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**ASSESSMENT OF THE BIOMETRIC POTENTIAL OF PRIMARY  
SCHOOL PUPILS**

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***Abstract***

The purpose of the research is to characterize the somatic, functional and motoric potential of the school population and to identify/establish the level of manifestation of its components and the interrelationships between them. We also want to compare the results of our study with the results of a nationwide study. Methods: This work is part of a larger study in progress, where participated 291 pupils from primary school pupils (grades 0 to IV). We achieved a comprehensive and coherent picture of the current biometric development of the rural population and we increased the capability and quality of sport within pupils. Results: our study group gain the following anthropometric measurements: age, weight, height, range of arms, shoe size. We also measured some motor skills where we obtained the following values: Spine mobility, Speed, Resistance, Pushups, Long jump, Ability samples. Conclusion. Engaging all children in free school and extracurricular activities, creating the sensory environment suited to somatic development and motor skills and qualities, where each question comes with a statement that precedes it and every statement with a motivation, we come up with a "project" in which new ideas come to you, you can see what goes wrong and what does not, then you can improve it even if not all the others are satisfied, but, as a whole, it satisfies more than any idea.

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**Keywords:** Somatic, functional, motor skills, results, measured.



## **1. Introduction**

The hypothesis of the works consists in: If, by applying objective test batteries, developed by SNEE within MEN (Ministerul Educatiei Nationale, 1999), to pupils in the primary cycle, we can obtain data on somato-functional and motoric indicators and can accurately work on educational instructive means and methods. The main idea of the study was to carry out a county study on the motor and somatic-functional potential of pupils in the rural environment, to assess the biometric and somatic-functional potential of the school population, and to elaborate and publish a report with the results of the research. (Grosu, 2009). The assessment of the biometric potential of pupils in grades I-IV in Tarnova community is the central objective of this monitoring, on medium and long term and also to verify a set of anthropometric and biometric parameters. The statistical indicators that we used in this paper were: arithmetic mean, amplitude, coefficient of variability and standard deviation environment (Galea, 2014). The results obtained were compared to those from the national level (biometric potential of primary and secondary school pupils). We think that the results could be even better if, in the Romanian education system, the physical education and sports classes would be higher than what exists at this time (minimum 4-5 hours/ week compared with the current 2 hours/ week) (Ardelean, Miuța & Mert, 2016).

## **2. Problem Statement**

To carry out a county study on the motor and somato-functional potential of rural students. Creation of a county database on the information in the field of motoricity of the rural population. Identification of the national and international research on biometric potential so far. Identification of biometric potential implications on health status and on increasing quality of life. Elaborate an evaluation guide on the methods, techniques and probes for assessing the motor and somato-functional potential of the school population. Develop and publish a report with the results of the research. The main idea is to carry out a preliminary study in the rural area of Arad county regarding the evaluation of the somatic, functional and motor potential of pupils of the first and fourth grades and to elaborate and publish a report with the results of the study. In the next stage 2018-2019, I will collect data on the somatic, functional and motoric potential of Class I-IV elves in the urban area of Arad County to make a comparative study. Arad County was among the counties that did not participate in the "Evaluation of the Somatic, Functional and Motoric Potential of the School Population in Romania" conducted by MECTS and UNEFS (Cojocaru, 2015).

## **3. Research Questions**

In the context of a modern society in which the health of the population is increasingly affected by the sedentary lifestyle, the assessment of the somatic and motoric potential is an ambitious approach which involves a high professional responsibility. This complex assessment process reflects both the level of development of the pupil and the efficiency of the educational process. At the same time, it is largely influenced by the professionalism demonstrated by each teacher.

## **4. Purpose of the Study**

Characterization of the somatic, functional and motoric potential of the school population as well as the identification of the level of manifestation of the components and the interrelationships between them

in different development cycles. I highlight the biodiversity potential of the school population of Tarnova with all five localities (Agrisu Mare, Araneag, Draut, Chier and Dud) to make significant contributions to the overall objectives of this research by increasing employability and mobility through actions that promote social inclusion of exercise as an independent form in and through sport, education and training.

