurement.

In conducting anthropometric measurements, it is recommended to use the same instruments for all students, such as telemeter, metric tape, mobility scales, etc.

This paper aims at presenting somatic evaluation methods at gymnasium level and anthropometric exam on harmonious growth and development that is an important activity in physical education and sports, because through these measurements we can check whether pupils fall within normal limits below or exceeds the normal level by age and gender.

**Introduction**

This study represents the anthropometric evaluation of the gymnasium students, "Iorgu Vârnav Liteanu" Highschool, Liteni, Suceava County, through measurements on the human body. Various measurement indices have been created for this work, which will compare with the ideal indices for each year of study by interpreting the values obtained by the students if they fall within the normal limits below or above the normal limits.

Anthropometric evaluation is a means of estimating physical development centred on measurements of the human body, on certain segments or on the whole body.

The main aspect of the anthropometric assessment is the comparison of mathematical results with figures, charts, precision and fairness.

Scientific work from abroad and from within the country emphasizes the particular character of the age of growth, in accordance with school age, which cannot be removed by the physical education and sports teachers or the coaches who model this fragile human material, unfinished ontogenetically. In the literature, growth and development of children do not take place at a normal pace, with stages of slowing down or accelerating growth with different time frames, depending on the age, gender and individual peculiarities of the children.

In all areas, all activities are influenced by decisions based on quantitative information, the measurement being very important and on which this information depends. Measurement is introduced in actions such as: observation, experiment, exploration, prospecting, verification, analysis, testing, testing, diagnosis, control, attestation, etc.

^All actions aiming at a correspondence between the subject or the phenomenon measured (skills, competencies, driving qualities) and the unit of measurement, by applying control samples, in order to collect results or data, in order to know as precisely as possible the effects of the practice physical exercises and, in general, the behaviour of subjects in physical education or sports.^ (A. Dragnea, 1984).

From M. Epuran`s perspective (2005), the measurement has the following functions:

- ❖ Objectivity - Measured results are authentic, real and can be compared or evaluated with similar results by several specialists;
- ❖ Quantification and precision - teachers, coaches or researchers through this function determine the results obtained in an exact form;
- ❖ Communication - aims to use standardized measures that express the possibility of a correct comparison of the results, which in turn develops the accuracy of the communication;
- ❖ Economy - a measurement with little money, gains more time;
- ❖ Scientific generalization - the means of measurement based on definitions will allow the establishment of the principles and laws of the field.

The basic element of student training is the study of theoretical and practical knowledge related to somatic measurements. These knowledge and values are very important in the selection of students for

the representative teams of the school or for practicing a performance sport, because by marking the dimensions of the human body segments can be reference points.

### **Material-method**

The study cannot be carried out without a profound documentation, carried out by the study of the specialized papers dealing with the anthropometric measurements of the Romanian and foreign authors.

The tests used were six and targeted the following: height (cm), weight (kg), trunk height (cm), abdominal perimeter (cm), span (cm) and sole length (cm).

The research methods used in the study are as follows:

*Method of bibliographic study* – is a specialized literature and notation of important and necessary information for the study.

*The method of observation* is a method of knowing and includes: how the subject addresses the situation, how it establishes human contact with others, how it responds to the proposed tasks, how it organizes its actions and how it expresses itself.

*The method of Anthropometric Measurements* - to assess the morphological type and physical development of students, we used the following anthropometric measurements: height, weight, height of the bust, abdominal perimeter, arm size, foot length.

*Statistical method* - gathering the results obtained with the purpose of mathematical analysis and interpretation, determining the position of the individual within the normal limits, or whether it is below or above the normal limit.

*The graphical and tabular method* - data presentation after collection and measurement were presented in a form appropriate to the research stage and needs.

The students who attended are from the 5th-8th grade from the "Iorgu Vârnav Liteanu" HighSchool, the city of Liteni, Suceava County, in a total of 78 participants, re-starting 12 pupils of the 5th grade, 20 pupils of the 6th grade, 22 pupils of the 7th grade, 24 students of the 8th grade, and the measurements used in the experiment were conducted in the gymnasium of the high school.

