



## A COMPARATIVE STUDY REGARDING THE IMPACT OF PHYSICAL EXERCISES OVER THE SOMATIC INDICATORS FOR CHILDREN LIVING IN URBAN AND RURAL AREAS (10-11 YEARS)

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**Problem Statement:** Once a child starts its school experience, the learning process is triggered, as it is considered that it has to develop on the basis of a healthy organism, due to the fact that the intellectual effort requires a greater physical resistance. Furthermore, knowing children's anatomic and physiologic particularities is a necessary condition for a good proceeding of the Physical Education lesson in school, because it enables the members of the didactic staff to understand the importance of physical education for primary school pupils, and the necessity of these lessons to be realised in an organised and systematic manner. Somatic parameters are a barometer for the didactic staff, and a comparative presentation of these parameters could represent a starting signal for the didactic process.

**Purpose of Study:** This research started from the hypothesis according to which there are significant differences in the somatic development of children in urban areas, as compared to those living in rural areas, and we believe that these differences occurred due to the lack of movement. The present research was undertaken on a group of 20 subjects: 10 subjects living and learning in urban areas, and other 10 in rural areas.

**Research Methods:** For our research we used the bibliographic study method, observation method, enquiry method (discussion, conversation, Lexical association – La, etc.), pedagogical experiment method, statistical-mathematical method, and graphical method.

**Findings:** The purpose of this research was to observe if significant differences occur in the somatic development for children from urban areas, which have only two Physical Education lessons are more sedentary, as compared with children from rural areas, who, in addition to the two lessons of Physical Education they have in the weekly syllabus, spend about 2-3 hours a day outdoors playing ball, running or playing several specific countryside childhood games (catch, hide and seek, etc).

**Conclusions:** Therefore, Physical Education lesson combined with leisure activities has a positive effect on children's growth and development, an aspect which should be taken into consideration, and we should offer more outdoor time for children living and studying in urban areas.

**Keywords:** pupils, urban, rural, motion, sedentary lifestyle, Physical Education, somatic indices.

### Introduction

Once a child starts its school experience, the learning process is triggered, as it is considered that it has to develop on the basis of a healthy organism, due to the fact that the intellectual effort requires a greater physical resistance. Furthermore, knowing children's anatomic and physiologic particularities is a necessary condition for a good proceeding of the Physical Education lesson in school, because it enables the members of the didactic staff to use correctly the means and methods and methodical processes of Physical Education, and can easily understand the reason for which some exercises are indicated while others are not, and can take measures for a rational dosage of children's effort, in accordance with their possibilities, having the

purpose of making the teaching process more efficient.

### Research purpose

This paper, by approaching the issues of this subject, has the following purposes:

- To identify the somatic and functional parameters;
- To identify possible somatic and functional differences which occur between the two groups of children, coming from urban and rural areas;
- To identify the causes which lead to the occurrence of somatic and functional differences between the two groups of subjects.

### Research objectives

The objectives which laid the bases of this study are the following:

1. The analysis of the cases in which somatic and functional differences appear between the two groups of subjects;

2. The evaluation of the somatic and functional differences between the two groups of subjects;
3. Acknowledging the reasons which lead to the occurrence of these somatic differences.

### Research hypothesis

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This research started from the hypothesis according to which there are significant differences in the somatic development of children in urban areas, as compared to those living in rural areas, and we believe that these differences occurred due to the lack of movement.

### Operational process and involved subjects

We undertook the research on a number of 20 pupils, randomly chosen and all boys, coming from rural schools (10 pupils) and urban schools (10 pupils). These schools, where the didactic process is developed, have approximately the same learning conditions, and, at least theoretically, have the same knowledge level.

### Research methods and techniques

In our scientific activity, we used acknowledged research methods and techniques:

1. Bibliographic study method;
2. Observation method and enquiry method (discussion);
3. Statistical-mathematical method;
4. Graphical method.

### Obtained results and their interpretation

It is important to note, before doing the analysis and interpretation of data, that in terms of physical signs we have to note weight gain and stature growth, which are relatively slow in the first two years of school, when the difference from one year to another does not exceed two kilograms – weight gain is emphasized later –, while in the last two years, when the difference of weight rises from year to year, from two to four kilograms. Thus, for the whole small schooling age weight gain range extends from 20-29 kg, for boys, and between 19-28 kg for girls.

Therefore, body weight grows 3-4 times more than other somatic indicators. “Growth is not equal, alternating from growing in height (period of

**Phase 1** – in this phase we measured and weighed pupils from the two groups, and we have recorded the final data in tables.

In order to improve the teaching system, and to increase the efficiency of the teaching process by

growing taller) to growing in weight (period of growing fatter), which affects all body segments, but mainly the torso and limbs.” (Căpraru E., Căpraru H., 2010)

After this period, the growth process becomes slower, between 113-132 cm for boys and 111-131 cm for girls. Growing in height is primarily based on the inferior limbs and has annual averages of approximately 4,5 cm for boys and 5,0 cm for girls. Without being robust, without having an impressive constitution, we might even say delicate, the small pupil has a muscular force that is continuously growing: “he is agitated and does not find his place, runs more, but instead gets tired easily. The muscular system grows up to approximately 27.5% of body weight.” (Stănescu M., 2004)

Being clumsy at first when manipulating objects, especially those required in school, the pupil becomes more skilled, learning how to organise his gestures according to the context.

