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Assessment Tests-Physiological Indicators of the Physical Condition

Sanda TOMA URICHIANU¹

Abstract

One of the benchmarks of physical education in primary school consists in maintaining optimal health and increase adaptability to environmental factors. Thus, we conducted a study to show the physiological indicators noticing by Ruffier test group is a functional cardio-vascular valuable, especially for children and elderly untrained person. We aim with this study to demonstrate the correlation of test results obtained in clinical orthostatic different groups of students at that age, in order to propose to improve the physical fitness of subjects and selection for athletic performance. We assume that the I st grade students somato-functional indicators evaluation will observe their inappropriate age-related physical development and will recommend compulsory practice of physical education activities within optional and extracurricular classes. The study undertaken following methods were used for research: observation pedagogical method tests, statistical and mathematical methods of processing and interpretation of data. Expected results from this study are even more important as children's health is a matter of public interest and concern specialized international institutions and medical research to the younger generation. The data obtained will be implemented at the school and available to those who wish to consult the bibliography and published materials. In a study undertaken we conclude we can say that consolidation motion skills and the primary school is performed simultaneously with performing exercises of physical development, as well as through a drive system specially developed that must be present in lesson Physical Education.

Keywords: *fitness, physical development, evaluation, students, physical education.*

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1. Introduction

Research has shown that long-term physical exercise improves physical and mental health, making a positive contribution to the process of learning and developing personality, reducing the risk of physical and mental pathologies associated with modern lifestyle. More and more scientific research has revealed that active people not only live longer, but also have a better quality of life [10].

Lack of physical activity leads to being overweight which favours the development of obesity and chronic conditions such as cardiovascular disease and diabetes. These factors affect the quality of life, endanger people's lives and create problems for the economy and budget allocated to health [8].

Under these conditions, the field of physical education and sports must assume with greater force the role of health promoter by maintaining the weight parameters [9] with the help of complementary competencies of specialists (teachers, coaches, physical therapists), and through the imposition of prophylactic framework programs by age groups in order to achieve the specific objectives of the specialists' area of competence.

Physical education and sport as a whole are fundamental human rights, recognized by major international organizations. The learning factor, consolidation and improvement of the exercises are included in the school curriculum and the means used in the physical education lesson are varied using elements of gymnastics, sports games, athletics, winter sports and other sports with local traditions [6].

One of the principles governing pre-university and higher education is the principle of promoting health education and harmonious physical development [3, 7], all included through physical education and sporting activities.

Physical education and sport have applied strategies and tailored methods for achieving differentiated goals for each age. Included in permanent education, they act in a global, physical, mental and cultural system favoring the social integration of people regardless of race, culture or political orientation [2]. Education drives activities that face new emerging dangers and challenges which have been imposed in this kind of action.

2. Problem Statement

Primary education in our country comprises pupils aged between 6 and 9 years old whom are characterized by essential somatic, psychic and motor transformations [1].

The activity of physical education and sport in the primary cycle plays an important role in the process of growth and development of the pupils' body in maintaining a healthy state by didactic teaching aimed at fostering knowledge of children by adapting them more quickly to new school requirements and bringing them together in classrooms[11].

From a conceptual point of view there are well-defined objectives and a very good training system by which the students from primary cycle are organized through age, sex, climate, material basis, etc.

A system that targets both the day-to-day and the out-of-school time period however, the implementation of this training system includes physical education lessons and is being achieved with many difficulties. The study of the human body in action can provide additional information compared to the resting state and highlight any functional changes that do not occur at rest. Also allowing subjects to differentiate in terms of the functional demand of the devices and systems involved in adapting the body to effort. Under physical exertion all the apparatuses and systems of the body are required in which the dominating ones are the cardio-vascular, respiratory and neuroendocrine apparatus[5].

3. Research Questions/Aims of the research

Are there appropriate solutions for children in Romania to increase parents, educators and children awareness on the beneficial effect of participating in the lesson of physical education and leisure by moving?