### **Results and discussions**

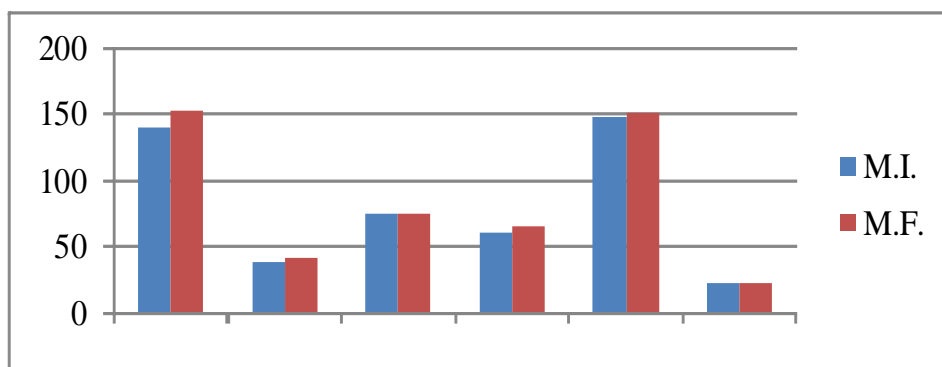
<b>Meas.</b>	<b>Height</b>	<b>Body Weight</b>	<b>Bust Height</b>
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$M_I/M_F$	$M_I$	$M_F$	$M_I$	$M_F$	$M_I$	$M_F$
$A_a$	11,5	8,5	10	12	9	7,5
<b>X</b>	140,16	152,87	37,93	42,08	74,97	75,68
<b>+/-S</b>	4,1	3,13	4,02	4,47	3	2,54
<b>Cv%</b>	2,88	2,04	10,58	10,63	4,00	3,36

*5<sup>th</sup> grade - Average Initial and Final Measurement*

Meas.	Abdominal perimeter		Width of the arms		Foot length	
	$M_I$	$M_F$	$M_I$	$M_F$	$M_I$	$M_F$
$A_a$	12	14	12,5	15,5	2,5	2,5
<b>X</b>	61,5	65,37	147	151,54	22,47	23,43
<b>+/-S</b>	4,19	5,63	4,74	5,43	0,86	0,81
<b>Cv%</b>	6,79	8,61	3,22	3,57	3,82	3,43

*5<sup>th</sup> grade - Average Initial and Final Measurement*



*5<sup>th</sup> grade - Average Initial and Final Measurement*

By comparing the results obtained with the initial measurement with the results from the final measurement it is observed in the above representation that the height has an increase of 12,71 cm, the weight increases by 4,15 kg, the height of the bust increases by 0,71 cm, the abdominal perimeter increases 3,87 cm, the width of the arms increases by 4,54, and the foot length has an increase of 0,96 cm.

Meas.	Height		Body Weight		Bust Height	
	$M_I$	$M_F$	$M_I$	$M_F$	$M_I$	$M_F$
$A_a$	17,5	16,5	19,5	22,5	13	13
<b>X</b>	158,10	161,1	46,66	51,89	77,95	78,01
<b>+/-S</b>	5,29	5,23	6,04	8,03	4,65	4,83

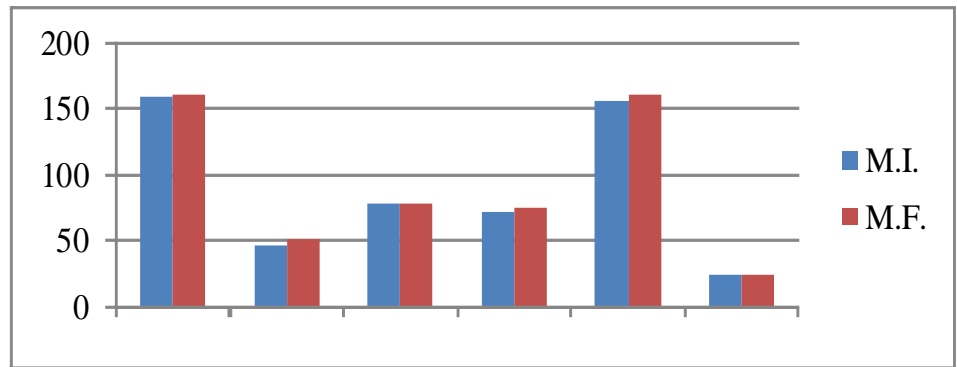
<b>Cv%</b>	3,34	3,24	12,93	15,41	5,95	6,19
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*6<sup>th</sup> grade - Average*

