STATISTICAL STUDY ON THE ANTHROPOMETRIC PROFILE OF THE 5TH GRADE PUPILS

CIUBOTARU MIHAI[1,] LEUCIUC FLORIN[2]

[1]State University of Physical Education and Sports, Chisinau, Rep. Moldavia
[2]Stefan cel Mare University of Suceava, Romania

Abstract

This study represents the anthropometric evaluation of the 5th grade students from LiceulTehnologic "IorguVârnavLiteanu",Liteni,Suceava.

For this study, we researched the theoretical ideas of the experts in the somatic evaluation domain, we estimated the development degree of the students' functional capacity and we initiated a structure of procedure typical to the anthropometric measurements of the 5th grade students.

The aim of this experimental study regarding the anthropometric profile of the 5th grade pupil, through applying some measurements of the human body, is identifying the results of the two measurements, the initial and the final, their comparison and recommending some methods and ways of somato-functional development in physical education and sports games pointing to the development of an ideal shape of the human body depending on the age and sex characteristics.

Key words: pupils, secondary school, measurements.

1. Introduction

Children development is one of the human biology problems of great theoretical and practical importance. As there are extremely numerous data in this domain, new research works are opening up, among which the acceleration phenomenon, so much disputed nowadays, emphasising the complexity of the problems. Instruments used for measurements in this domain are: the dynamometer, the metric tape, the compass, the mobility scale, etc.

After the growth period, children can be considered adults as they reach a somato-vegetative and psychological maturation and the body exhibits fundamental differences and significant neuro-hormonal lability. Irregular growth and development with temporary exacerbations of neuro-vegetative and psychological processes, the child's growing age is divided into several periods, with particular morpho-functional and psychical aspects. All the growth and development periods are important; a special denotation has the prepubescent stage in which the child turns into an adult. Puberty is a different time period for both girls and boys relative to hereditary or environmental factors.

Between 1970 and 1980, the project "The Biomotric Potential of the School Population" was launched, with Alexandra Fosneanu, Virgil Mazilu, Virginia Paraschiv and NicuAlexe (coordinator) taking part in the assessment of health status, waist evolution, children's weight and the development of motor skills in close connection with the biological and functional substrate.

Between 1969 and 1996,"The Comparative Study of the Biomotric Potential of School Population" was implemented during three periods (1969 -1972; 1980-1984; 1991-1996), including infants, primary school pupils, secondary school and high school students.

So far, for the school year 2016-2017, its pilot phase has been carried out to highlight the possibilities of applying anthropometric measurements and functional movement tests as well as data collection.

Anthropometry - Measurement (Greek, 'metron' - measure), dimensions of the human body.

"All actions aiming at correlation between the measurement of the subject or the measured phenomenon (skills, skills, 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 practicing physical exercise and, in general, behavior of subjects in physical education or sports "(A. Dragnea, 1984).

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[1]mihaiciubotaru11@yahoo.com, 0749201875
[2]f_leuciuc@yahoo.com, 0746852974

Definitions of measurement:
- the conceptual and empirical operation by assigning values to the parameters of objects and processes;
- the assignment process, according to strict rules of an 'imprecise' number of the measure of a characteristic;
- the process by which the quantitative determination of a characteristic is reduced

M. Epuran defines measurement as "the process of assigning numbers to the properties of objects (individuals, phenomena) according to certain principles, so that numerical relations represent the relevant relations between objects".

From the point of view of the relation between the objects and the phenomena measured, there are the following categories:
- direct- comparison of the measurement size with the unit of measurement;
- indirect - to find a value by using a formula and introducing the results obtained by direct measurement.

2. Material-method

The study cannot be completed without a profound documentation, carried out by the study of the specialized papers dealing with the anthropometric measurements of Romanian and foreign authors.
The participant are 5th grade pupils from LiceulTehnologic "IorguVârnavLiteanu" Liteni ,Suceava, in a total of 14 participants, 6 girls and 8 boys. The measurements used for the experiment were carried out in the high school gym.

