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INVESTIGATIVE STUDY OF SOMATIC INDICATOR VALUES IN PUBERTAL SCHOOLCHILDREN FROM URBAN AREAS

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Abstract
The values of somatic indicators, height and weight as well as their ratio defined as BMI are important reference points of human organism growth and development in gymnasium-cycle schoolchildren populations. Knowledge of the relationship between height and weight is important, not only during growth periods, where it is used to evaluate organism growth and development, but also for the adult individuals. If the two indicator values are analyzed separately, it can be seen that *height* represents the more efficient indicator for organism growth and development evaluation whereas *weight* is affected by multiple deviations due to the influences of diet and living conditions.
The aim of this research is to evaluate the level of the main indicators of somatic growth (height and weight) in children aged between 12 – 15 years, the object of this study being organism growth and development level.
In order to emphasize the importance of organism growth and development rate, a study on the somatic indicators was conducted between May and June 2014, encompassing a number of 261 schoolchildren, of which 132 girls and 129 boys from General School No. 30 of Braşov.
The significantly higher level of the measured values of the indicators reveals the effects of an acceleration phenomenon in the gymnasium-cycle population. We assume that, urbanization, the superior quality of the diets, and last but not least, genetic factors are the driving forces behind this acceleration process.

Keywords: somatic indicators, height, weight, acceleration phenomenon, gymnasium cycle, puberty.

Introduction:

Growth and development represents a dynamic complex of biological processes occurring in human organism until it reaches maturity [1]. Physical growth consists in reaching the optimum value of height and weight in accordance with the person's age, as well as the size increase of all the organs and systems [Beers, 2009, p 2248].

Organism maturation is a process which occurs earlier in girls than in boys. The growth rate in girls is 12.1±0,9 years in contrast to 14.1±0,9 years in boys [Beers, 2009, p 2248].

The growth and development processes are influenced by a number of factors with independent action capable of changing the genetic potential of an individual [3]. The current trends, with regard to these processes, are proving once more the strong influence exerted by the environmental factors on the individual's genetic potential in terms of linear growth, whereby nutrition represents a major determinant of the growth process. Puberty is a dynamic period of development, marked by rapid changes regarding size, shape, and composition of human body. The passage from puberty to adolescence is characterized by changes of body composition, especially the regional distribution of the adipose tissue. Hormone regulation along with the changes produced in organism composition is determined by the release of gonadotropin, leptin, steroids and the growth hormone. Most likely, the interactions between these hormone axes are more important than their principal effects, as the changes in organism composition and the regional distribution of adipose tissue might actually be signals indicating neuroendocrinological axes alteration. These processes are amplified during puberty and are probably vital over the entire time period from fetal development till the onset of the aging process [3].

Heredity and genes play an important role in transmitting the physical and social characteristics from parents to children. Various characteristics that are specific to the growth and development processes, such as intelligence, aptitudes, body structure, height, weight, hair and eyes colour are influenced by genetic factors [4 - 7].

Gender is a very important factor of influence on human growth and development processes. Physical growth in girls is more rapid than in boys during adolescence. In general, there are significant differences between the growth processes of girls and boys [6, 7].

Socioeconomic factors – A higher socioeconomic status signifies a larger budget allotted for education, healthy nutrition, better child care, as well as appropriate medical and social services. These factors can induce changes in organism growth and development processes, resulting in the acceleration phenomenon. The prevalence of nutritional excess is much more important in lower social classes from industrialized countries, especially where food supply is adequate but the diets are imbalanced. In such cases, excess weight is the result of a nutritional imbalance associated with a high intake of carbohydrates and added sugars [4, 7].

Hormones are responsible not only for height increase but also for the rate and change of proportions between different body segments during the growth periods. The genetic factors are conditioning this development process by means of growth-stimulating hormones: somatotropic hormone, thyroxin and thymus [5].

Materials and methods:

In order to determine the organism growth and development rate in children aged between 12 – 15 years, we conducted a longitudinal study between May and June 2014 among the schoolchildren from the General School No. 30 of Braşov. The anthropometric measurements included: height and weight depending on age and gender. The height was measured using a stadiometer, and was expressed in centimeters (cm) whereas weight was determined using digital scales and was expressed in kilograms (kg). The statistical-mathematical indicators used for analyzing the data obtained after the measurements are the following: arithmetic mean (Ma), standard deviation (σ), coefficient of variation (c.v.), amplitude (W) etc. (Table 1 and 2)

Discussions:

Anthropometric evaluation of children and adolescents requires the use of standards and/or references of growth in order to evaluate the growth process and the nutrition condition [8; 9]. An optimum growth reflected by a growth standard, implies that all children have the potential to reach this level, with a growth reference used for comparison [10].

Knowing the relationship between the two anthropometric indicators, height and weight, is important for evaluating the growth and development level of individuals. If analyzed separately, the data about the height indicator appear even more relevant for evaluating growth and development, since weight is influenced by nutrition and the living conditions of every individual.

Table 1. Anthropometric parameter values measured in girls aged between 12 - 15 years.