## 5. Research Methods

In achieving our goals we used the following research methods:

- Method of pedagogical observation
- Test method
- The questionnaire method

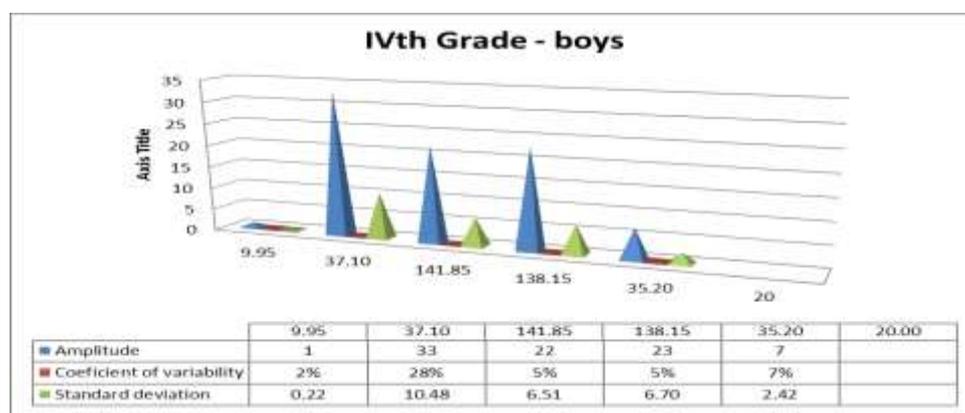
## 6. Findings

Following the analysis of the somatic measurements data, according to the Journal of Hygiene and Public Health, vol. 57, no.2 / 2007 "CORRELATION OF ANTHROPOMETRIC INDICATORS WITH AGE AND SEX, IN EARLY ADOLESCENCE", the following statistical data were obtained:

In the 4th grade - boys, the following data were obtained: according to table no. 1 and figure 01, the classes are homogeneous in age, height and foot size and sufficiently representative, homogeneous in weight and width of the arms. In 2007, the average height at the age of 10 was 138.73 cm in boys and a weight of 35.86 kg, having in 2016 an average height of 141.85 cm. and weighing 37.10 kg. There resulted an increase of the waist by 3.12 cm and weight by 1.24 kg, with a very good weight / height ratio of 0.26 kg.

**Table 01.** Measurements - IV-th Grade - boys

Measurements - IV-th Grade – boys						
Subject no.	Age	Weight	Height	Range of arms	Shoe no. (size of the foot)	Exempt/not exempt of sport (yes/no)
Arithmetic mean	9.95	37.10	141.85	138.15	35.20	20
Amplitude	1	33	22	23	7	
Coefficient of variability	2%	28%	5%	5%	7%	
Standard deviation	0.22	10.48	6.51	6.70	2.42	



**Figure 01.** Statistical processing of measurements - IV-th Grade - boys

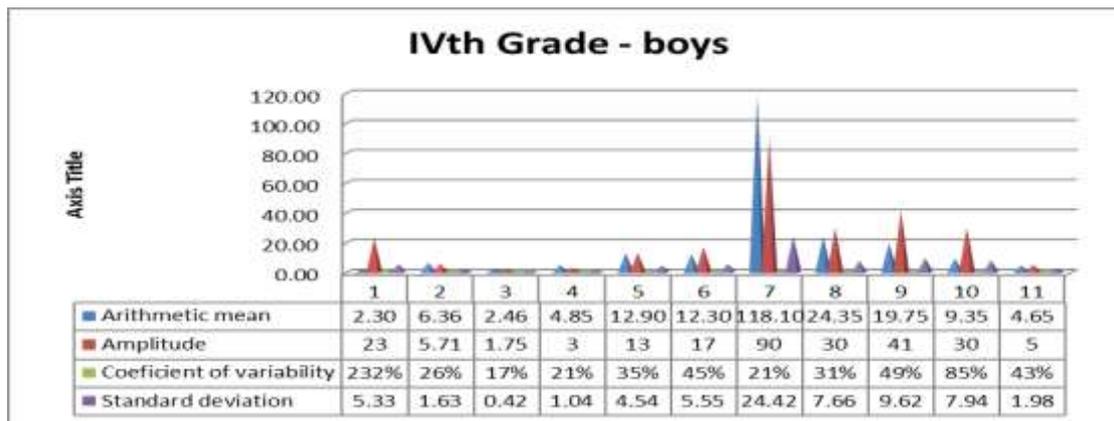
**Data Interpretation - Motor qualities**

