

Study regarding the impact of the number of physical education classes at primary level

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Abstract

In Romania, the secondary effects of the lack of physical activity are becoming more visible now with high incidence in children and young people, and many social and economic difficulties affecting voluntary participation of young people in physical activities. One solution could be increasing the number of hours of physical education in the public educational system. **The aim** of this study was to determine the effect of increasing the number of hours of physical education under the current system of education in Romania, from two to five classes a week and placing movement games in their classes of students in primary level, physically and mentally healthy. **Methods and subjects.** Thus, using the experimental method, we chose the subjects as the pupils in two classes from primary level, as follows: first grade, as an experimental group - EG (n = 16, 10-B / 6-G), age = 7 ± 0; height = 1.31 ± 0.03, weight = 30.125 ± 3.28; and second grade as a control group - CG (n = 16, 10-B / 6-F), age = 8 ± 0; height = 1.34 ± 0.07, weight = 33.68 ± 9.03. Before study, we tested both groups of students, initial test - IT, on the level of motor skills development time, using 5 different samples. Then I worked with EG differentiated as planned; ie, five hours a week, while the CG we used means and dosage, according to the current curriculum in Romania.

Results. After three months were carried out final tests FT- and we present in this study the results for statistical indicators: mean - M, standard deviation - SD and coefficient of variation - CV, five of the samples - back extension / rep. (BE), - maintaining hang / sec. (MH), - lifting torso (crunch) / rep. (LT) - shuttle 5x5 / sec. (SH), and - long jump from standstill / cm (LJ), of randomly selected samples in the school curriculum. Thus we present here summarized results of the samples from IT: CG: BE: 6.06 ± 2.54 , CV = 41.9%; MH: 6.18 ± 2.83 , CV = 45.8%; LT: 27.31 ± 3.75 , CV = 13.7%; and GE has the results: BE: 6.43 ± 2.27 , CV = 35.4%; MH: 6.18 ± 3.22 , CV = 52.2%; LT: 27.5 ± 4.22 , CV = 15.4%; while the TF, the results were: CG: BE: 2.9 ± 8.75 CV = 33.3%; MH: 9 ± 3.14 , CV = 34.9%; LT: 28.62 ± 2.68 , CV = 9.4%; and EG it has the results: BE: 13.37 ± 2.94 , CV = 22%; MH: 15.2 ± 3.3 , CV = 21.8%; LT: 29.81 ± 0.54 , CV = 1.8%. **Conclusions.** The results indicate that, after three months of five hours per week of physical education, the experimental group improved both quantitatively and qualitatively the parameters on all motric qualities, but in force the growth was more spectacular.

Keywords: physical activity, motion games, motric qualities, harmonious development.

Introduction

Frequent changes within our educational system, not considering the actual situation in Romanian schools - with many remaining amenities of 20-30 years ago, and especially the lack of interest in physical education, generally within the education system in our country, are factors that caused the sharp drop in interest of children and hence their poor results in physical education and many more medical exemptions faced daily by every physical education teacher. Therefore, I think it is imperative that within the organized school, during the program and beyond, children are accustomed from an early age to participate in physical activities, initially in the form of simple games and competitions, relays, passes, etc. to form the habit of making motion to heading outdoors, in nature even to practice various sports later, to learn rules of hygiene and healthy eating, in a word to prepare to become a complete person, firmly planted in reality and who can face any situation successfully (Gyori, 2015).

International statistics show that the teaching time allocated to physical education in primary education has been greatly reduced since 2006/2007, with a share of about a third of the time allotted for language instruction, respectively half the time allotted for math (EACEA, 2013). Thus, the curriculum is given too little time for sports, sports media time is 109 minutes per week in primary schools, the figure dropping constantly since 2002. Due to the low level of education and increasing financial hardship they face every day, the Romanian society has a rigid position, indifference and even rejection towards the need to practice regular, if not daily, exercises of motion, maintenance, although the top quality of life, in the European Union was ranked at the bottom, 53rd (<http://internationalliving.com>). But in Romania, 7.7% of the male population is obese and 9.5% of the total female population is obese, according to a study by Eurostat (European Statistical Office). In our country, a Romanian in three is overweight and one in four is obese. Unfortunately, only 10% of the population with body mass index over 30 going to a medical control to solve the problem of weight. In total, in Romania there are 3.5 million obese, according to a study conducted by the company Abbot Laboratories. (<http://www.sfatulmedicului.ro>). However, and that by 2016, physical education

