

Assessing the biometric potential of eighth-grade pupils in the rural area of Arad County

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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 536 pupils from elementary and middle school, but the current study consider only 35 boys, in the eighth grade. 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: $13,83 \pm 0,38$, weight: $49,23 \pm 9,84$, height: $160,23 \pm 8,04$, range of arms: $156,37 \pm 26,81$. We also measured some motor skills where we obtained the following values: Spine mobility: $0,51 \pm 5,90$, Speed: $7,26 \pm 0,57$, Resistance: $4,30 \pm 0,37$, Pushups: $23,29 \pm 6,79$, Long jump: $163,03 \pm 16,23$, Crunch: $22,8 \pm 3,02$, Throwing ball: $33,89 \pm 9,39$. **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.

Keywords: research, evaluation, potential, somatic, functional

Introduction

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, MEN-SNEE, 1999,)

The assessment of the biometric potential of pupils in grades I-VIII 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. (Galea, 2014). The results obtained were compared to those from the national level (biometric potential of primary and secondary school pupils) and with a large study report, done at national level, published in 2015 (Cojocaru et al, 2015).

The need to know the somatic and motor skills is the co-efficient of the work done by both, the teacher and his / her methods as well as the subject / student. (Cârstea, 1993)

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)

Children enjoy sports and this was demonstrated again by seeing the results of the questionnaire applied, from which we observed that 99% of the pupils are happy at sports classes and consider that the two classes per week, from the current school curriculum, are not enough, and they wish a number of five hours a week.

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; EACEA/Eurydice, 2013).

Methods used

In achieving our goals we used the following research methods:

Method of pedagogical observation, tests method, the questionnaire method and statistical analysis of data. The statistical indicators that we used in this paper were: arithmetic mean, amplitude, coefficient of variability and standard deviation environment (Galea, Ardelean, Istvan, 2010).

The hypothesis of the work

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.

Results obtained at anthropometric measurements with pupils

Following the analysis of the somatic measurements data, according to the Journal of Hygiene and Public Health, , “Correlation of anthropometric indicators with age and sex, in early adolescence” and Journal of Human Sport and Exercise (2010), the following statistical data were obtained:

In the 8th grade - boys, the following data were obtained: according to **table no. 1**, 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 14 was 162.8 cm in boys and a weight of 50.1 kg, having in 2016 an average height of 160.23 cm. and weighing 49.23 kg. There resulted a decrease of the waist by 2.57 cm and weight by 0.87 kg, with a very good weight/height ratio of 0.30 kg.

Table no.1. Anthropometric measurements with VIII-th grade – boys.

Subject no.	Age (Years)	Weight (Kg)	Height (cm)	Range of arms (cm)	Shoe no. (size of the foot)	Exempt/ not exempt of sport (yes/no)
Arithmetic mean	13.83	49.23 (58,89)*	160.23 (168,0)*	156.37 (169,5)*	39.31	35 able
Amplitude	1	44	32	133	7	-
Coefficient of variability	3%	20%	5%	17%	6%	-
Standard deviation	0.38	9.84	8.04	26.81	2.19	-

** Scales obtained by ninth grade pupils from several counties (excluded Arad), from rural areas, published in a national report in 2015 (Cojocaru et all, 2015).*

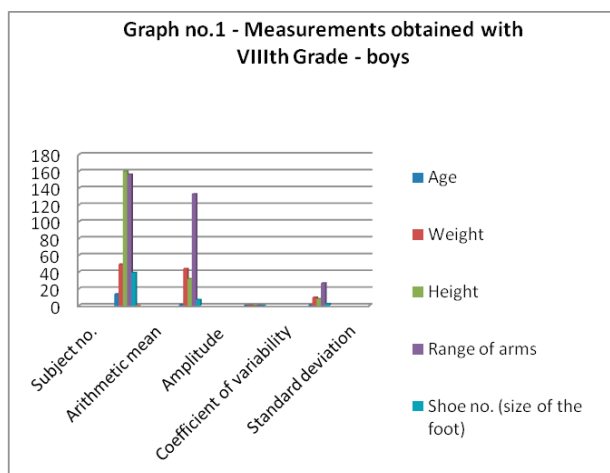


Figure 1. Representing statistical data for anthropometric measurements.