*Initial and Final Measurement*

<b>Meas.</b>	<b>Abdominal perimeter</b>		<b>Width of the arms</b>		<b>Foot length</b>	
	<b>MI</b>	<b>MF</b>	<b>MI</b>	<b>MF</b>	<b>MI</b>	<b>MF</b>
<b>A<sub>a</sub></b>	15	14	22	24,5	4,5	4,5
<b>X</b>	71,6	75,26	156,35	161,01	24,35	24,87
<b>+/-S</b>	4,8	4,42	6,65	6,81	1,37	1,3
<b>Cv%</b>	6,67	5,86	4,23	4,21	5,61	5,21

*6<sup>th</sup> grade - Average Initial and Final Measurement*



*6<sup>th</sup> grade - Average Initial and Final Measurement*

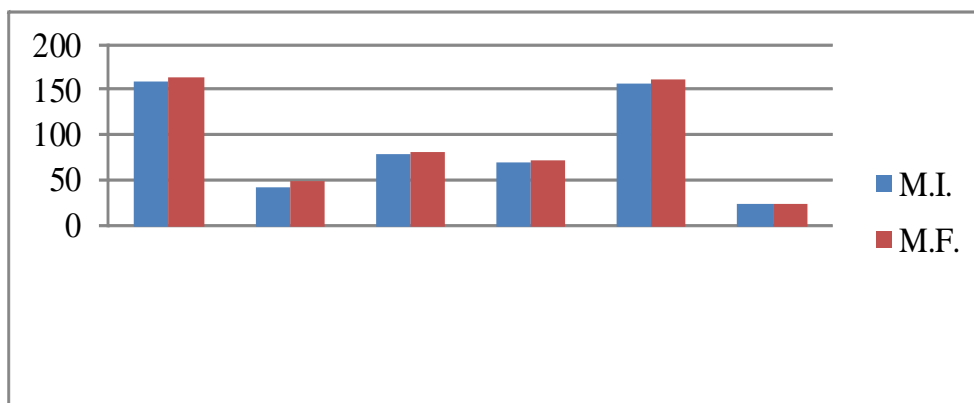
Comparing the results obtained with the initial measurement with the results from the final measurement it is observed in the above representation that the height has a growth of 3 cm, the weight increases by 5,23 kg, the height of the bust increases by 0,06 cm, the abdominal perimeter increases 3,66 cm, the width of the arms increases by 4,69, and the foot length has an increase of 0,52 cm.

<b>Meas.</b>	<b>Height</b>		<b>Body Weight</b>		<b>Bust Height</b>	
	<b>M<sub>I</sub></b>	<b>M<sub>F</sub></b>	<b>M<sub>I</sub></b>	<b>M<sub>F</sub></b>	<b>M<sub>I</sub></b>	<b>M<sub>F</sub></b>
<b>A<sub>a</sub></b>	20	20	18,5	23,5	15	13,5
<b>X</b>	159,65	162,49	43,20	49,32	79,68	80,37
<b>+/-S</b>	6	5,99	5,76	7,76	4,69	4,57
<b>Cv%</b>	3,755	3,68	13,3	15,85	5,88	5,69

*7<sup>th</sup> grade - Average Initial and Final Measurement*

Meas.	Abdominal perimeter		Width of the arms		Foot length	
	$M_I$	$M_F$	$M_I$	$M_F$	$M_I$	$M_F$
$A_a$	19,5	13	22	23,5	3	3,5
<b>X</b>	70,68	72,60	156,75	161,38	23,87	24,38
<b>+/-S</b>	7,04	6,55	6,99	6,70	0,99	1,11
<b>Cv%</b>	9,95	9,03	4,47	4,17	4,17	4,56

*7<sup>th</sup> grade - Average Initial and Final Measurement*



*7<sup>th</sup> grade - Average Initial and Final Measurement*

Comparing the results obtained with the initial measurement with the results from the final measurement it is observed in the above representation that the height has an increase of 2,84 cm, the weight increases by 6,12 kg, the height of the bust increases by 0,69 cm, the abdominal perimeter increases 1,92 cm, the width of the arms increases by 4,63, and the sole length is 0,51 cm.