Age (yrs)	No. children	Measured parameter	M_a	σ	C.v. (%)	W	±m	Extreme values		Frecvency (%)	
								L. sup.	L. inf.	under average	above average
12	44	Height (cm)	153.07	8.20	5.35	38.00	1.25	174.00	136.00	45.45	54.55
13	33		158.45	5.90	3.72	23.50	1.04	169.50	146.00	42.42	57.58
14	31		157.97	6.43	4.07	29.50	1.17	171.00	141.50	48.39	51.61
15	24		162.79	5.68	3.49	21.50	1.19	174.50	153.00	45.83	54.17
12	44	Weight (kg)	44.72	10.44	23.35	35.50	1.59	64.50	29.00	61.36	38.64
13	33		50.12	10.77	21.49	47.50	1.90	81.50	34.00	57.58	42.42
14	31		49.84	8.75	17.56	37.50	1.60	73.00	35.50	54.84	45.16
15	24		54.25	7.58	13.98	27.50	1.58	68.50	41.00	50.00	50.00

Table 2. Anthropometric parameter values measured in boys aged between 12 - 15 years.

Age (yrs)	No. children	Measured parameter	M_a	σ	C.v. (%)	W	±m	Extreme values		Frecvency (%)	
								L.sup.	L.inf	under average	above average
12	44	Height (cm)	151.08	8.86	5.86	45.00	1.35	176.00	131.00	54.55	45.45
13	28		157.75	8.48	5.38	33.50	1.63	174.00	140.50	50.00	50.00
14	26		164.35	9.43	5.74	38.00	1.89	178.50	140.50	46.15	53.85
15	31		170.35	7.78	4.57	36.50	1.42	186.50	150.00	48.39	51.61
12	44	Weight (kg)	44.38	13.96	31.46	69.00	2.13	94.00	25.00	61.36	38.64
13	28		46.61	10.54	22.61	36.50	2.03	67.50	31.00	60.71	39.29
14	26		54.60	12.94	23.70	66.50	2.59	97.00	38.50	53.85	46.15
15	31		59.63	14.06	23.58	69.00	2.57	108.00	39.00	61.29	38.71

Height represents the main indicator of somatic growth and development and is genetically conditioned. Table1 and Table 2 present the data with regard to this indicator, in girls and boys, aged between 12 - 15 years.

In girls, the obtained average values are the following: 153.07 cm – 12 years, 158.45 cm – 13 years, 157.97 cm – 14 years, 162.79 cm – 15 years (Table 1 and Figure 1), whereas in boys, the obtained average values are the following: 151.08 cm – 12 years, 157.75 cm – 13 years, 164.35 cm – 14 years and 170.35 cm – 15 years (Table 2 and Figure 1).

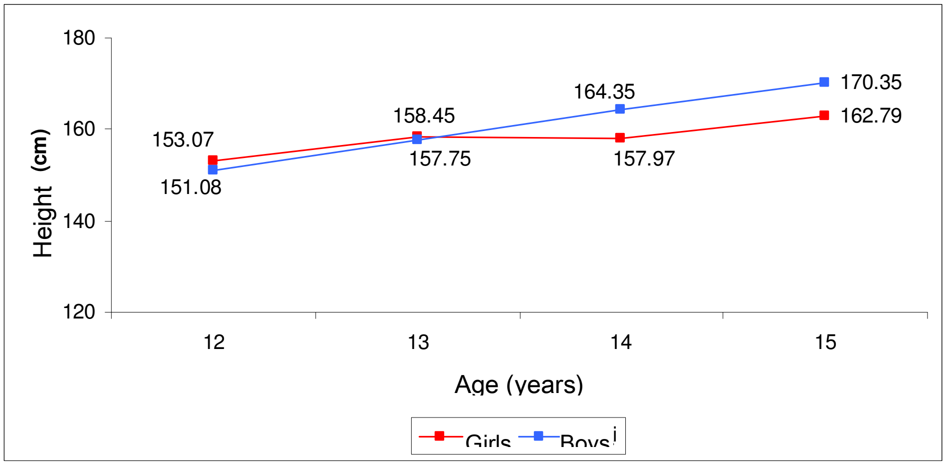

Figure 1. Distribution of height averages depending on age and gender

With regard to the frequency of girls with height above age average value this is 54.55% at 12 years, 57.58% at 13 years, 51.61% at 14 years and 54.17% at 15 years. The measured sample is homogenous, with a coefficient of variation taking values between 3.49 – 5.35%, and has representative average value (Table 1). The annual rate of growth shows a peak value of 5.38 cm from 12 to 13 years and a minimum value of -0.48 cm, from 13 to 14 years (Table 3).

The proportion of boys who have a height above the age average is 53.85% in those aged 14 and 51.61% in those aged 15. The measured sample is homogenous, with a coefficient of variation taking values between 4.37 – 5.86%, and has representative average value (Table 2). The annual rate of growth shows a peak value of 6.67 cm from 12 to 13 years, and a minimum value of 6 cm from 14 to 15 years (Table 3).