Following the obtained and centralized data, in grades I-IV, according to the National Evaluation System - Secondary school, I highlight the evaluated motor qualities compared to the calculated arithmetical mean, which characterizes a sample (a population) from an evaluated and studied characteristic point of view. The following grades have been obtained and revealed - IV-th Grade - boys, according to table no. 2 and figure 02, the following grades have been obtained:

- grade FB (speed - 6 "36), grade FB (resistance - 2'43"), grade FB (tractions – 4.85 gym bench ), grade FB (12.90 no. push-ups) grade FB (12,90 - jumps over the gym bench), grade S (118,10cm - length on the spot), grade FB (abdomen / 30 " - 24,35 reps), grade 10 (15,23 no. reps - lifting of the legs from the back of the back), S (jump the rope with both legs, on the spot – 9,35 no. reps), grade FB (throwing the ball to the target – 4,65 successful), (throwing the oine ball - 33,89m).

**Table 02.** Motor Qualities - IV-th Grade - boys

Subject no.	Mobility of the spine	Velocity - shuttle 5m x 5m - speeding / 50m	Resistance	Upper limb muscular force:		Lower limb muscle strength:		Abdominal Muscle Strength:		Skill:	
				Pulls	Pushups	Complex force structure	Long jumps	Abdomens	Lifting legs	Rope jump	Goal Throwing/Oine ball
Arithmetic mean	2.30	6.36	2.46	4.85	12.90	12.30	118.10	24.35	19.75	9.35	4.65
Amplitude	23	5.71	1.75	3	13	17	90	30	41	30	5
Coefficient of variability	232%	26%	17%	21%	35%	45%	21%	31%	49%	85%	43%
Standard deviation	5.33	1.63	0.42	1.04	4.54	5.55	24.42	7.66	9.62	7.94	1.98



**Figure 02.** Statistical processing of motor qualities – Iv grade - boys

### Data Spread - Motor qualities

#### VIII-th Grade - boys were obtained: according to table no. 2:

- **speed(5X5m)** - the amplitude with a value of 5.71 representing the minimum time to maximum and with a mean standard deviation of 1.63, with a coefficient of variability of 26% that shows us that the classes are sufficiently representative, homogeneous;

- **the resistance (running of duration)** - the amplitude with a value of 1.75 representing the minimum time to maximum and with a mean average deviation of 0.42, with a coefficient of variation of 17%, shows us that the classes are sufficiently representative, homogeneous;

- **tractions (at the gym bench)** - amplitude with a value of 3 representing the minimum value to maximum and with a standard deviation of 1.04 with a coefficient of variability of 21% shows that the classes are sufficiently representative, homogeneous; push-ups - the amplitude with a value of 13 representing the minimum number to the maximum and with a mean standard deviation of 9,54, with a coefficient of variability of 35% shows a lack of homogeneity of the grup;

- **jumps over the gym bench** - the amplitude with a value of 17 representing the minimum number to the maximum and with an average deviation standard of 5.55 with a coefficient of variability of 45% shows that the classes are not homogeneous;

- **the length leap in the field** - the amplitude with a value of 90 representing the minimum distance to the maximum and with a standard average deviation of 24,42 with a 21% variability coefficient shows us that the classes are sufficiently representative, homogeneous ;