in the Romanian education compulsory lost further ground, lead us to a simple conclusion but extremely clear: physical education held starting at primary school, sports and exercise all need to be promoted as major factors regarding education standards, so as to contribute to increasing desire to go to school for students and improve academic thereof. (Howie, Pate, 2012).

We believe that a solution to this problem would be to increase the number of hours of physical education under the current system of education in Romania, from two to four - five hours a week, and introducing motion gaming to the lower grades in these hours, to positively influence the level of development of motor skills and wellbeing of general, elementary school children. It is therefore necessary to study primary school, ascertaining the degree of truthfulness of those mentioned above, in order to implement this solution nationally, if this proves true.

The purpose of this study was to observe whether there is any improvement in the somatically, mentally and physically health of the students. Also during the experiment, one of the major objectives was to select the drive means that neither bore the students nor submit them to excessive efforts.

Methods. Participants.

The experiment I conducted in Secondary School “Sorin Titel” Margina, Timis county, on a sample of 32 students, representing the students of two classes: first grade, as an experimental group - EG (N = 16, 10-B / 6-F), M age = 7 ± 0 ; M height = 1.31 ± 0.03 , M weight = 30.125 ± 3.28 ; and second grade as a control group - CG (N = 16, 10-B / 6-F), M age = 8 ± 0 ; M height = 1.34 ± 0.07 , M weight = 33.68 ± 9.03 . With EG I worked differently according to the selected content planned for the duration of five hours per week, while the control group we used means “traditional” set in units / drives each motor quality, during the space of two hours a week, according to the curriculum in force in our country. Both the EG and the CG, the methods and means used complied schedules yearly and the structure of the physical education lesson, development / motric education, having locations defined in the composition of this structure: the speed and skill - after “Influence selective

musculo-skeletal / body “and the resistance and strength - before”, the body after exercise.”

Say that we decided that the EG to consist of students from class I (the first grade) in order to better support the research hypothesis, namely that the number of hours per week to physical education has an important role in developing motor skills in young school children.

Also, all project participants come from rural areas where the school is located and where was conducted the study, being clinically healthy at the date of commencement of the experiment, and at its end, with no injury, trauma or serious illness while participating in it. The children’s parents were informed and they signed an agreement for this study.

This study had methodological support of the Research Center for Physical Activities of the Faculty of Physical Education and Sports from Aurel Vlaicu University of Arad. We mention that we have the permission of the Commission of Ethics of the faculty to conduct this study.

Experimental Design

The experiment was conceived and was conducted in three stages:

Stage - I: that included initial tests and evaluation of motor skills development, physical development for both groups (EG and CG).

a) Anthropometric measurements: height, weight, waist and the thorax circumference and body mass index – Quetelet - useful for measuring a population and not to make the diagnosis on one person (Galea, 2014), were held in the gym, outside school hours;

b) The assessment / investigation of the degree of development of motor skills we used the following tools / samples: -Maintaining in hanging position; -Long jump from standstill; -The shuttle 5x5 m; -Back extension; -Lifting the torso (crunches); were held in the gym, during the school hours, from 15 to 26 February 2016;

Stage - II : was to implement effective planning documents developed and experimentation methods and tools, which aim at increasing pupils’ interest in movement, increasing development of motor skills - under investigation - increasing physical and mental health exertion, through movement games, especially attracting students to physical education class, held in pleasant and useful

manner, sports culture education, respecting a good structure.