Table 3. Annual height growth rates depending on gender

Age (years)	Height (cm)	
	Girls	Boys
12 – 13	5.38	6.67
13 – 14	- 0.48	6.60
14 - 15	4.82	6.00

Data distribution in the case of girls aged 12, representing the average value of height, using the Gauss curve is the following (Table 4 and Figure 2): the interval M ± SD encompasses 68.18% of the measured girls, the interval M ± 2SD encompasses 93.18% of the measured girls, and the interval M ± 3SD encompasses 100% of the measured girls

Table 4. Gauss distribution of height averages in girls aged 12.

-3 SD	-2 SD	-1 SD	M_a	+1 SD	+2 SD	+3 SD
128.48	136.68	144.87	153.07	161.26	169.46	177.66
		68.18%				
	93.18%					
100%						

Data distribution in the case of boys aged 12, representing the average value of height, using the Gauss curve is the following (Table 5 and Figure 2): the interval M ± SD encompasses 59.09% of the measured boys, interval M ± 2SD encompasses 93.18% of the measured boys, and interval M ± 3SD encompasses 100% of the measured boys.

Table 5. Gauss distribution of height averages in boys aged 12.

-3 SD	-2 SD	-1 SD	M_a	+1 SD	+2 SD	+3 SD
124.5	133.36	142.22	151.08	159.94	168.80	177.66
			59.09%			
			93.18%			
			100%			

By plotting data distribution using the Gauss curves, it can be noticed that these are normally distributed (Figure 2), with M_a = 153.07 cm (girls), 151.08 cm (boys), σ = 8.20 (girls) and, respectively 8.86 (boys), and c.v. = 5.35% (girls) and respectively 5.86% (boys) (Table 1 and Table 2).

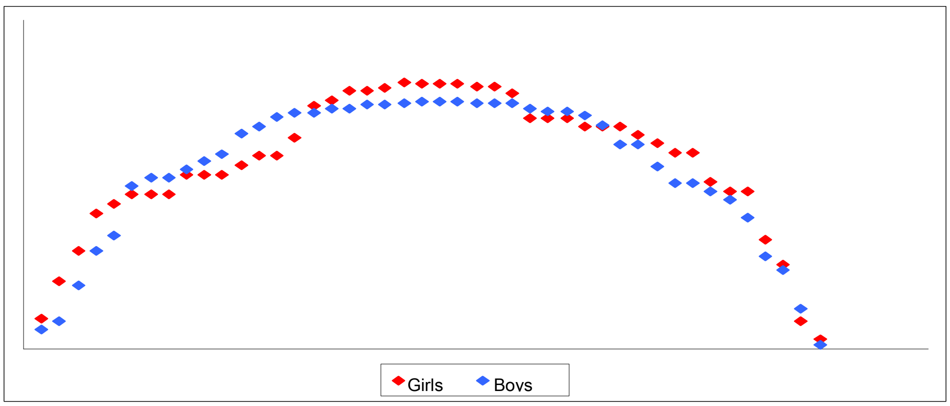

Figure 2. Gauss distribution of height values in 12-year-old children, depending on gender

Data distribution in the case of girls aged 13, representing the average value of height, using the Gauss curve is the following (Table 6 and Figure 3): the interval M ± SD encompasses 75.76% of the measured girls while interval M ± 2SD encompasses 100% of the measured girls.

Table 6. Gauss distribution of height average values, in girls aged 13.

-3 SD	-2 SD	-1 SD	MEDIA	+1 SD	+2 SD	+3 SD
140.76	146.66	152.56	158.45	164.35	170.25	176.15
			75.76%			
			100%			

Data distribution in the case of boys aged 13, representing the average value of height, using the Gauss curve is the following (Table 7 and Figure 3): the interval M ± SD encompasses 67.86% of the measured boys, while M ± 2SD encompasses 100% of the measured boys.

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Table 7. Gauss distribution of height averages in boys aged 13.

-3 SD	-2 SD	-1 SD	MEDIA	+1 SD	+2 SD	+3 SD
132.3	140.78	149.27	157.75	166.23	174.72	183.2
			67.86%			

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By plotting data distribution using the Gauss curves, it can be noticed that these are normally distributed (Figure 3) with M_a = 153.07 cm (girls), 151.08 cm (boys), σ = 8.20 (girls), respectively 8.86 (boys) and c.v. = 5.35% (girls), respectively 5.86% (boys) (Table 1 and Table2).