This research aims at evaluating the somato-functional indicators of Ist grade students, to assess their fitness level and establish their need to practice physical education.

We assume that the Ist grade students somato-functional indicators evaluation will observe their inappropriateage-related physical development and will recommend compulsory practice of physical education activities within optional and extracurricular classes.

4. Research Methods

The following steps have been taken to carry out the study: we analyzed the present scientific data on somato-functional indicators for 6-7 age group students, we used the method of pedagogical observation for elementary Ist class students at the physical education class, the method of pedagogical experiment, method of Ruffier functional tests, the statistics and graphical representation method.

The study was carried out between October and November 2016, at Gymnasium School no.28 in Bucharest, and students of the A Ist class were tested, 21 pupils: 10 girls and 11 boys.

Applying the Ruffier tests aimed at assessing 6-7 age group students' physical and functional development level in terms of cardiovascular adjustment during and after effort. The obtained results would assess the physical education Ist classes required frequency and the need to supply them with more optional classes, especially for performance sport selection.

The findings of the study will provide concrete information to the decision-maker (school principal, physical education teachers, pupils, parents), convinced of limiting the exemptions from physical education lessons and practicing extracurricular sport or with family.

5. Findings

Table no. 1 and 2 show the results of anthropometric and functional measurements for Ist class students (boys and girls), regarding height (cm), weight (kg) and RI(Value of Ruffier index).

Table 1. Measurements results for boys

No.	Age	Height (cm)	Weight (kg)	Arm span (cm)	Ruffier Test			
					P1	P2	P3	RI
1	6	120	18	125	92	140	120	15.2
2	6	122	20	127	100	136	96	13.2
3	6	124	23	131	96	156	120	17.2
4	6	120	22	124	104	160	120	18.4
5	6	121	25	126	108	132	120	16.0
6	7	129	22	135	84	120	108	11.2
7	6	113	19	120	100	144	104	14.8
8	6	115	22	120	100	148	120	16.8
9	6	120	23	126	92	120	120	13.2

10	6	124	25	129	92	140	116	14.8
	x	120.8	21.9	126.3	96.8	139.6	114.4	15.08
	SD	4.54	2.33	4.62	7.00	13.4	8.69	2.15
	Cv%	3.76	10,64	3.65	7.24	9.60	7.59	14.26

Note: P1 – pulsetaken before effort; P2 – pulse taken after effort; P3 – pulse taken at la 1 minute after effort; IR = Ruffier index

Table 2. Measurements results for girls

No	Age	Height (cm)	Weight (kg)	Arm span (cm)	Ruffier Test			
					P1	P2	P3	RI
1	6	118	23	120	108	140	116	16.4
2	7	124	25	130	92	132	108	13.2
3	6	118	21	122	104	160	120	18.4
4	6	119	21	123	92	132	104	12.8
5	6	123	24	132	108	160	120	18.8
6	6	119	23	124	92	148	120	16.0
7	6	112	19	115	92	144	120	15.6
8	6	114	18	119	100	132	116	14.8
9	6	121	21	126	92	140	92	12.4
10	5	120	23	125	84	156	120	16.0
11	6	123	21	126	88	160	120	16.8
	x	119.18	21.73	123.9	95.64	145.82	114.18	15.56
	SD	3.71	2.10	4.85	8.09	11.64	9.18	2.12
	Cv%	3.11	9.67	3.92	8.46	7.98	8.04	13.62

Note: P1 – pulse taken before effort; P2 – pulse taken after effort; P3 – pulse taken at la 1 minute after effort; IR = Ruffier index

Table no. 1 shows the comparative tests results of Ruffier test index for Ist class students (boys and girls) regarding 1, 2 and 3 pulse values (before, immediately after effort, and 1 minute after effort) and Ruffier test index.

