

## ASPECTS REGARDING THE DEVELOPMENT OF MOTOR QUALITIES THROUGH DYNAMIC GAMES AND RELAYS IN PHYSICAL EDUCATION LESSONS IN PRIMARY SCHOOL

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**Abstract:** The development of explosive force for the lower limbs and the acceleration speed constitute major objectives of the school's curriculum for the primary school students. The objective of our research was to emphasise the way in which proper usage of dynamic games and relay races with jumping and running content influence, at the primary school level, the development of motric qualities. The experiment took place at the „Iosiv Vulcan” National College from Oradea during the physical education classes. We had 103 subjects, 54 in experimental group and 49 in control group, girls and boys. The 10 weeks of the experiment were divided for methodological reasons into two cycles of 5 weeks each. Evaluation of acceleration speed and agility: 20 meters with foot start, 4x5 meter shuttle with foot start, “Foot taping test” and “Agility test”. The activity submitted during this experiment led to a much better progress in all control tests, in favor of the subjects in the experiment group, which confirms the efficiency of the activity performed.

**Key words:** dynamic games, motric qualities, Physical Education

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### INTRODUCTION

Exercises and sport are an important part of childhood. The lessons learned form physical education lessons are applicable through life. The development of explosive force for the lower limbs and the acceleration speed constitute major objectives of the school's curriculum for the primary school students. Children who establish regular exercise habits will ideally continue them

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in adulthood (Benjamin and Glow 2003; Peitz et al. 2018). As an indispensable factor for success in physical education activities, games and other physical activities, basic motor skills in childhood are determinant for a healthy and active lifestyle.(Cermak et al. 2015). On the other hand, physical inactivity in childhood may result in the inability to acquire and develop motor skills and abilities, which leads to posterior deficit in learning and in the perfection of specialized motor abilities (Gallahue et al. 2013). More than just a chance to have fun, play is serious business when it comes to a child's health and development. Despite its many benefits, statistics show that the amount of time children get to play has been declining for decades. Tightly structured family and school schedules, more parents working outside the home, fewer safe places to play, and rising media use and screen time are among the reasons (Zghal et al. 2019; Cristea et al. 2002).

Some variables make it difficult to practice physical activity in school environments, such as: limited time, large number of students per class and lack of adequate spaces. Besides, throughout the years there has been a change in the behavior of children, leading to the removal of games that involve the movement of several body segments, and to the approximation with technology and entertainment using a screen. Facing this phenomenon, new strategies are required to keep the children motivated for the practice of physical activity (Finco et al. 2015; Cristea and Sabău 2017) Dynamic games can contribute to increasing efficiency, motivation in the development of motor skills among children. Dynamic games is a form of practicing predominantly emotional physical exercise, performed spontaneously or organized according to predetermined rules, for recreational purposes. At the same time, play is a way of adapting the child to social reality

The insertion of dynamic games in the physical activity help children and adolescents to reach the recommended levels of physical activity, and, probably, have a positive impactive on the lives of children, since this is a useful way to acquire and develop motor skills and abilities. (Medeiros et al. 2017)

In this context, in this study we analyze the literature as to the efficacy of the use of exergames in Physical Education classes and in the acquisition and development of motor skills and abilities. We organized educational games for all activities, at any time, depending on the objectives, considering them valuable means of learning. Knowing that the game is a form of organization, method and procedure, we often used the interactive methods, considering them games with multiple formative-informative valences that affect the child's mind and personality. The objective of our research was to emphasise the way in which proper usage of dynamic games and relay races with jumping and running content influence, at the primary school level, the development of motric qualities.

## **HYPOTHESIS**

The proper usage of dinamic games and raley races containing jumps and runs during the phisical educatin classes at the primary school level will determine a significant growth in the manifestation index of the acceleration speed and explosive force of lower limbs. The judicious application of those means and methods requires (at our subject's category) the usage of maximal intensity, complete recovery breaks and the motivation of the subjects.

## **SUBJECTS**

Our experiment took place at the „Iosiv Vulcan” National College from Oradea during the 2019-2020 school year. Considering the fact that our subject are primary level students we random draw two parallel classes, second and third grade. Also by random draw we chose at each grade an „experiment class” and a „control class”. By these means we obtained an experiment group (made of the second grade class A and third grade class B) and a control group (made of second grade class C and third grade class A). The experiment group contained 48 subjects (25 girls and 23

boys) from the second and third grade, 8-9 years old. Initially, when we started the experiment the number of the subjects were 54, but during the development of the experiment some of the subjects weren't able to participate at the whole experiment and take both tests (because of the poor health condition or unknown reasons). The control group was made of 49 subjects (24 girls and 25 boys) from the second and third grade, same age as those from the experiment group.