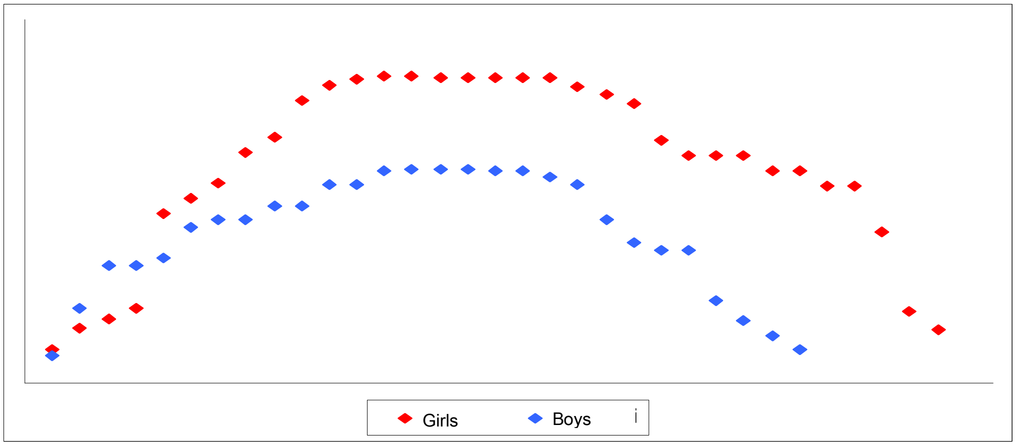

Figure 3. Gauss distribution of height values in children aged 13 depending on gender

Data distribution in the case of girls aged 14, representing the average value of height, using the Gauss curve is the following (Table 8 and Figure 4): the interval M ± SD encompasses 70.97% of the measured girls, interval M ± 2SD encompasses 93.55% of the measured girls, while M ± 3SD encompasses 100% of the measured girls.

Table 8. Gauss distribution of height averages in girls aged 14.

<table>
<tr><th>-3 SD</th><th>-2 SD</th><th>-1 SD</th><th>MEDIA</th><th>+1 SD</th><th>+2 SD</th><th>+3 SD</th></tr>
<tr><td>138.69</td><td>145.11</td><td>151.54</td><td>157.97</td><td>164.39</td><td>170.82</td><td>177.25</td></tr>
<tr><td colspan="2"></td><td colspan="3">70.97%</td><td colspan="2"></td></tr>
<tr><td></td><td colspan="5">93.55%</td><td></td></tr>
<tr><td colspan="7">100%</td></tr>
</table>

Data distribution in the case of boys aged 14, representing the average value of height, using the Gauss curve is the following (Table 9 and Figure 4): the interval M ± SD encompasses 69.23% of the measured boys, the interval M ± 2SD encompasses 96.15% of the measured boys, and the interval M ± 3SD encompasses 100% of the measured boys.

Table 9. Gauss distribution of height averages in boys aged 14

<table>
<tr><th>-3 SD</th><th>-2 SD</th><th>-1 SD</th><th>MEDIA</th><th>+1 SD</th><th>+2 SD</th><th>+3 SD</th></tr>
<tr><td>136.06</td><td>145.49</td><td>154.92</td><td>164.35</td><td>173.78</td><td>183.21</td><td>192.63</td></tr>
<tr><td colspan="2"></td><td colspan="3">69.23%</td><td colspan="2"></td></tr>
<tr><td></td><td colspan="5">96.15%</td><td></td></tr>
<tr><td colspan="7">100%</td></tr>
</table>

By plotting data distribution using the Gauss curves, it can be noticed that these are normally distributed (Figure 4), with M_a = 153.07 cm (girls), 151.08 cm (boys), σ = 8.20 (girls), respectively 8.86 (boys) and c.v. = 5.35% (girls), respectively 5.86% (boys) (Table 1 and Table 2).

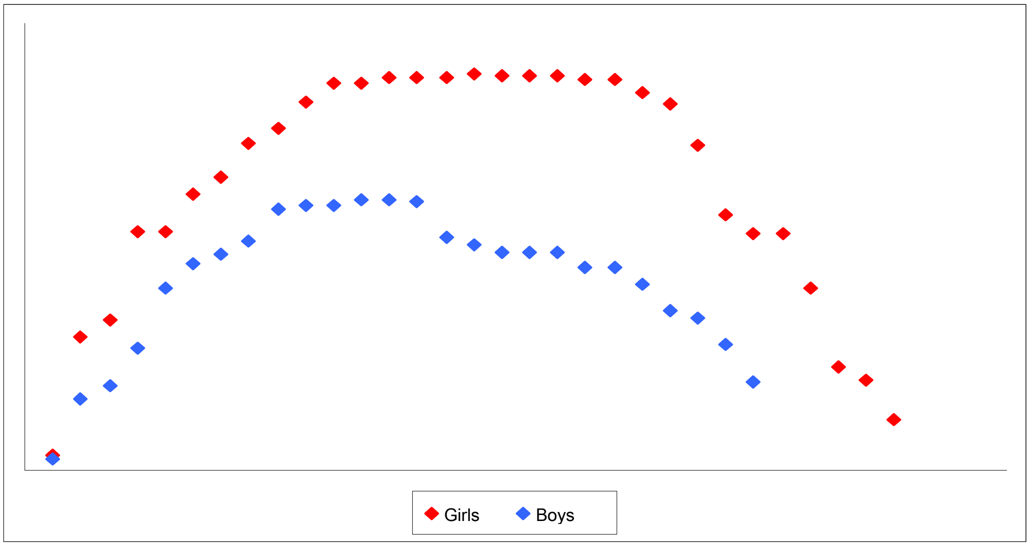

Figure 4. Gauss distribution of height values in children aged 14 depending on gender

Data distribution in the case of girls aged 15, representing the average value of height, using the Gauss curve is the following (Table 10 and Figure 5): the interval M ± SD encompasses 66.67% of the measured girls, the interval M ± 2SD encompasses 95.83% of the measured girls, and interval M ± 3SD encompasses 100% of the measured girls.

