Study Regarding Movement Speed Development in Primary School Children by Using Motor Games and Relays

Laurenţiu-Gabriel Talaghir[a], Teodora Mihaela Iconomescu[a], Constantin Ciorbă[b]

[a] *Dunarea de Jos University of Galati, Domneasca Street no. 47, Galati 800008, Romania*
[b] *Ion Creangă State University,, Ion Creanga street no. 1, Chisinau 2069, Republic of Moldova*

Abstract

The development of motor qualities represents a constant challenge for specialists in the domain of physical education. The general competences in the new Physical Education school curriculum for the 3rd and 4th grades focus on improving motor quality manifestation indices in relation to the individual possibilities of pupils belonging to this age group. In the present paper, we aimed at presenting the results regarding the improvement of the speed motor quality by using movement games and relays. We used 5 movement games and 5 relays, which concentrated on developing speed. In order to test the results obtained within the physical education classes we used the 25-metre sprint, the race starting from a standing position. The results recorded in the final tests proved that the use of movement games and relays had a positive effect on the improvement of the speed motor quality manifestation indices. The experimental group obtained an average value of performance for the tested trial of 6.07 seconds whereas the control group obtained an average value of performance of 6.21 seconds. Therefore, we can assert that the obtained results prove the practical efficiency of movement games and relays.

Keywords: physical education, speed, movement games, relays, primary school, motor qualities

5. Introduction

Movement games are part of gymnastics and represent one of the most efficient means of acquiring the content specific to physical education. Within fundamental motor activities, movement games prove to be useful both during physical education classes and for children's free time (free time motor activities, sports camps, etc.).

In the last years, in this direction of adaptation and evolution, new curricula for PE for the Romanian primary school system have been drawn up (M.N.E., 2013; M.N.E., 2014).

This aspects of adapting the curricula to the ever changing social reality is approached in the specialists' concerns worldwide (Carse, 2015; O'Sullivan, 2013; Jess et all., 2016).

Authors, such as Iconomescu (2013), consider that the physical education class is different from the other classes in terms of content, structure, methodology, dynamics, location and learning particularities.

The games most often than not focus on different motor actions performed by the subject and are partially governed by a set of rules. The content is established depending on the purpose and it determines the form of the game.

The method of organising games is extremely important in obtaining an adequate motor density of the lesson. The teacher must find the most suitable options so that the children are not eliminated from the game.

Physical Education has two components, that is practical activity training and education as the assimilation of a set of rules which regulate human behaviour (Giggs, 2012; Currie, 2013). Specialists proved that the quality of the educational process mainly depends on the conscious selection of the training means, methods and procedures (Iconomescu and Talaghir, 2014).

An important concept, which emphasizes the educational value of games, is the one referring to the "new games". They make reference to interactive, group games whose only purpose is to recreate and engage in this kind of activity people of different ages, genders and levels of training.

By means of the proposed movement games, children develop their cooperation skills, they assume certain responsibilities, and they learn about tolerance, about acceptance but also about making decisions and assume their consequences. The present paper is the result of the equal contribution of all authors.

6. Procedure

The experiment took place during the 2015-2016 school year in Primary school no. 18 from Galati, with 3rd grade pupils. In order to carry out the experiment, 3rd grade A was designated the experimental group and 3rd

grade B, the control group. There were 59 3rd-graders who took part in the experiment, out of which 30 pupils were girls and 29 were boys. The experiment proposed by us aimed at showing whether the use of movement games is useful in trying to improve the motor skill manifestation indices in this age group.

In the present paper, we shall present the results obtained by pupils within the experiment regarding the improvement of speed as motor skill.

The study involved the use of 5 games and 5 relays within the experimental group in order to develop speed as motor skill.

The choice of these movement games and relays was done so that they corresponded to the level of the pupils. Their placement within physical education lessons was done in accordance with the learning units planned for developing speed as motor skill, which were approved by the management of the school for the third grade.

As far as the control group is concerned, the planning documents of the teacher, approved by the school management, were taken into account, and the influences regarding the development of speed as motor quality were achieved with specific means, that is the traditional teaching method.

The data obtained in the initial and final tests from both groups (the experimental and the control groups) was interpreted from a statistical point of view by means of a specialised program, i.e. SPSS 23.0.

Movement games and relays are presented in detail further on, as part of the working procedure which was used during the experiment. In order to create diversity within physical education classes, these games and relays were coded and combined. The lessons contained two games and one relay or one movement game and two relays. Depending on the feedback coming from the pupils, they were repeated twice or three times within the same lesson.

As assessment trial, we used the "25-metre sprint", with the start from a standing position. This trial was executed in a straight line, on flat ground, the stopwatch was started at the movement of the back leg and the time taken to complete the trial was measured in seconds and fractions of a second. This trial was taken at the beginning and at the end of the school year.

6.1. Movement games used to develop speed as motor skill

GAME NO. 1 THE RACE ON NUMBERS (V.1)

Educational goals: the development of the reaction time, of the execution speed and of team spirit

Game description: Two or more teams are formed, the players sit in a line or in rows, one after the other. Each row must have an equal number of players. The players may sit on the ground, cross-legged, or they may stand. After the teacher counts them in depth, they are told to remember their number.