There were six tests which covered the following: height (cm), weight (kg), trunk height (cm), abdominal perimeter (cm), arm span (cm) and sole length (cm).

The methods used were the following:
- analysis of the specialized literature or the bibliographic documentation method;
- pedagogical observation;
- statistical-mathematical method;
- the graphical method.

Analysis of the specialized literature / bibliographic documentation method - knowledge by studying the literature specialized in the field of somatic evaluation, examination of some scientific papers.

Observation is an organized and continuous process that allows us taking some results. The data obtained through observation allow us to form a rapid opinion about the individuals themselves.

Anthropometric Measurement Method. We used the following anthropometric measurements: height, weight, height of the bust, abdominal perimeter, arm span, foot length to assess the morphological type and the physical development degree of students.

The statistical - mathematical method meant the systematic collection of the parameters obtained on the subjects, leading to certain calculations for determining the results in order to analyze whether the subject under investigation is within the normal limits or below /above the normal limit.

The graphical method was designed to estimate in full graphical representations the data obtained by anthropometric measurements, to establish the results and differences between the subjects of the fifth grade research.

3. Results and discussions

The measurement values (initial and final) made of subjects (male and female) are shown in tables 1-4.

Table 1 - Initial measurement, girls, 5th grade, median age 11 years

No.	Name	Height	Body weight	Bust height	Abdominal perimeter	Arm span	Foot length
1.	A.I.	155	38	79	62	147	23
2.	M.S.	140	33	74	58	137	21
3.	P.I.	147	34	74	56	141	22
4.	P.G.	150	41	77	65	149	22
5.	P.M.	151	42	67	63	149	23
6.	S.D.	145	37	75	62	147	23
	A_a	15	9	12	9	12	2
	X	148	37,5	74,33	61	145	22,33
	+/-S	5,21	3,61	4,08	3,34	4,89	0,81

		Cv%	3,52	9,62	5,48	5,47	3,37	3,62

Table 2 - Initial measurements, boys, 5th grade, median age 11 years

No.	Name	Height	Body weight	Bust height	Abdominal perimeter	Arm span	Foot length
1.	A.P.	147	32	75	58	147	23
2.	C.M.	147	33	75	55	143	21
3.	D.M.	155	41	78	66	156	24
4.	N.E.	147	41	75	64	151	23
5.	P.D.	147	35	72	57	147	22
6.	P.A.	152	39	76	62	150	23
7.	P.A.	148	43	78	64	144	22
8.	S.C	148	43	76	70	154	23
	A_a	8	11	6	15	13	3
	X	132,33	38,37	75,62	62	149	22,62
	+/-S	2,99	4,43	1,92	5,04	4,59	0,91
	Cv%	2,25	11,54	2,53	8,12	3,08	4,02

Table 3 - Final measurement, girls, 5th grade, median age 11 years

No.	Name	Height	Body weight	Bust height	Abdominal perimeter	Arm span	Foot length
1.	A.I.	156	41	79	62	147	23
2.	M.S.	150	50	75	64	160	24
3.	P.I.	154	36	74	57	146	22
4.	P.G.	153	43	77	71	149	23
5.	P.M.	153	45	70	70	150	23
6.	S.D.	149	38	75	66	147	23
	A_a	7	14	9	14	14	2
	X	152,5	42,16	75	65	149,83	23
	+/-S	2,58	5,03	3,03	5,21	5,19	0,63
	Cv%	1,69	11,93	4,04	8,01	3,46	2,73