Table 10. Gauss distribution of height averages in girls aged 15.

-3 SD	-2 SD	-1 SD	MEDIA	+1 SD	+2 SD	+3 SD
145.76	151.77	157.11	162.79	168.47	174.15	179.83
			66.67%			
			95.83%			
			100%			

Data distribution in the case of boys aged 14, representing the average value of height, by using the Gauss curve is the following (Table 11 and Figure 5): the interval M ± SD encompasses 74.19% of the measured boys, interval M ± 2SD encompasses 90.32% of the measured boys, and interval M ± 3SD encompasses 100% of the measured boys.

Table 11. Gauss distribution of height averages in boys aged 15.

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
147.02	154.80	162.58	170.35	178.13	185.91	193.69
			74.19%			
			90.32%			
			100%			

By plotting data distribution using the Gauss curves, it can be noticed that these are normally distributed (Figure 5), with M_a = 153.07 cm (girls), 151.08 cm (boys), σ = 8.20 (girls), respectively 8.86 (boys) and c.v. = 5.35% (girls), respectively 5.86% (boys) (Table 1 and Table 2).

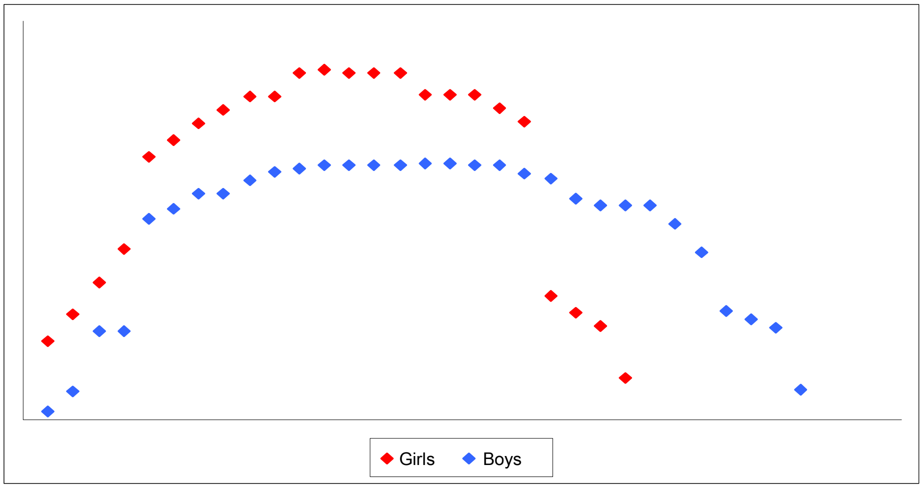

Figure 5. Gauss distribution of height values in children aged 15 depending on gender

Weight is a somatic indicator influenced by socioeconomic, educational factors etc. The average values of this indicator are presented in Table 1 and Table 2, depending on age and gender.

For the case of girls the measurements yielded following weight averages: 44.72 kg – 12 years, 50.12 kg – 13 years, 49.84 kg – 14 years, respectively 54.25 kg – 15 years (Table 1 and Figure 6). The average values of weight in boys are: 44.38 kg – 12 years, 46.61 kg – 13 years, 54.60 kg – 14 years and 59.63 kg – 15 years (Table 2 and Figure 6).