### MATERIALS AND METHODS

The experiment took place at the „Iosiv Vulcan” National College from Oradea during the physical education classes where we benefited from our collaboration with H.S. teacher. „Iosiv Vulcan” National College, Oradea has good material conditions for the efficient conduct of physical education lessons. Our experiment lasted for 10 weeks preceded by one week in which the initial test was performed and followed by another week allocated to the final test.

The 10 weeks of the experiment were divided for methodological reasons into two cycles of 5 weeks each. During the experiment I intervened directly in 40 physical education lessons (20 lessons for each of the two classes from the experiment group). The period of the experiment was chosen so as to be consistent with the class curriculum. The classes that make up the control group continued their work as usual. From an organizational point of view, the physical education lessons presented the following structure: the organization of the group of students (1-2'), the preparation of the body for effort (10-12'), the development of acceleration speed and agility (15-18'), the development of the explosive force of the lower limbs (12-15'), the recovery of the body after effort (2-3') and the organized end of the lesson (1-2'). The same organizational structure was used for the experimental group, excepting the means used which consisted exclusively of dynamic games and relay races with jumping and running content.

In the case of the experiment group, in the first of the two cycles of five weeks that made up our experiment we chose to use in the first physical education lesson of the week 3 dynamic games with running content and 2 relay races with jumping and running content, and in the second physical lesson of the week we used 3 dynamic games with jumping content and 3 relay races content with running content.

We did the same in the second 5-week cycle, with the amendment that the means used (dynamic games and relay races) were changed to bring new types of exercises for children, but not before producing an adaptive reaction to the exercises used in the previous cycle.

We chose to repeatedly apply the same means during the 10 physical education lessons in a training cycle, to ensure that all children learn the specific rules and can participate with maximum physical and mental involvement so that the goals set can be met. Without maximum involvement, the development of speed and explosive force cannot be achieved.

Given the characteristics of the developmental stage of the subjects, we did not make any specific dosage for girls or boys. For the same reason, given the comparable results between boys and girls, we chose not to use the division by sex for the statistical interpretation of the results obtained.

**Table 1.** Weekly distribution of the used means

<i>Cycle</i>	<i>First lesson of the week</i>	<i>Second lesson of the week</i>
<i>I</i>	3 dynamic games with running content 2 relay races with jumping content	3 dynamic games with jumping content 3 relay races with running content
<i>II</i>	3 dynamic games with running content 2 relay races with jumping content	3 dynamic games with jumping content 3 relay races with running content

In order to obtain a more objective evaluation of the activity carried out, we decided to apply a system of control tests, the measurements performed by us on the subjects can be grouped in two categories:

Evaluation of acceleration speed and agility: 20 meters with foot start (20 m.), 4x5 meter shuttle with foot start (4x5 m) and “Foot taping test” (F.tapind) and “Agility test” (Agility) and evaluation of acceleration speed and agility: 20 meters with foot start (20 m.), 4x5 meter shuttle with foot start (4x5 m) and “Foot taping test” (F.tapind) and “Agility test” (Agility), evaluation of the explosive force of the lower limbs: long jump without momentum (S.l.j) and “Sargent Test” (Sargent).

## RESULTS

The activity submitted during this experiment led to a much better progress in all control tests, in favor of the subjects in the experiment group, which confirms the efficiency of the activity performed.

**Table 1.** The arithmetic mean of the results recorded, in the control samples used, by the subjects from the 2 groups in each of the 2 tests and the progress between them (expressed as a percentage and by means of the effect size)

<i>Test</i>	<i>Experimental group</i>				<i>Control group</i>			
	<i>T.I.</i>	<i>T.F.</i>	<i>Progress</i> (%)	<i>ES</i>	<i>T.I.</i>	<i>T.F.</i>	<i>Progress</i> (%)	<i>ES</i>
<i>20 metri standing start (s.)</i>	4,55 ±0,38	4,42 ±0,27	2,86	<b>1,02</b>	4,49 ±0,33	4,44 ±0,41	1,11	<b>0,58</b>
<i>The shuttle 4x5 metri (s.)</i>	9,87 ±0,63	9,64 ±0,47	2,33	<b>0,83</b>	9,91 ±0,57	9,83 ±0,55	0,81	<b>0,54</b>
<i>Foot taping test (nr.)</i>	61,83 ±6,78	64,05 ±6,02	3,59	<b>0,94</b>	61,04 ±7,32	62,92 ±8,11	3,08	<b>0,63</b>
<i>Agility test (s.)</i>	11,73 ±0,58	11,52 ±0,41	1,79	<b>0,91</b>	11,78 ±0,49	11,69 ±0,56	0,76	<b>0,77</b>
<i>Standing long jump (cm.)</i>	126,32 ±12,26	136,5 4 ±11,6 8	8,09	<b>1,05</b>	124,91 ±12,08	132,78 ±12,37	6,30	<b>0,86</b>
<i>Sargent test (cm.)</i>	23,96 ±3,38	26,77 ±3,05	11,73	<b>0,90</b>	22,88 ±3,32	25,04 ±3,44	9,44	<b>0,71</b>