- **abdomens at 30"** - amplitude with a value of 30 representing the minimum number to maximum and a mean standard deviation of 7.66 with a coefficient of variability 31% show that the classes are not homogeneous;

- **lifting the dorsal legs up to 30"** - amplitude with a value of 41 representing the minimum number to the maximum and with a mean standard deviation of 9.62, with a coefficient of variation of 49% shows us that the classes are not homogeneous;

- **jumps to the rope on both legs on the spot** - the amplitude with a value of 30 representing the minimum distance to the maximum and with a mean standard deviation of 7.94, with a coefficient of variation of 85% shows us that the classes are not homogeneous;

- **throwing the oine ball** - the amplitude with a value of 5 representing the minimum distance to the maximum and with a mean average deviation of 1.98, with a coefficient of variability of 43% shows us that classes are not homogeneous.

## 7. Conclusion

The measurements were performed periodically, in stages or at the beginning and end of some activities and they highlighted the dynamics of growth and physical development processes. Monitoring the biodiversity potential of the school population, as a tool for diagnosing and predicting the health of the young population, forecasting and developing annual and term plans and having a detailed layout of learning units specific to evaluations, helps and contributes to selection, training and participation in sport competitions (Bompa, 2003). This leads also to knowledge and promotion of the area (Camp Casoaia). It also helps to increase the number of people who could practice sport, as an independent form, to develop sporting branch, to increase the selection base for sports clubs and national sports federations. From my point of view, as a sport teacher, the acquired skills empower me to promote the development of the Romanian sport, to strengthen the impact of practicing sport in society, to encourage the perception that sport and movement can change the life of man and society, it can motivate and educate characters and it can also bring glory and performance. The independent practice of physical exercise and sport leads, as a fundamental factor in the formation and full development of personality, to manifestation of the sport culture. We can do this through an extensive programme of sports activities aiming to enhance the health of children, regardless of age and gender (education through sport and movement), to draft projects for organizing more competitions, trips and school camps (Cârstea, 2000). We can also aim to:

- increase the number of sports classes at five hours per week,
- develop the role played by sport in education;
- organise voluntary activities;
- use sport as a tool for multilateral development;
- promote active education through movement and sport;
- fight against overweight, obesity, chronic illness;
- promote social integration of people with disabilities.
- endowment with sporting bases, allowing the appropriate physical and sports classes to take place, taking into account the needs for accessibility for pupils and the local community.

## References

- Ardelean V.P., Miuța C., & Mert C., (2016). Study regarding the impact of the number of physical education classes at primary level. *Arena Journal of Physical Activities*, 5, 143-154.
- Bompa, T., (2003). *Performanta in jocurile sportive* [Performance in sports games], Constanta: Editura Ex Ponto S.N.A
- Cârstea, G., (2000). *Teoria și metodică educației fizice și sportului* [Theory and methodology of physical education and sport], București: Editura AN-DA.
- Cojocaru V., Stănescu M., Ciolcă C., Tudor V., & Mujea A.M., (2015), *Raport privind evaluarea potențialului somatic, funcțional și motric al populației școlare din România* [Report on the assessment of the somatic, functional and motoric potential of the Romanian school population], București: Editura Discobolul

- Galea, I., (2014). *Evaluare motrica si somatofunctionala* [Motric and somatofunctional evaluation], Editura Universitatii "Aurel Vlaicu" Arad.
- Grosu, E.F., (2009). *Psihomotricitatea* [Psychomotricity], Cluj Napoca: Editura GMI,
- Ministerul Educatiei Nationale – S.N.E.E. (1999). *Sistemul național școlar de evaluare la disciplina educație fizică și sport*. Retrieved from [https://www.isjbotosani.ro/img/uploads/gabihartie/file/brosura\\_evaluare.pdf](https://www.isjbotosani.ro/img/uploads/gabihartie/file/brosura_evaluare.pdf)