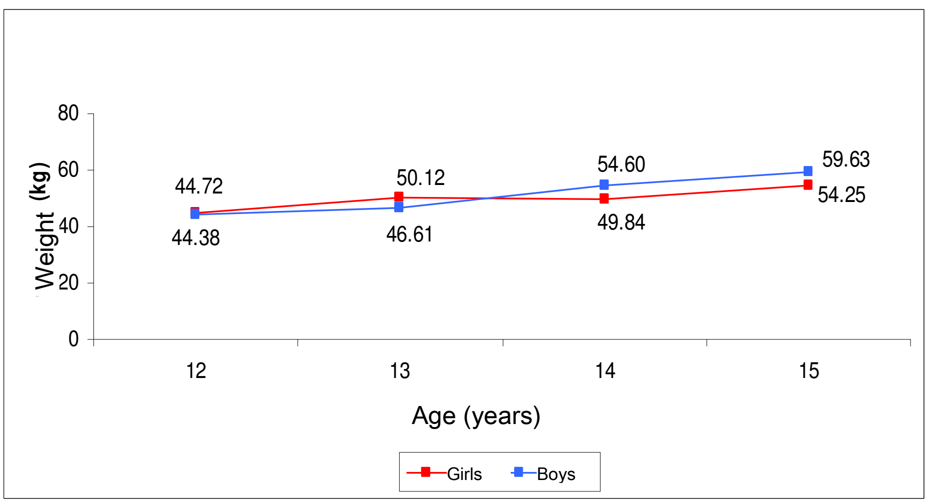

Figure 6. Distribution of weight averages depending on age and gender

The frequency in girls who have a weight below the age average value is 61.36% at 12 years, 57.58% at 13 years, 54.84% at 14 years and 50% at 15 years, while the frequency of the cases having a weight above the age average value is 38.64% at 12 years, 42.42% at 13 years, 45.18% at 14 years and 50% at 15 years (Table 1). The coefficient of variation indicates medium sample homogeneity. However, homogeneity is low compared to the value obtained for the height, with values between 13.98 and 23.35%, depending on the age of the group, while the average is still representative (Table 1). The annual growth rate reaches a maximum value of 5.40 kg from 12 to 13 years, and a minimum value of -0.28 kg, from13 to 14 years (Table 12).

The frequency in boys who have a weight below the age average value is 61.36% at 12 years, 60.71% at 13 years, 53.85% at 14 years and 61.29% at 15 years (Table 2). Similar to the case of girls, the coefficient of variation indicates a medium sample homogeneity, with values between 22.61% and 31.46%, depending on the age, while the average is still representative (Table 2). The annual growth rate reaches a maximum value of 7.99 kg from 13 to 14 years, and a minimum value of 2.23 kg, from 13 to 14 years (Table 12).

Table 12. The annual weight growth rates depending on gender

Age (years)	Weight (kg)	
	Girls	Boys
12 – 13	5.40	2.23
13 – 14	- 0.28	7.99
14 - 15	4.41	5.03

The data distribution plot, representing the average value of weight, by using the Gauss curve is the following:

- Girls – aged 12 years (Table 13 and Figure 7): the interval M ± SD encompasses 63.63% of the measured girls, whereas M ± 2SD encompasses 100% of the measured girls

Table 13. Gauss distribution of weight averages in girls aged 12.

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
13.39	23.83	34.28	44.72	55.16	65.6	76.04
		63.63%				
	100%					

- Boys – aged 12 years (Table 14 and Figure 7): the interval M ± SD encompasses 75% of the measured boys, interval M ± 2SD encompasses 95.45% of the measured boys, and interval M ± 3SD encompasses 100% of the measured boys.

Table 14. Gauss distribution of weight averages in boys aged 12

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
2.5	16.46	30.42	44.38	58.33	72.29	86.25
		75.00%				
	95.45%					
100%						

By plotting the data distribution using the Gauss curves, it can be noticed that these are normally distributed, in girls, (Figure 7), with $M_a = 44.27$ kg, σ = 10.44 and c.v. = 23.35% (Table 1). In the case of boys, c.v. = 31.46%, which signifies that data dispersion is very large, The arithmetic mean is not representative, $M_a = 44.38$ kg, for the considered sample. It is therefore recommendable to use the median due to grouinhomogeneity (Table 2).

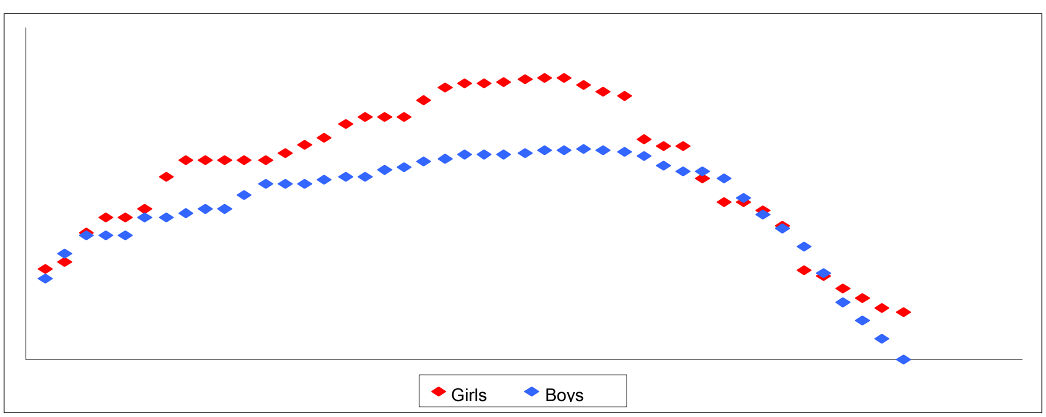

Figure 7. Gauss distribution of weight averages in children aged 12 depending on gender

Girls – aged 13 years (Table 15 and Figure 8): the interval M ± SD encompasses 72.73% of the measured girls, interval M ± 2SD encompasses 93.94% of the measured girls, and interval M ± 3SD encompasses 100% of the measured girls.

Table 15. Gauss distribution of weight averages in girls aged 13 years.

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
17.81	28.58	39.35	50.12	60.89	71.65	82.42
		72.73%				
	93.94%					
100%						

Boys – aged 13 years (Table 6 and Figure 8): the interval M ± SD encompasses 60% of the measured boys, and interval M ± 2SD encompasses 100% of the measured boys.