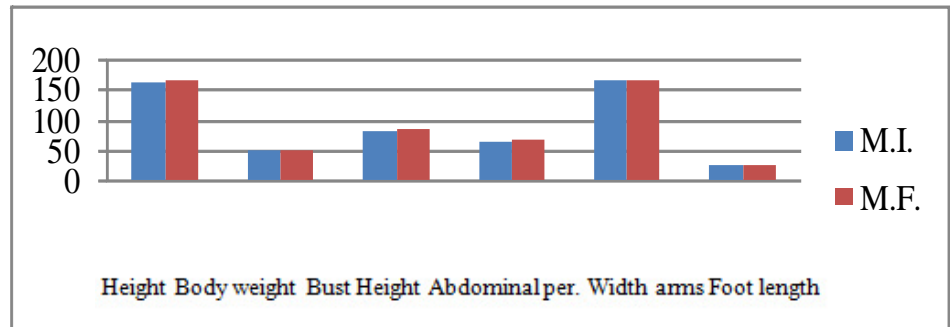
Meas.	Height		Body Weight		Bust Height	
	$M_I$	$M_F$	$M_I$	$M_F$	$M_I$	$M_F$
$A_a$	26,5	19,5	25	30,5	18,5	19
<b>X</b>	164,5	167,54	49,95	52,12	83,83	84,25
<b>+/-S</b>	9,07	8,85	7,34	8,99	5,31	5,48
<b>Cv%</b>	5,51	5,27	14,69	17,09	6,35	6,51

*8<sup>th</sup> grade - Average Initial and Final Measurement*

Meas.	Abdominal	Width of the arms	Foot length
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$M_I/M_F$	perimeter					
	$M_I$	$M_F$	$M_I$	$M_F$	$M_I$	$M_F$
$A_a$	12	14	27	27	4	3,5
$X$	66,37	68,41	167,41	167,74	24,78	25,24
$+/-S$	3,67	3,90	8,305	8,31	1,3	1,09
$Cv\%$	5,50	5,68	4,95	4,95	5,20	4,29

*8<sup>th</sup> grade - Average Initial and Final Measurement*



*8<sup>th</sup> grade - Average Initial and Final Measurement*

Comparing the results obtained at the initial measurement with the results from the final measurement it is observed in the above representation that the height has a growth of 3,04 cm, the weight increases by 2,17 kg, the height of the bust increases by 0,42 cm, the abdominal perimeter increases 2, 04 cm, the width of the arms increases by 0,33, and the foot length has an increase of 0,46 cm.

### Conclusions

After the comparative analysis and comparative interpretation of the results of the anthropometric development indicators of the subjects exposed to the research results a higher level in the final measurements, thus confirming the positive influence of the exercises practiced during the physical education and sports classes, but also in the free time, on the development of pupils. As a result of the research we underline the following conclusions: the assumption we left off was confirmed, we found significant differences from the initial testing to the final one, which is encouraging, the children have to develop harmoniously.

Students had a positive response to anthropometric measurements and participated conscientiously and actively in equal measure. For developing morph-functional indexes, we suggest that all students exercise as much physical exercise as possible in both leisure time and in an organized setting, and why not practicing a performance sport.

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### **STUDIUL CONSTATATIV PRIVIND PROFILUL ANTROPOMETRIC AL ELEVULUI DIN CICLUL GIMNAZIAL DE LA LICEUL TEHNOLOGIC “IORGU VÂRNAV LITEANU”, LITENI**

**Cuvinte cheie:** elevi, gimnaziu, antropometrie, măsurători, exerciții.

#### **Abstract:**

Una din cele mai importante preocupări ale omului este stabilirea dimensiunilor fizice ale corpului uman.

Evaluarea antropometrică este o metodă de cuantificare a creșterii și dezvoltării fizice bazată pe măsurarea corpului.



În efectuarea măsurătorilor antropometrice se recomandă să se folosească pentru toți elevii aceleași instrumente, cum ar fi: taliometru, bandă metrică, scăriță de mobilitate, etc.

Prezenta lucrare are ca scop prezentarea metodelor de evaluare somatică la nivelul învățământului gimnazial și examenul antropometric privind creșterea și dezvoltarea armonioasă care constituie o activitate importantă în educație fizică și sport, deoarece prin aceste măsurători putem verifica dacă elevii se încadrează în limitele normale, sub acestea sau depășește nivelul normal în funcție de vârstă și sex.