All these aspects described above have been observed and noted by the following authors: Stănescu M. (2002, 2004), Ifrim M. (1986), Căpraru E., Căpraru H. (2010), in books such as: *Physical Education for Preschool Children and Pupils*, and *The Didactic of Physical Education* (Stănescu M); *Motric Anthropology* (Ifrim M.); *Mother and Child* (Căpraru E., Căpraru H.).

For this reason, we believe that, through an early identification of the phenomena affecting the human body, enabling it to develop and transform, we can help the members of the didactic staff to understand the importance of physical education for primary school pupils, and the necessity of this lessons to be realised in an organised and systematic manner, due to the fact that somatic parameters are a barometer for trainers, and a comparative presentation of these parameters could represent a starting signal for the didactic process.

### The present research was undertaken in two phases:

- Phase 1 or phase of somatic-metrical indices measurement – height and weight
- Phase 2 or enquiry phase.

opening new research directions for field specialists, we undertook the study below, in accordance with data from Tables No. 1, 2, and Graph No. 1.

Statistic indicators recorded for 4<sup>th</sup> grade pupils, aged 10-11 years, from rural areas

Table No. 1

No.	Name and Surname	Age - years -	Height - cm -	Weight - kg -
1.	E.A	10	124	22,5
2.	G.F.	10	125	34,7

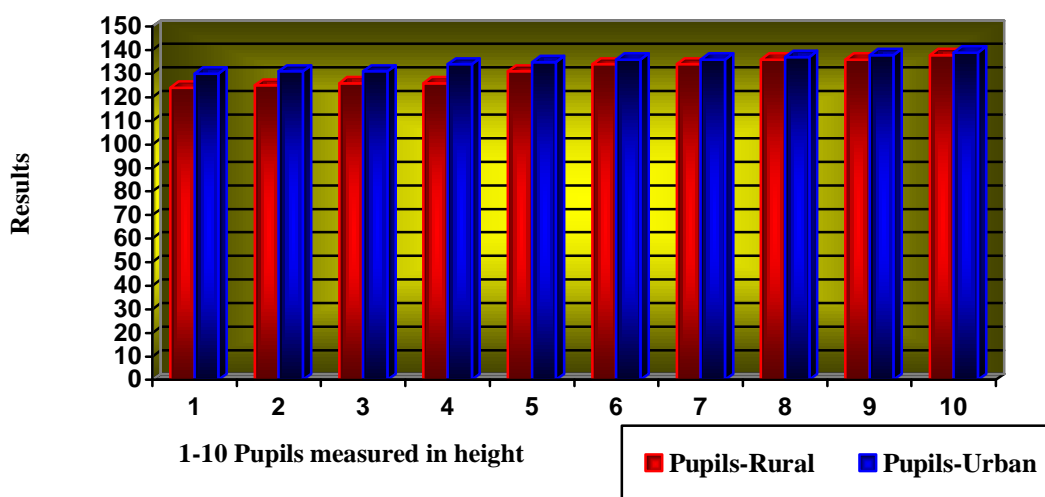
3.	T.N	10	126	29,2
4.	Z.F.	10	126	30,5
5.	I.H.	10	131	27,5
6.	Ș.I.	10	134	29,7
7.	O.R.	10	134	30,2
8.	W.S.	10	136	28,4
9.	V.L.	11	136	33,4
10.	L.M.	11	138	33,3
X	Average	10,2	131	29.94

Statistic indicators recorded for 4<sup>th</sup> grade pupils, aged 10-11 years, from urban areas