We chose to highlight the progress between the two tests in each group involved in our research through two indicators: the difference between the arithmetic means of the performances recorded, in the control samples used, by the subjects from the 2 groups (experimental and control) in each of the 2 tests (initial and final), expressed in percentages (%) and by means of the effect size (ES) which referring to Thomas J.R., et al (1996) represent the standardized difference

between the arithmetic means of the performances recorded, in the control samples used, by the subjects from the 2 groups in each of the 2 tests.

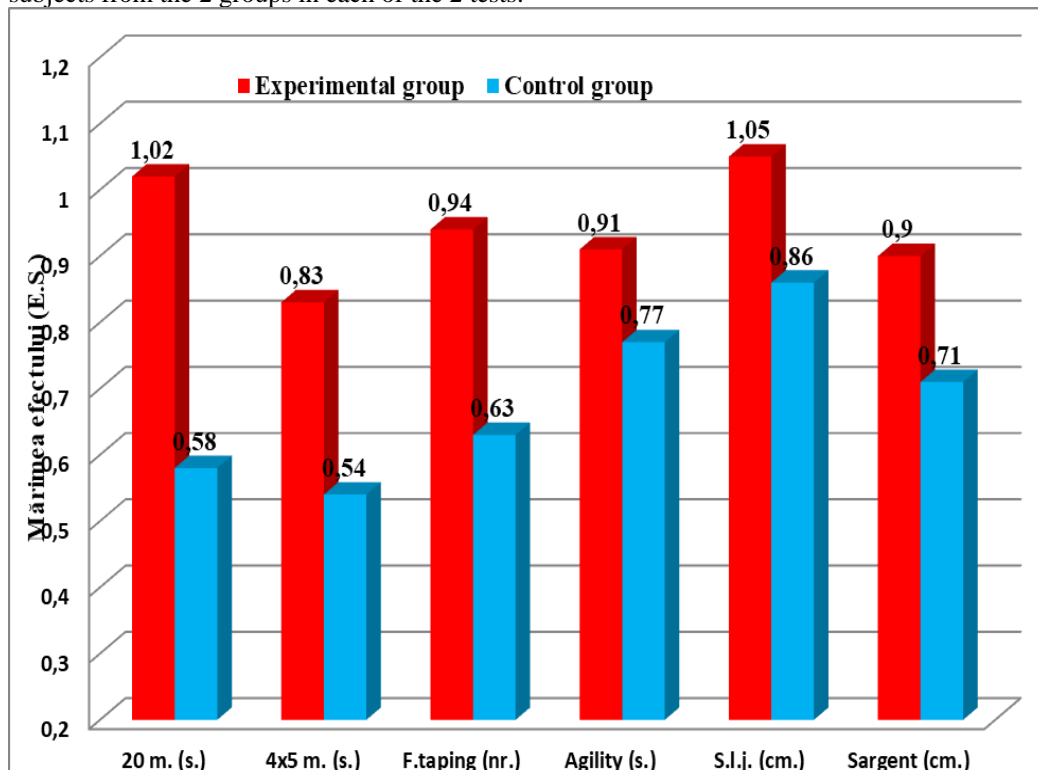


Figure 1. Effect size calculated for each control sample in the two groups of subjects

We can see a difference in all the tests applied in favor of the experiment group, the experiment group evolved in all tests compared to the control group.

## CONCLUSIONS

The obtained results confirm the research hypothesis.

An important goal of physical education teachers is to increase students' motivation and interest in the systematic participation of physical activities. We believe that dynamic games and relay races can successfully fulfill this goal, while obtaining some attractive and enjoyable lessons for students.

Also, through our approach we wanted to emphasize the fact that if these dynamic games and relay races with running and jumping content are correctly chosen and properly dosed can significantly contribute to increasing the manifestations of the two motor qualities mentioned.

Another conclusion that emerges from the values recorded in the control tests and the progress made by the experiment groups, both girls and boys, confirms the efficiency of the activity performed. The development or the increase of some indicators of various manifestation forms of the explosive force and the acceleration speed, determines us to support the efficiency and the design of the didactic approach in the physical education lesson.

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