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# THE INFLUENCE OF RELAYS AND APPLICATIVE PARCOURSES ON PHYSICAL HARMONIOUS DEVELOPMENT IN PRIMARY CLASSES SCHOOLCHILDREN

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**Abstract**

*Aim.* The purpose of this paper is to demonstrate that the application of a program consisting of relays and applicative parcourses, will lead to the physical and harmonious development of primary school students.

*Methods.* For this, a series of motor tests were applied to a number of 37 schoolchildren, age 9-10 year old - long jump from the spot, throwing the sheep ball and completion of an application route. The experimental group (N = 19) used a series of applicative parcourses and relays specially chosen and designed, executed 4-6 times in each physical education class.

*Results.* At the initial testing the results obtained were substantially equal in the two groups, while in the final testing the experimental group obtained significant results in all the tests applied.

*Conclusions.* The proposed operational structures achieved their purpose for which they were designed, thus confirming the hypothesis of the paper - the introduction of relays and applicative parcourses will determine the harmonious physical development in 9-10 year old schoolchildren.

*Key words:* schoolchildren age 9-10 years old, physical harmonious development, applicative parcourses.

## Introduction

The concept of the harmonic ideal dates still to antiquity. For the ancient Greeks, the perfect human being represented the idea of the ideal life embodied in the formula Kalos kai agatos (the beautiful and good man). Physical education classes contribute to the development of motor qualities - speed, endurance, strength, skill - leading implicitly to good and very good results in the tests performed, but also to the harmonious development of the schoolchildren.

Physical development is closely related to the promotion of health and a healthy lifestyle, including the acquisition of the pleasure of practicing physical activities and exercises throughout life. Last but not least, physical education provides a framework in which students can independently test their fitness, experiment some activities and practice them in their free time, if they wish.
(http://eacea.ec.europa.eu/education/eurydice./ documents/thematic_reports/150RO.pdf, p 17, vizualizat în 10.08.2016).

Physical development involves two categories of indices: somatic, morphological - which are seen, observed with the eye or obtained by measurement) and functional, physiological - which are not seen with the naked eye, but which is the engine of the body.

Cârstea (2000), considered that the level of human physical development is multifactorial. This level is a cumulative result of hereditary and environmental factors (natural, environmental and social).

In order to achieve a correct and harmonious physical development, depending on the age, a series of main objectives are pursued:

- harmony between the two categories of indices;
- harmony / proportionality within the somatic / morphological indices (the most important being the ratio between height and body weight!);
- harmony between functional / physiological indices;
- maintaining optimal muscle tone ("improving trophicity and muscle tone"!);
- obtaining and maintaining a correct bodily attitude (global and segmental), both in static and dynamic motor acts;
- prevention of physical attitudes and deficiencies;
- correcting all deficient physical attitudes and some physical deficiencies (especially those of mild and medium degree);
- education of the great functions of the organism, but especially of the respiratory function (or, as the same specialized bibliographical sources specify: "education of the voluntary respiratory act") (Cârstea, 2000, p 88).

Harmonious physical development exercises are the group of exercises with the highest applicability in all areas. They must meet certain requirements, as follows:

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- to be accessible;
- be appropriate to the level of training, age and sex;
- to be designed in a logical order;
- to be symmetrical for the left and for the right;
- alternating muscle groups and the character of the stress (strength, stretching, relaxation, coordination) and changing working positions;
- adequate dosing (number of repetitions, complexity, difficulty);
- continuity in the application of the exercises;
- adequate organization of teams;
- efficient teaching methods: complexes, files, drawings, photomontages, leaflets, video films;
- the exigency towards the correctness of the execution.
(http://www.rasfoiesc.com/hobby/sport/EXERCITII-DE-DEZVOLTARE-FIZICA37.php, vizualizat în 28.08.2016).

Harmonious physical development exercises consist of segmental, analytical and complex positions and movements for the balanced development of the muscular and osteo-articular system, but also for the functional improvement of the musculoskeletal system (Cârstea, 2000, p 88; http://www.rasfoiesc.com/hobby/sport/EXERCITII-DE-DEZVOLTARE-FIZICA37.php, vizualizat în 28.08.2016).

Relays are competition games, played in teams, without direct contact with the opponent. The relays have a high degree of accessibility, some of which can be organized with young children. They arouse interest in all age groups who practice physical education (Gidu et all, 2021). With these characteristics, relays are the category of movement games that are widely used in physical education class.

The competitive character is very pronounced, which leads to the raising of the emotional state.

The organization of the relays is done on two or more teams, depending on the number of participants. The number of players in a team should be around 6-10. The most commonly used formations are in rows, at a distance of 1.5-2 m from each other. Relays can be organized in other shapes: rays, circle, square (http://www. creeaza.com/familie/sport/LUCRARE-DE-LICENTA-EDUCATIE-FI182.php).

The applicative parcourses are combinations of specific, non-specific and acrobatic applicative exercises, arranged in a logical order (Niculescu, 2012, p 82-89).