Table 16. Gauss distribution of weight averages in boys aged 13 years

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
15	25.54	36.07	46.61	57.14	67.68	78.22
		60.71%				
	100%					

By plotting the data distribution using the Gauss curves, it can be noticed that these are normally distributed, in girls, (Figure 8), with M_a = 50.12 kg (girls), 46.61 kg (boys), σ = 10.77 (girls), respectively 10.54 (boys) and c.v. = 21.49% (girls), respectively 22.61% (boys) (Table 1 and Table 2).

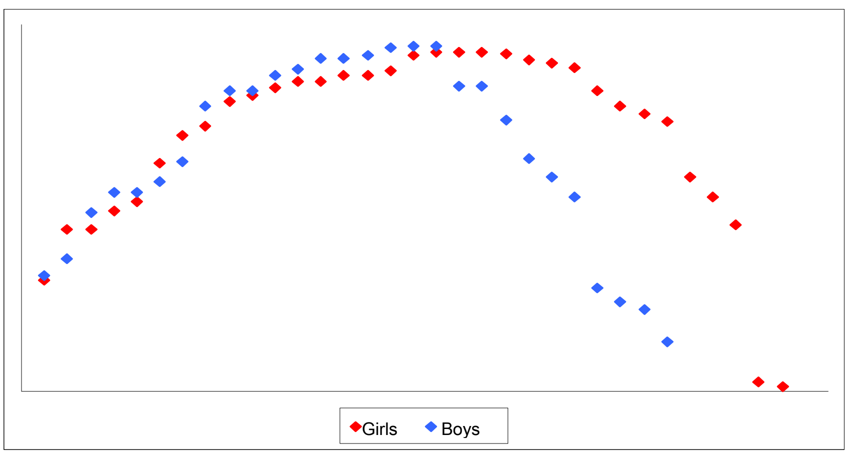

Figure 8. Gauss distribution of weight averages in children aged 13 years, depending on gender

Girls – aged 14 years (Table 17 and Figure 9): the interval M ± SD encompasses 70.97% of the measured girls, interval M ± 2SD encompasses 93.94% of the measured girls, and interval M ± 3SD encompasses 100% of the measured girls.

Table 17. Gauss distribution of weight averages in girls aged 14 years

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
23.58	32.33	41.09	49.84	58.59	67.34	76.1
		70.97%				

			93.94%			
			100%			

Boys – aged 14 years (Table 18 and Figure 9): the interval M ± SD encompasses 73.08% of the measured boys, interval M ± 2SD encompasses 96.15% of the measured boys, and interval M ± 3SD encompasses 100% of the measured boys.

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Table 18. Gauss distribution of weight averages in boys aged 14 years

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
15.78	28.72	41.66	54.6	67.54	80.48	93.42
			73.08%			
			96.15%			
			100%			

By plotting the data distribution using the Gauss curves, it can be noticed that these are normally distributed (Figure 9), with M_a = 49.84 kg (girls), 54.60 kg (boys), σ = 8.75 (girls), respectively 12.94 (boys) and c.v. = 17.56% (girls), respectively 23.70% (boys) (Table 1 and Table 2).

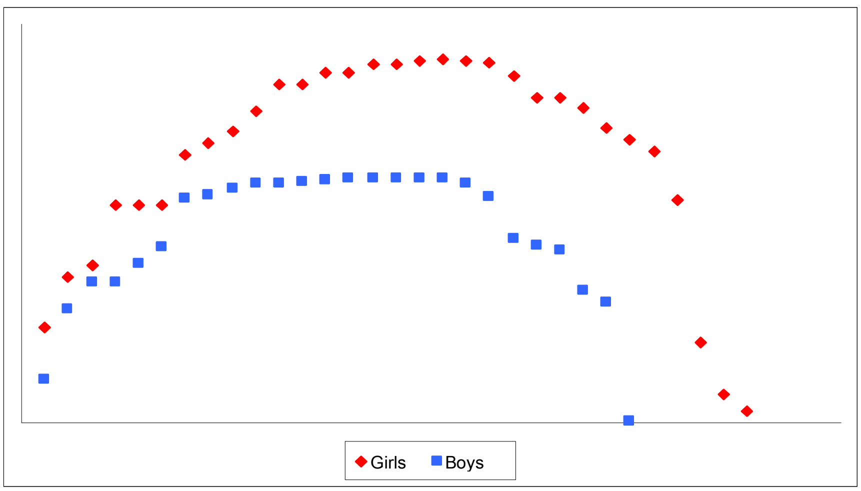

Figure 9 Gauss distribution of weight averages in children aged 14 years, depending on gender

Girls – aged 15 years (Table 19 and Figure 10): the interval M ± SD encompasses 66.67% of the measured girls, and the interval M ± 2SD encompasses 100% of the measured girls.

Table 19. Gauss distribution of weight averages in girls aged 15 years

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
31.5	40.15	46.67	54.25	61.83	69.42	77
			66.67%			
			100%			

Boys – aged 15 years (Table 20 and Figure 10): the interval M ± SD encompasses 74.19% of the measured boys, interval M ± 2SD encompasses 96.77% of the measured boys, and interval M ± 3SD encompasses 100% of the measured boys.