Here are some of the means used during lessons with experimental group:

-The Pacer - “Progressive Aerobic Cardiovascular Endurance Run” (Meredith, Welk, 2010), and different games for: - speed development; - for skill development; - for the development of resistance; - or force development games (Login, Stoicescu, 1982);

We also performed with pupils various utilitarian and applicative pathways or different stage races, in the form of contest or games, for the development of skills and abilities.

Stage - III : which included final testing and evaluations, registration and ordering data for processing them. Also, another activity of this stage was the statistical analysis by comparing and determining the degree of achievement the objectives and working hypothesis confirmation or rejection.

For the experiment to achieve the most correct results, we took into account the particularities of age, anatomical and physiological and psychological characteristics of students, and that during the most favorable for the development of motor skills are lower ages for speed and skill, and the higher (from 14 years), for strength and endurance. Therefore, games and paths applied or circuits that we selected, primarily target development speed and skill rather than developing strength and endurance, without neglecting them, but only as a general matter, taking into account the specific of their age.

Statistics

Data in the tables are measurements of the two groups at initial testing (IT) and final (FT), the five selected samples: - back extension / rep. (BE), - maintaining in hanging position/ sec. (MH), - lifting the torso / rep. (LT), - the shuttle 5x5 / sec. (SH) and - long jump from standstill / cm (LJ). We also calculated the mean - M, standard deviation - SD and coefficient of variation - CV for them to plotting.

Results

The average of data obtained are presented in tables 1 and 2. Although students are growing , like to mention that they are

almost the same age and are part of regular classes, that are not selected based on physical qualities, and are not uniform regarding to body weight, height or level of fat. Results are outstanding, as indicated by CV, because its values are decreasing at the final testing and especially at experimental group, indicating an increase of homogeneity of the group.

Table 1. Results from initial testing – IT, at both groups CG and EG.

Groups:	Control group	Experimental group
<i>The samples</i>	<i>M±SD / CV</i>	<i>M±SD / CV</i>
- Maintaining in hanging posit. (sec)	6.18±2.83 / 45.8%	6.18±3.22 / 35.4%
- Long jump from standstill (cm)	121.62±22.65 / 18.6%	100.43±16.62 / 16.5%
- The shuttle 5x5 m (sec)	10.68±1.34 / 12.5%	10.52±0.74 / 7.1%
- Back extension (rep)	6.062±2.54 / 41.9%	6.43±2.27 / 35.4%
- Lifting the torso (crunches) (rep)	14.62±5.65 / 38.7%	14.5±5.7 / 39.3%

Table 2. Results from final testing – FT, at both groups CG and EG.

Groups:	Control group	Experimental group
<i>The samples</i>	<i>M±SD / CV</i>	<i>M±SD / CV</i>
- Maintaining in hanging posit.(sec)	9.0±3.14 / 34.9%	15.12±3.3 / 21.8%
- Long jump from standstill (cm)	124.5±22.6 / 18.2%	104.93±16.7 / 15.9%
- The shuttle 5x5 m (sec)	10.67±1.34 / 12.6%	10.44±10.75 / 7.3%
- Back extension (rep)	8.75±2.9 / 33.3%	13.37±2.94 / 22%
- Lifting the torso (crunches)(rep)	18.06±5.61 / 31.1%	23.56±5.8 / 24.6%

Analyzing the results obtained in the tests, we see that all the samples there was a considerable improvement in the results for students in the experimental group, as shown in the figure 1, which illustrates the results of the experimental group to back extensions (BE); if initial testing results were about equal, after 3-month,

experimental group has clearly improved motric quality - force, for this test, registering an doubled average, compared to initial testing.

Experts say that a very high standard deviation indicates that average is not representative for data string, but our data are within normal parameters. It is also known that a decreasing coefficient of variation, indicates a high homogeneity of the group tested, which can be seen on the data presented by us in the tables (Galea, Ardelean, Istvan, 2010).