They are complex structures consisting of basic motor skills (walking, running, jumping, throwing, catching) applied utilitarian motor skills (climbing, climbing, balancing, dragging, lifting and transporting weights, traction, pushing) and technical elements in sports.

The applicative parcourses developed in the form of a game lead to the development of intellectual qualities: thinking, attention, observation spirit, thus developing the students' personality.

The applicative parcourses are part of the group of global activities within which the utilitarian skills and abilities are applied. They capitalize in new conditions, not previously studied, knowledge, skills and abilities, acquired in previous lessons or even in that lesson. The applicative parcourses must create situations that require students to solve certain problems individually and creatively (Niculescu, 2012, p 82-89).

**Material and methods**

In our scientific approach we started from the premise that the application of a program consisting of relays and applicative parcourses, will lead to a physical and harmonious development of primary school students.

The experiment was attended by 37 students, aged between 9 and 10 years, from two fourth grades, from the Secondary School 39 - N. Tonitza - Constanța. Following the results of the somato-motor tests obtained at the initial test, the results obtained by the 37 students are in normal parameters for this age category.

Thus, due to the fact that the recorded values were substantially equal in all subjects participating in the experiment (N = 37) we established that one of the classes represents the experimental group, and the other - the control group.

The identification data of the subjects are presented in table 1.

**Table 1**

| Group | Years (age) | Height (cm) | Weight (kg) |
|---|---|---|---|
| Experimental (N = 19) | 10.26 ± 0.73 | 142.95 ± 8.51 | 38.25 ± 10.24 |
| Control (N = 18) | 10.11 ± 0.32 | 142.70 ± 6.75 | 38.05 ± 8.75 |

The tests used to assess motor development were the following:

Long jump without elan

Throwing the rounders ball at a distance

Completing the application parcourse

- zig-zag jumps from one foot to the other in 4 circles paced at a distance of 1.5 m,
- crawling on the mattress,
- walking in balance on the gym bench,
- trellis climbing,
- untying a scarf caught at a height of 2.5 m.

The stopwatch stops when the student descends from the trellis.

Points:

1 p - each jump in a circle - maximum 4 p, minimum 0 p

1 p - walking in balance on the gym bench

1 p - climbing on the trellis

1 p - untie the scarf

1 p - framing the execution of the entire route in 30 seconds.

Every second over the 30 regulations is penalized with 0.2 p.

The experiment took place between October 2018 and March 2019, during approximately 6 months, in the sports base of the N. Tonitza School, Constanța.

Subjects had two (2) hours of physical education per week, in the morning between 9:00 and 11:00. The experimental group used a series of application courses and relays specially chosen and designed to contribute to the physical development of students, while they were not found in the program of the control group.

This is to determine their effect on the physical and harmonious development of primary school students. The exercises used in the physical education classes of the experimental group were performed 4-6 times per hour.

**Results**

We present in the following tables the statistically processed data from the final testing for both samples included in the experiment. The result obtained in this experiment are presentend in the table below.

Table 2. Experimental group - motor development

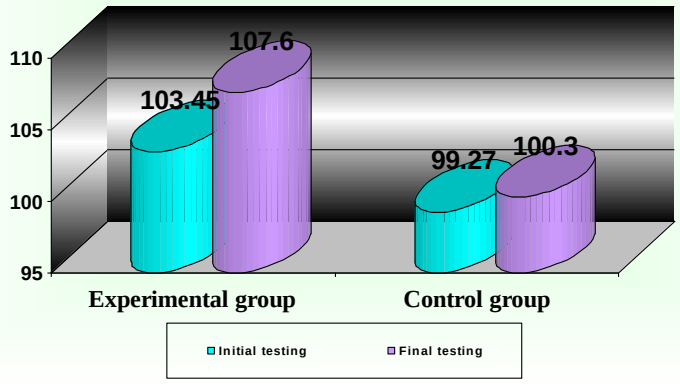
| Parametri | Testare finală | | | Testare inițială | | | Diferența $T_f - T_i$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | $\overline{X}$ | ±S | CV % | $\overline{X}$ | ±S | CV % | $\overline{X}$ | ±S | CV % |
| 1 | 103.11 | 6.38 | 6.19 | 100.53 | 7.04 | 7.01 | 2.58 | - 0.66 | - 0.82 |
| 2 | 18.37 | 2.45 | 13.36 | 16.89 | 3.11 | 18.39 | 1.48 | - 0.66 | - 5.03 |
| 3 | 14.53 | 2.22 | 15.28 | 10.11 | 1.85 | 18.33 | 4.42 | 0.37 | - 3.05 |