Table 20. Gauss distribution of weight averages in boys aged 15 years.

-3 SD	-2 SD	-1 SD	AVERAGE	+1 SD	+2 SD	+3 SD
17.45	31.51	45.57	59.63	73.68	87.74	101.80
		74.19%				
	96.77%					
100%						

By plotting the data distribution using the Gauss curves, it can be noticed that these are normally distributed (Figure 10), with M_a = 54.25 kg (girls), 59.63 kg (boys), σ = 7.58 (girls), respectively 14.06 (boys) and c.v. = 13.98% (girls), respectively 23.58% (boys) (Table 1 and Table 2).

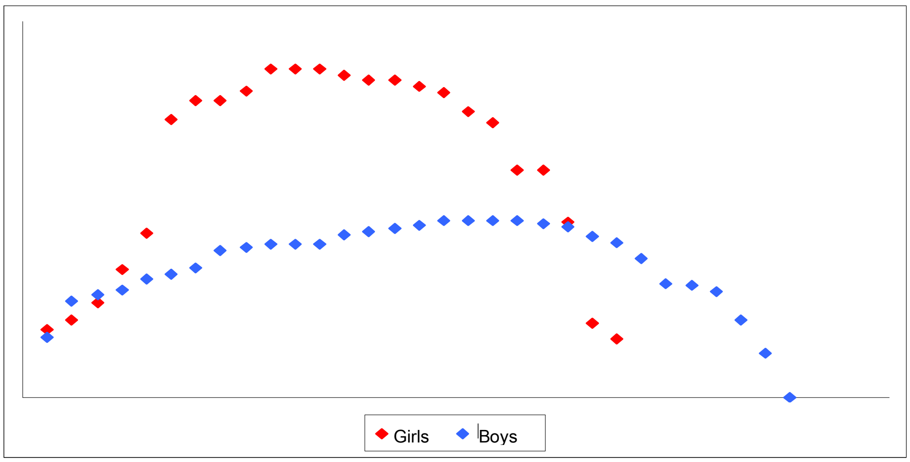

Figure 10. Gauss distribution of weight values in children aged 15 years depending on gender

Conclusions

1. After completion of the conducted study we noticed a significant increase of the somatic indicator values, depending on age;
2. By analyzing the evolution of height averages, a significant increase could be observed, from 12 to 15 years, both in boys, as well as in girls, with a difference of 9.55 cm between the boys' and the girls' averages;
3. By analyzing the weight averages, we noticed an increase in boys which exceeds the girls' weight increase: 15.25 kg, from 12 to15 years in boys and 9.53 kg, in girls.

Recommendations

1. Somatic measurements in schoolchildren aged 12 – 15 should be conducted annually, usually at the beginning of the school year, encompassing all schoolchildren, The obtained values should be correlated with the data from the previous year;
2. The evaluations regarding the organism growth and development level should be made by correlating the levels of the somatic indicators with the level of the students' environmental and social factors.

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STUDY ON IMPROVING THE MOTOR QUALITY SPEED WITH SECONDARY SCHOOL STUDENTS BY USING ALGORITHMS

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Abstract:
Permanent improvement of the teaching process is a constant concern of specialists in pedagogy. Therefore, in this paper we wanted to present how the development of motor quality "speed" can be improved in several forms. For this, we used the method of training algorithm. The study was conducted by students of grade VIII. Results showed that the efficiency of this method is higher than the traditional method.

Key words: physical education, secondary school, speed, manifestation forms, algorithmization

Introduction:
The main directions of research were the specific objectives of school physical education.
Harmonious physical development and improving the motor skills indices are some of these objectives. Thereby, the speed in all its forms of manifestation is the objective of the teaching process, adapted to the psychomotor peculiarities of age school children.
Algorithmization in physical education can be the basic element of didactic programming and projecting, which ultimately contributes to the frame objectives and reference objectives. This consists in compiling and application of actuator systems (means, exercises) in order to achieve the proposed objectives in a logical and rational sequence, complying with requirements of the principle of accessibility (Iconomescu T.M., 2013:36-37)
Observation and intervention in the educational process are meant to collect data that lead to validation or refutation of working hypothesis.
Observations are going to examine whether the students are receptive to activity performed during mandatory lessons.
We also intended to observe if students have an appropriate conduct and they are interested in the proposals of teachers for improving their performance.
This improvement will be achieved through the implementation of programs with algorithms designed by us in order to improve their manifestation of speed and their response to all sorts of situations for they were requested.

Method
To check the working hypothesis we conducted a pedagogical experiment which involves a change in the regular work program of physical education lessons.
For this purpose we have made an experimental lot with VIII grade students, divided into two groups, the experimental group and the control group (boys and girls).
The experimental group will execute the means of practice based on algorithms, guided by professor of physical education during lessons from school program.
The control group worked in physical education classes according to the planning documents of the school, conceived by the teacher without explicitly focus on differentiated means to improve speed.
The experiment was conducted during the first semester of school year 2014 - 2015, when 40 lessons were observed in the "Constantin Bratescu" High School, Isaccea, Tulcea County.