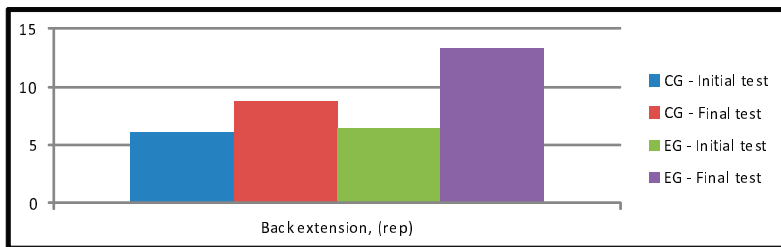


Figure 1. Graphical representation of mean results achieved by the two groups on the test back extensions.

What should be noted, after the experiment, it is that all physical attributes have improved, but the force is the one that had the sharpest growth, as shown in the graph below.

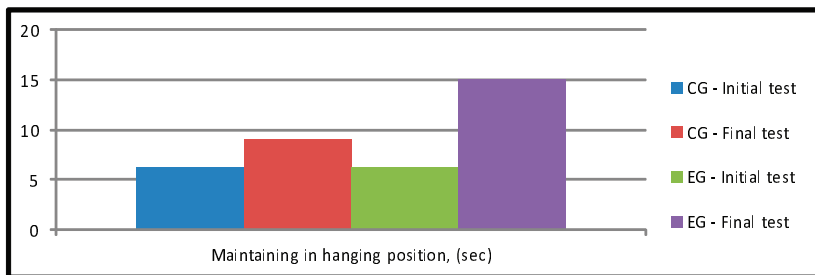


Figure 2. Graphical representation of mean results achieved by the two groups on the test maintaining in hanging.

Even if not used a specific workout for strength, the greater number of lessons made the difference in the experimental group, in final testing.

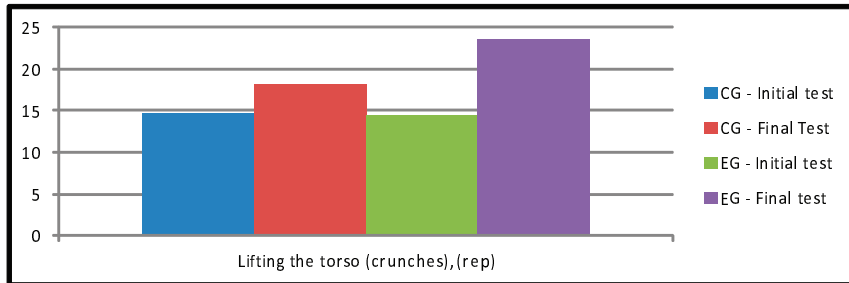


Figure 3. Graphical representation of mean results achieved by the two groups on the test lifting the torso.

In Figure 4 we have represented the long jump sample. This test is only in which control group exceeds experimental group. The explanation could be the age difference, which is higher in the control group and from here comes the difference in strength in the lower limbs. But anyway experimental group improves performance at final testing.

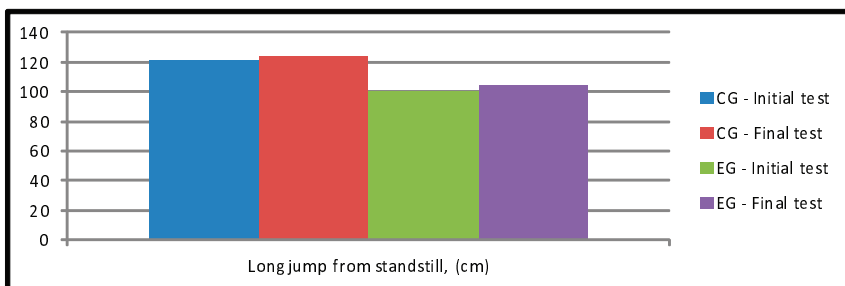


Figure 4. Graphical representation of mean results achieved by the two groups on the test long jump.

It can be seen in figure 5 as speeds improves at final testing in both groups but significantly in the experimental group.