Table 3. Control group - motor development

| Parametri | Testare finală | | | Testare inițială | | | Diferența $T_f - T_i$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | $\overline{X}$ | ±S | CV % | $\overline{X}$ | ±S | CV % | $\overline{X}$ | ±S | CV % |
| 1 | 99.28 | 6.83 | 6.88 | 98.56 | 7.85 | 7.97 | 0.72 | - 1.02 | - 1.09 |
| 2 | 16.28 | 3.30 | 20.30 | 16.33 | 3.33 | 20.36 | - 0.05 | - 0.03 | - 0.06 |
| 3 | 10.28 | 1.60 | 15.58 | 9.89 | 1.71 | 17.30 | 0.39 | - 0.11 | - 1.72 |

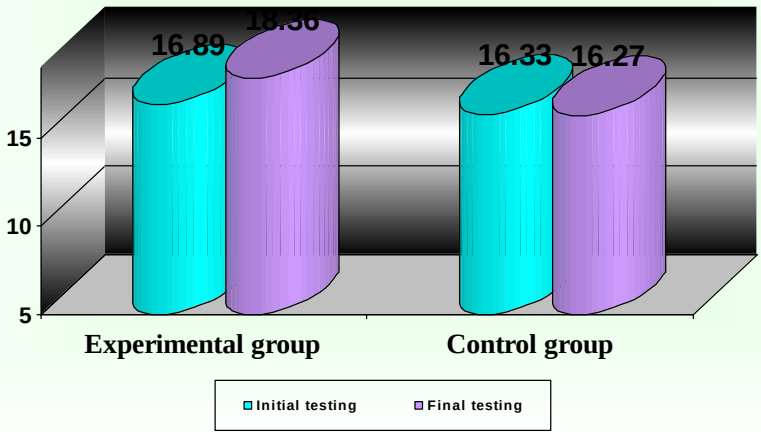
**Discution**

1. Long jump without elan

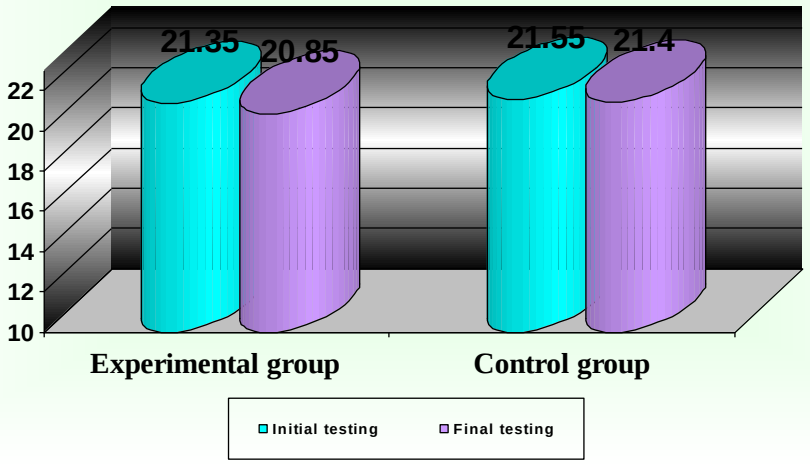


The experimental group obtained an average of 103.11 ± 6.38 cm, and the control group 99.27 ± 6.83 cm. Statistical analysis showed that in this sample, the experiment group has significantly better results than the control group ($t = 1,758$, $p < 0.05$).
And others researchers find the same results – Gidu, Straton, Hritac (2010), Mușat et al. (2014).

2. Throwing the rounders ball at a distance




In this test, in the final test, the experimental group obtained an average of 18.36 ± 2.45 points, and the control group 16.27 ± 3.30 points. The experimental group obtained significantly better results in the final test compared to the control group ($t = 2.175$, $p < 0.05$).
Gidu, Straton, Hritac, (2010) find the same result in their experiment.



3. Completing the application parcourse

In this case the registered values are the following: in the experimental group, 14.52 ± 2.22 points and in the control group 10.27 ± 1.60 points. Statistical analysis showed that the differences between the two groups are significant (t = 6,700, p < 0.001).

## Conclusions

1. Subjects in the experimental group obtained significantly better results in the final test than in the initial one (p <0.05), in all the tests that were administered.
2. Also, the experimental group obtained significantly better results than the control at the final test, in all administered samples (p <0.05).
3. At the level of the control group, there were no significant differences between the two tests - initial and final - (p> 0.05).
4. The general and specific means used in the preparation of the experimental group ensured an adequate demand from a quantitative and qualitative point of view, determining significant changes in the physical development, but also in the motor one of the students.
5. Harmonious physical development can be improved by using carefully designed application paths adapted to students' possibilities.
6. The exercises and operational structures used during the experiment were well selected and dosed according to the age of our subjects, ensuring a harmonious evolution of the child, an evolution that is expressed through effective and expressive motor skills and a good emotional balance.
7. The use in the preparation of students of the application courses and of the physical development complexes for 20 minutes, twice a week, during approximately 6 months, contributed to the physical development of the subjects.

The proposed operational structures achieved their purpose for which they were designed, thus confirming the hypothesis of the paper - the introduction of relays and application parcourses will determine the harmonious physical development of students aged 9-10.

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