Data Spread for motor qualities

We will show below the data obtained with VIII-th grade boys were according to **table no. 2**:

- **speed** - the amplitude with a value of 2.27 representing the minimum time to maximum and with a mean standard deviation of 0.57, with a coefficient of variability of 8% that shows us that the classes are homogeneous;
- **resistance** - the amplitude with a value of 1.55 representing the minimum time to maximum and with a mean average deviation of 0.37, with a coefficient of variation of 9%, shows us that the classes are homogeneous;
- **tractions** - amplitude with a value of 69 representing the minimum value to maximum and with a standard deviation of 15.53 with a coefficient of variability of 39% shows that the classes are not homogeneous;
- **pushups** - the amplitude with a value of 24 representing the minimum number to the maximum and with a mean standard deviation of 6, 79, with a coefficient of variability of 29% shows that the classes are sufficiently representative, homogeneous;
- **jumps over the gym bench** - the amplitude with a value of 42 representing the minimum number to the maximum and with an average deviation standard of 10.22 with a coefficient of variability of 50% shows that the classes are not homogeneous;
- **the length leap in the field** - the amplitude with a value of 69 representing the minimum distance to the maximum and with a standard average deviation of 16, 23 with a 10% variability coefficient shows us that the classes are homogeneous;
- **abdomens at 30"** - amplitude with a value of 13 representing the minimum number to maximum and a mean standard deviation of 3.02 with a coefficient of variability 13% show that the classes are homogeneous;
- **lifting the dorsal legs up to 30"** - amplitude with a value of 11 representing the minimum number to the maximum and with a mean standard deviation of 2.92, with a coefficient of variation of 19% shows us that the classes are sufficiently representative homogeneous;
- **throwing the oine ball** - the amplitude with a value of 36 representing the minimum distance to the maximum and with a mean average deviation of 9.39, with a coefficient of variability of 28% shows us that classes are sufficiently representative, homogeneous.

Table 2 – Motor skills at VIII-th grade - boys

Subject no.	Mobility of the spine (cm)	Velocity (sec) - speed/ 50m	Resistance (min)	Upper limb muscular force (rep)		Lower limb muscle strength: (rep)		Abdominal Muscle Strength: (rep)			Skill:	
				Pulls	Pushups	Complex force structure	Long jumps (cm)	Crunches 30 "	Lifting legs 30 "	Rope jump	Goal Throwing/ Oline ball	
Arithmetic mean	0.51	7.26	4.30 (4,29)*	39.43	23.29 (19,1)*	20.43	163.03 (179,37)*	22.80 (38,61)*	15.23	23.14	33.89 (34,72)*	
Amplitude	27	2.27	1.55	69	24	42	69	13	11	54	36	
Coefficient of variability		8%	9%	39%	29%	50%	10%	13%	19%	58%	28%	
Standard deviation	5.90	0.57	0.37	15.53	6.79	10.22	16.23	3.02	2.92	13.33	9.39	

* Scales obtained by ninth grade pupils from several counties (excluded Arad), from rural areas, published in a national report in 2015 (Cojocaru et al., 2015).

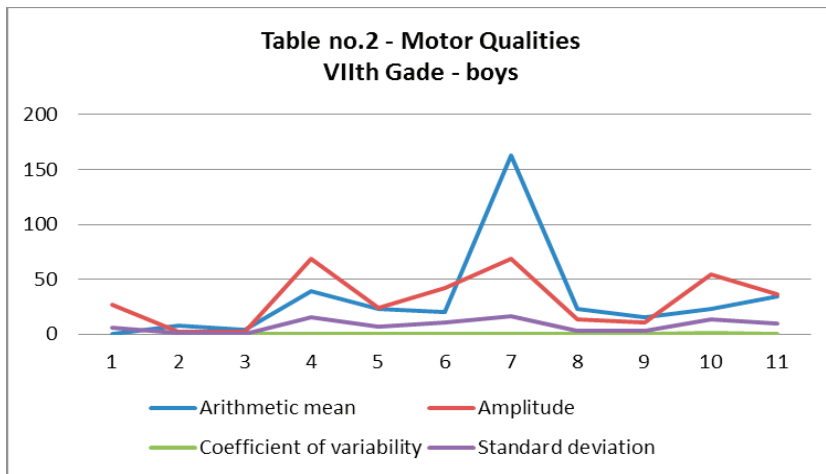


Figure nr. 2. The evolution of some statistical parameters in VIII-th grade boys.

Data Interpretation and discussion for motor qualities

Following the obtained and centralized data, in grades V-VIII, 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:

VIII-th Grade - boys, according to **table no. 2**, the following grades have been obtained: grade 10 (speed - 7 “26), grade 9 (resistance - 4’30”), grade 10 (tractions - 23 “29), grade 10 (23.29 no flotations) grade 8 (20,43 - jumps over the gym bench), grade 5 (163,03cm - length on the spot), grade 8 (abdomen / 30 “- 22,80 repeats), grade 10 (15,23 no. repeats - lifting of the legs from the back of the back), grade 9 (throwing the oine ball - 33,89m).

In a study done at national level, and published in 2015, but with ninth grade pupils, we found some results wich can be compared with our data, for example: - resistance: 4,29, - pushups: 19,1, - long jump: 179,37, - crunches: 38,61, - throwing small ball:

34,72. (Cojocaru et al., 2015). As we can observe only in long jump and in crunches the ninth grade pupils have better results and the other are almost similar.

Conclusions

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.

We think that this kind of measurements could be a very useful tool for finding the health status of the children. Also these tests can be a very useful tool for specialists in the field, and they can more easily identify talented children for practicing different sports. 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.

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.

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