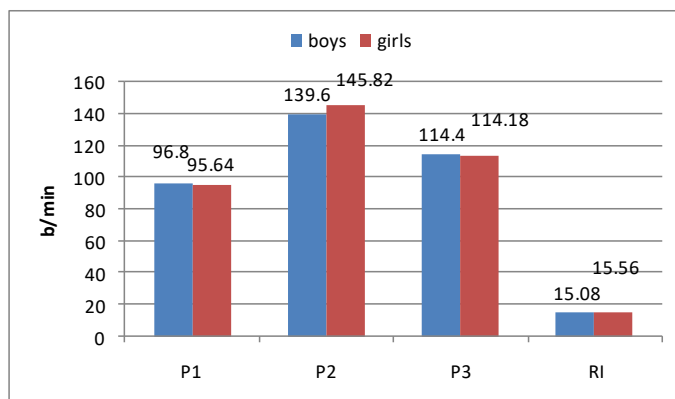


Fig. 1. Ruffier test results for boys and girls

6. Discussions

This scientific research aims at establishing the importance for 1st class students to practice physical education activities and the need to supply the curricula with an optional sport class.

In this research, we conducted a comprehensive study of anthropometric and morphological-functional cardiovascular parameters in A 1st class, 6-7 years old students participating in physical education lessons in school curriculum.

The results of anthropometric and functional measurements for 1st class students show the average index height for boys is of 120,8 cm and for girls– 119.18 cm; the weight for boys is 21.9 kg for girls– 21.73 kg; arm span for boys is of 126.3 cm for girls– 123.9 cm, all these differences represent good index homogeneity both for boys and girls (table 1 and 2), which confirm the age appropriate index values.

The comparative analysis Ruffier Test results show (Table 1) that pulse 1, taken before effort, the average index for boys is of 96.8 b/min and for girls of 95.64 b/min; pulse 2, taken immediately after effort, shows an average index for boys of 139.6 b/min and for girls of 145.82 b/min; pulse 3, taken 1 minute after effort, show an average for boys of 114.4 b/min and for girls of 114.18 b/min; the Ruffier index has an average for boys of 15.08 and for girls of 15.56, highlighting a low fitness condition.

When doing a comparative analysis of the individual results for boys, it is observed that 6 have satisfactory RI and 4 have unsatisfactory RI values and for girls – 5 have satisfactory RI and 6 have unsatisfactory RI. Physical development of girls is age appropriate, but the values obtained by the Ruffier test show poor fitness and low effort.

7. Conclusions

Practicing attractive physical activities in the form of games will have a positive effect on the production, maintenance and / or recovery of the state of health, on the quality of life, respectively on the improvement of the physiological indicators.

According to the data from this study it was found that the anthropometric parameters correspond to the 6-7 age group to which the tested subjects belong.

The Ruffier Test functional indicator dynamics show close value index for boys and girls before the effort, higher values for girls, which shows an insufficient physical condition and similar values at both sexes 1 minute after effort.

The cardiovascular indicators of children show lower values in girls, demonstrating that they are actively less involved in physical education lessons and other dynamic sporting activities while the boys are more willing to participate in activities like soccer.

Appreciation of the physical condition (Ruffier test) by finding the cardiovascular parameters shows a slightly satisfactory age related physical condition, and the low values imply the need for a better active participation in sports activities.

The study showed a good harmonious physical development of children and an effort capacity below the age at which the majority of them got the unsatisfactory rating.

Our recommendation is to supply the physical education lessons with some more interesting activities for children and to attract the students to participate in extracurricular sports activities to improve the physical condition (fitness).

Considering the age of children aged 6-7 and the fact that they are in the first year participating in physical education lessons and organized sporting activities, we can say that the level of I-a class fitness is at the limit between satisfactory and unsatisfactory.

The somato-functional index for Ist class students established that the physical development level is not age appropriate and would recommend the need of practicing the physical education activities within optional and extracurricular classes, which confirmed the research hypothesis.

8. Acknowledgements:

I declare on my own responsibility that the subjects in this research were informed of their voluntary participation; they understood the information received and the possibility to withdraw from the research at any time without any negative consequences on them. Research complies with the ethical standards, and the research participants gave their consent to participate in this project.

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