Table 4 - Final measurement, boys, 5th grade, median age 11 years

No.	Name	Height	Body weight	Bust height	Abdominal perimeter	Arm span	Foot length
1.	A.P.	149	38	75	58	150	23
2.	C.M.	150	37	75	56	145	24
3.	D.M.	159	43	79	69	162	26
4.	N.E.	150	45	77	70	155	24
5.	P.D.	152	38	73	64	154	23
6.	P.A.	157	42	77	66	150	23
7.	P.A.	153	47	79	70	150	24
8.	S.C	156	46	76	73	160	24
	A_a	10	10	6	14	17	3
	X	153,25	42	76,37	65,75	153,25	23,87
	+/-S	3,69	3,92	2,06	6,06	5,67	0,99
	Cv%	2,40	9,33	2,69	9,21	3,69	4,14

The statistical and mathematical indicators used to process the data obtained from the measurements for the two tests are presented in tables 5 and 6.

Table 5 - Average class initial measurement

	Height	Body	Bust	Abdominal	Arm	Foot

	weight	height	perimeter	span	length
A_a	11,5	10	9	12	12,5	2,5
X	140,16	37,93	74,97	61,5	147	22,47
+/-S	4,1	4,02	3	4,19	4,74	0,86
Cv%	2,88	10,58	4,00	6,79	3,22	3,82

Table 6 - Average class final measurement

	Height	Body weight	Bust height	Abdominal perimeter	Arm span	Foot length
A_a	8,5	12	7,5	14	15,5	2,5
X	152,87	42,08	75,68	65,37	151,54	23,43
+/-S	3,13	4,47	2,54	5,63	5,43	0,81
Cv%	2,04	10,63	3,36	8,61	3,57	3,43

By 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 an increase of 12,71 cm, the weight increases by 4,15 kg, bust height increases by 0,71 cm, the abdominal perimeter increases 3,87 cm, the arm span increases by 4,54, and the foot length has an increase of 0,96 cm (figure 1, table 7).
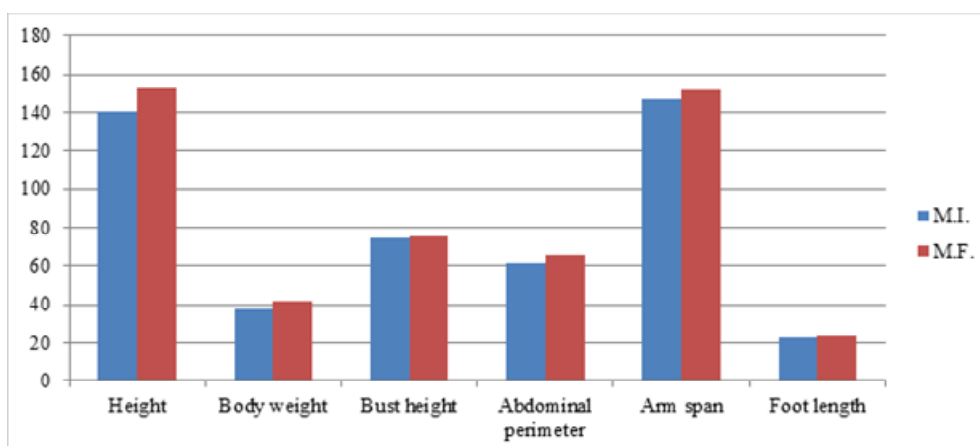