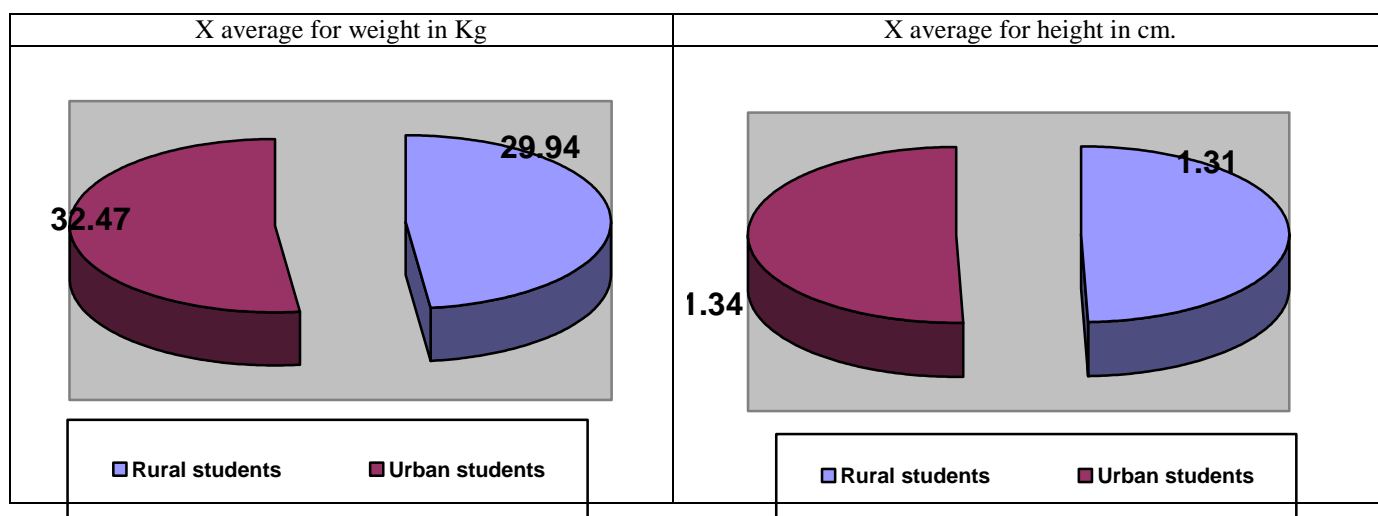
Table No. 1

No.	Name and Surname	Age - years -	Height - cm -	Weight - kg -
1.	N.G.	10	130	28,8
2.	E. L	10	131	32,0
3.	C.B.	10	131	32,5
4.	P.C.	10	134	36,5
5.	B.Z.	10	135	30,7
6.	N.I.	10	136	30,5
7.	T.A.	10	136	38,5
8.	Z.P.	11	137	34,6
9.	I.I.	10	138	30,8
10.	T.V.	11	139	29,8
X	Average	10,2	134	32.47

Graph No. 1 Representation of statistic height indicators in centimeters for pupils in rural and urban areas



Graph No. 2 Representative graph regarding height (cm) and weight (kg) average, presented in comparison for the two groups of pupils - urban and rural areas



**Phase 2** – is the enquiry phase both for the entire group and individually. As a consequence of the undertaken research, we observed that there are significant differences for the two groups for leisure activities (see Tables No. 3 and 4).

**Statistic indicators recorded after the enquiry for pupils – rural areas**

**Table No. 3**

Question for the enquired group	Answers %	
1. How many lessons of Physical Education do you have weekly?	2 lessons	100%
2. Do you play outdoors after school?	Yes - 90%	No - 10%
3. How many hours do you spend playing outdoors?	3-4 hours	90%
3. Which are your favourite games? Please enumerate.	Catch, hide and seek, football, volley - 90%	No answer - 10%
4. If you do not play outdoors, which other activities do you prefer?	TV, PC games	10%

**Statistic indicators recorded after the enquiry for pupils – urban areas**

**Table No. 4**

Question for the enquired group	Answers %	
1. How many lessons of Physical Education do you have weekly?	2 lessons	100%
2. Do you play outdoors after school?	Yes - 20%	No - 80%
3. How many hours do you spend playing outdoors?	1-2 hours/ 20%	I play outdoors only on Saturdays and Sundays 80%
3. Which are your favourite games? Please enumerate.	Badminton, football 20%	No answer 80%
4. If you do not play outdoors, which other activities do you prefer?	TV, PC games	80%

The statistical indicators, registered after our investigation for pupils who live and learn in urban and rural areas, proved that urban subjects, besides the two Physical Education lessons, spend little time outdoors, in the park or playing (1-2 hours on weekends, and the

rest of their spare time is spent in front of the TV, or computer – 80% of pupils), as compared with subjects from rural areas, who spend 90% – about 3-4 hours daily after their school program - outdoors playing



different games (catch, hide and seek), sports such as football or volleyball, and completing their chores.

If we observe the recorded indicator from Tables No 1 and 2, we notice that pupils from rural areas are smaller and thinner (have recorded  $X =$  height 1.31 m and weight 29.94 kg), as compared to those from urban areas who have  $X =$  1.34 m height and 32.47 kg). Therefore, they are either skinny and tall, or small and fat. Thus, the absence of motion after school led to negative modification of height and weight indices, confirming the hypothesis according to which there are significant differences in the somatic development of children in urban areas, as compared to those living in rural areas, and we believe that these differences occurred due to the lack of movement.

#### Conclusions

- Somatic parameters are a barometer for trainers and their future activities, and a comparative presentation of these parameters could represent a starting signal for the didactic process, because it is widely known that any delay for a child's somatic development is an alarm signal for other activities which may disturb his/her learning capacity.
- Between the somatic indicators of urban subjects and rural subjects there are major differences, which we believe that occurred due to the sedentary life characterising children living in big cities.
- The absence of motion after school led to negative modification of height and weight

indices, thus confirming the hypothesis according to which there are significant differences in the somatic development of children in urban areas, as compared to those living in rural areas, and we believe that these differences occurred due to the lack of movement.

- Physical Education lesson, combined with leisure activities, has a positive effect on children's growth and development, an aspect which should be taken into consideration, and we should offer more outdoor time for children living and studying in urban areas.
- This present study completes other previous researches in this field, and the scientific approach of the mentioned subject opens new perspectives for field specialists.

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