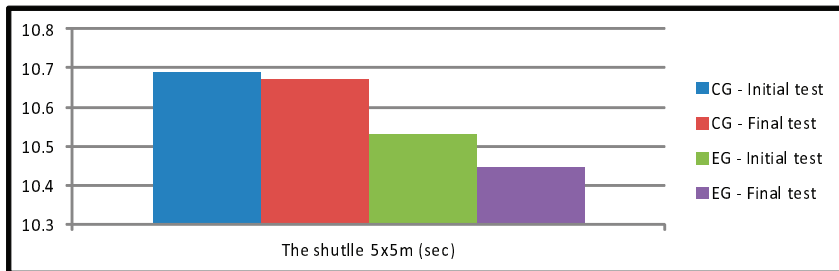


Figure 5. Graphical representation of mean results achieved by the two groups on the test the shuttle.

Conclusions

A comparative analysis of graphs, that represent arithmetic averages of the results of the initial and final two groups subjected to research, follows a breakthrough, significantly higher in the experimental group, confirming that increasing the number of hours, from 2 to 5 and by use of motion games in physical education classes, there is positive influence on the instructive – educational level and abilities improvement.

The experiment also demonstrated that by using means and methods specific to physical education, grouped in structured exercises and movement games, runs applications and relay race in 5 hours per week, were obtained indices of higher manifestation of motor skills in the experimental group, compared to the control group, although the latter was composed of older students, age and therefore with greater possibilities for solving tasks.

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References

1. Agency for Governmental Strategies, (2007), *Physical activities in Romania*, European online journal, Bucharest;
2. European Commission / EACEA, (2013), *Physical education and sport at schools in Europe. Eurydice report*, Publications Office of the European Union, Luxembourg;
3. Galea I., (2014), *Evaluare motrica si somatofunctionala*, Editura Universitatii "Aurel Vlaicu", Arad;
4. Galea I., Ardelean V., Istvan G., (2010), *Metodologia cercetării științifice în Educație Fizică și Sport: sinteze și aplicații*, Editura Universității Aurel Vlaicu, Arad;
5. Gyori F., 2015, *Thoughts about the theoretical approach of recreation, sport and tourism*, Arena Journal of Physical Activities, nr. 4/ 2015, pp.25-41, "Aurel Vlaicu" Publishing House, Arad;
6. Howie K. E., Pate R. R., (2012), *Physical activity and academic achievement in children: a historical perspective*, Journal of Sport and Health Science, 1 (2012), 160-169, <http://dx.doi.org/10.1016/j.jshs.2012.09.003>;
7. Kohl W. H., (2013), *Educating the Student Body - Taking Physical Activity and Physical Education to School*, National Academies Press, Washington, USA ;
8. Login M., Stoicescu A., (1982), *Guide methodically - Physical education classes I - IV*, Didactic and Pedagogic Publishing House, Bucharest;

9. Ministry of Education and Research - National Council for Curriculum, (2001), *Methodological Guide for the implementation of the program of physical education - primary education*, Aramis Publishing house, Bucharest;
10. Ministry of Education - National Assessment and Examination, (1999), *National System of School Assessment discipline Physical Education and Sports* Publisher Romanian School, Brasov;
11. Mitra G., Mogoș A., (1980), *Methodology of Physical Education School* Publishing Sports - Tourism, Bucharest;
12. Meredith M.D., Welk G.J., (2010), *Fitness Gram-Activity Gram - Test Administration Manual*, Fourth Edition, Human Kinetics, Illinois, USA;
13. Rengasamy S., (2012), *A Physical Fitness Intervention Program Within A Physical Education Class On Health-Related Fitness Selected Among Secondary School Students*, International Conference On New Horizons In Education INTE, ELSEVIER, ScienceDirect Sciver - www.sciencedirect.com;
14. <http://eacea.ec.europa.eu/education/eurydice/>,04/04/2016;
15. <http://internationalliving.com>,05/04/2016;
16. <http://www.sfatulmedicului.ro/Educatie-pentru-sanatate>, 21/04/2016;
17. http://activelivingresearch.org/sites/default/files/ALR_Brief_ActiveEducation_Jan2015.pdf, 11/27/2016;
18. <http://fitness.mercola.com/sites/fitness/archive/2012/09/28/physical-activity-improves-academic-performance.aspx>, 11/28/2016;