Figure 1 - Initial and final class average measurement

Table 7 - Mean initial and final measurement girls and boys

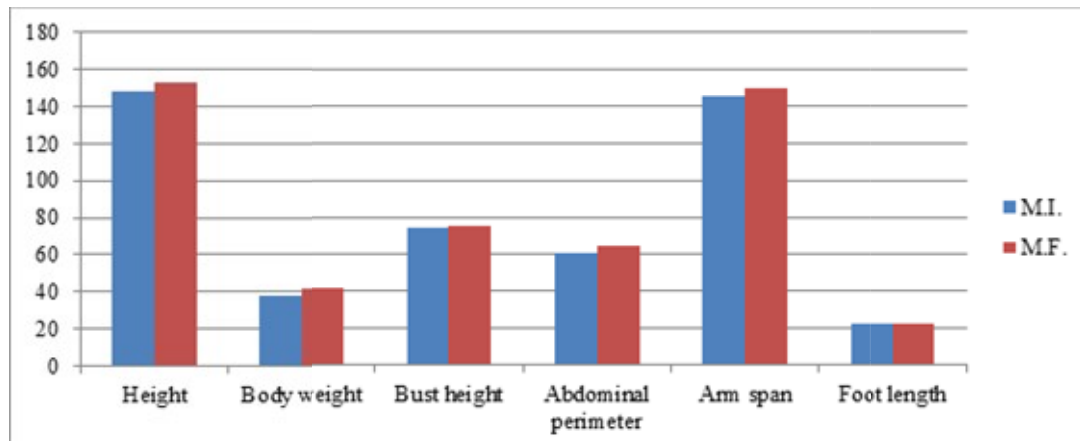|	F/M	Height	Body weight	Bust height	Abdominal perimeter	Arm span	Foot length
m1	girls	148	37,5	74,33	61	145	22,33
m2		152,5	42,16	75	65	149,83	23
m1	boys	132,33	38,37	75,62	62	149	22,62
m2		153,25	42	76,37	65,75	153,25	23,87

Figure 2 - Initial and final girls measurements

By 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 an increase of 4,8 cm, the weight increases by 4,66 kg, bust height increases by 0,67 cm, the abdominal perimeter increases 3, 87 cm, the arm span increases by 4,83, and the foot length has an increase of 1,33 cm (figure 2 and 3, table 7).
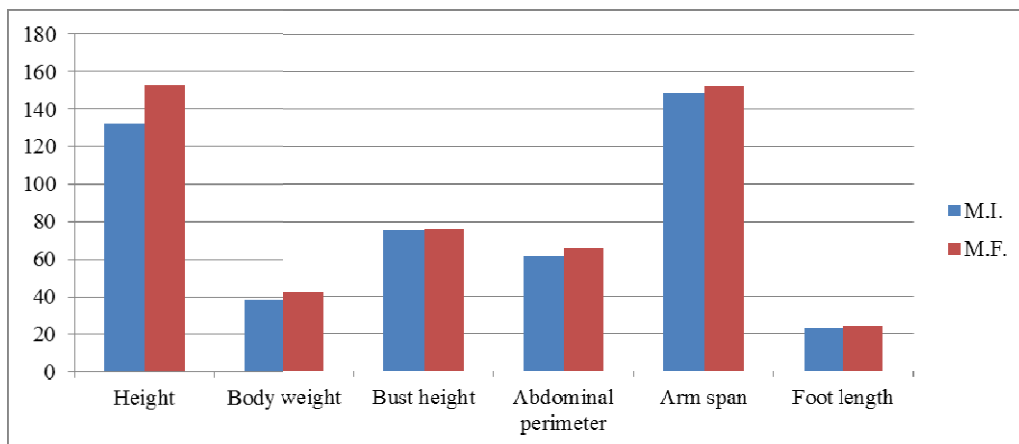

Figure 3 - Initial and final boys measurements

By 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 an increase of 20,99 cm, the weight increases by 3,63 kg, bust height increases by 0,75 cm, the abdominal perimeter increases 3,75 cm, the arm span increases by 1,25, and the foot length has an increase of 1,25 cm(figure 2 and 3, table 7).

4. Conclusions

As a result of the research we found significant differences between the initial measurement and the final one, which is encouraging, the children should develop harmoniously. Students had a positive response to anthropometric measurements and participated conscientiously and actively.

Taking into account the more obvious development of psychomotor skills in final testing, it helps pupils get higher, sometimes maximum, grades and pass the exams.

This can be an incentive for students to practise physical exercise in an organized setting, and those willing to move have the opportunity to put into practice what they have learned at school and in their free time.

Maintaining an optimal state of health, practising physical exercise in an organized setting, but also in free time, developing motor skills all lead to a healthy and well-developed body.

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