The leader of the game establishes the running direction and calls out a number, for example, 5. The players who have this number stand up and run around their row, trying to reach their starting point as soon as possible. The team whose player reached the starting point faster scores one point. In this way, all the players run around their row. The one who does not run in the correct direction or the one who does not run around the whole row of his/her team scores a negative point. At the end of the game, all the points are added and the team with most points is the winner.

Rules: the running is performed in only one direction; running around the whole row of children is mandatory

Methodical guidelines: The teacher insists on the children's running direction in order to avoid injuries. Initial start positions may be changed. The game may be repeated 2 or three times.

GAME NO. 2 WHO IS FASTER? (V.2)

Educational goals: speed-of-movement development

Game description: Arranged in two lines, facing each other, the pupils move towards the opposing line by means of in-place jogging or jogging. At a certain moment, the teacher calls out the name of one team (red-blue, warm-cold). The members of this team execute the order "Left about face!" and run towards the finish line while the members of the other team try to catch them. After counting the pupils who got caught, the game is resumed.

Rules: "Left about face!" is mandatory.

Methodical guidelines: The catching race is allowed only up to each team's line. The teacher must make sure that no obstacles exist behind the teams. A pupil is considered to be caught even if he/she is only touched by an opponent. The game may be repeated 2 or three times.

GAME NO. 3 ALL AT ONCE (V3)

Educational goals: the development of the reaction time, of cooperation and of team spirit

Game description: The players are divided into more groups, they stand behind a start line, executing different running elements, and they have an obstacle in front of them at a distance of 10 -12 m. When the teacher blows the whistle, all the members of the groups run around the obstacle simultaneously and come back to the starting point. The group that finishes first is the winner of the race.

Rules: The pupils must run around the obstacle.

Methodical guidelines: The players from each team are advised to keep their place in the team and they are not allowed to pass in front of another player. The game may be repeated 2 or three times.

GAME NO. 4 RUNNING IN PAIRS (V.4)

Educational goals: the development of the reaction time and of the speed of movement

Game description: The pupils are arranged in two lines at a distance of 5-6 m, facing the teacher. The teacher says: "Left about face!" Then, the pupils at the back try to catch the players at the front. When the teacher says again: "Left about face!", the roles are reversed.

Rules: The players are not allowed to start running before the teacher blows the whistle.

Methodical guidelines: After a few repetitions, the starting point is changed. The game may be repeated 2 or three times.

GAME NO. 5 COLOURS (V.5)

Educational goals: Psychomotor and motor goals: running motor skill development, the speed-of-reaction development, the spatial and temporal orientation development, the distance assessment ability development;

Cognitive goals: attention development, analysis and decision ability development;

Socio-emotional goals: educating courage, perseverance and group work ability

Game description: The group is divided into two equal teams, which will face each other, standing behind two lines drawn on the ground, at a distance of 2 m one from the other. Behind them, at a distance of 8-10 m, a refuge space is delimited for each team. The coordinator of the game will attribute one colour to each of the two groups and, when the respective colour is mentioned, the respective players must run towards the players of the other team, trying to touch them before they arrive at the refuge space. The ones who are caught are taken prisoners and will be part of the opponents' team. The group that has the most players is the winner.

Rules: After a player enters the refuge space, catching (touching) the respective player is no longer taken into account.Methodical guidelines: The children who represent the colour that has not been mentioned must return to the refuge space as quickly as possible; the colours will be changed by the coordinator of the game. The game may be repeated 2 or three times.

6.2. Relays used for the development of speed as motor skill

RELAY NO. 1 – THE OBSTACLE RELAY (V.6)

Educational goals: the speed-of-movement and segment-coordination development

Game description: Children are divided into rows, in front of each team the teacher places a gymnastics bench and draws 10-15 lines on the ground, which are parallel to the start line; the children must step over the bench, run over the lines up to a certain point and come back running up to the next player.

Methodical guidelines: The children are forbidden to step on the line drawn on the ground.

Rules: The players must not step on the bench and on the lines drawn on the ground. The game may be repeated 2 or three times.

RELAY NO. 2 – THE RELAY IN PAIRS (V.7)

Educational goals: acquiring the running motor skill, speed-of-movement development, cooperation and team spirit development

Game description: The players are divided into equal teams, arranged in rows, behind a start line, each row is counted in depth and player number 1 stands behind a line drawn on the ground at a distance of 15-20 metres from the start line. At the teacher's whistle, player number 1 runs towards the row, takes player number 2 by the hand and they both return to the start line. The team that finishes first is the winner.

Rules:

- - The two players must hold hands at all times while running
- - The players are not allowed to go over the start line while waiting for their team member to come
- Alternative: The two team members could hold each other by the elbow while running; running may be replaced with jumping, galloping or skipping. The game may be repeated 2 or three times.

RELAY NO. 3 – THE DODGE RELAY (V.8)

Educational goals: the reaction and movement speed development, the ability to change the running direction

Game description: The players are divided into teams and arranged in flanks; one of the players stand behind the start line. The space between the two teams is of 3-4 metres. In front of each team, following the running direction, the teacher places cones every 1-2 metres. At the teacher's whistle, the first pupil from each group runs and dodges the cones and goes back to the end of the row. The team whose last player passed, in his/her return race, the marked line that is in front of the teams is considered to be the winner.

The players must dodge the cones in a zigzagging manner. They are not allowed to take down the cones, but if they do, they must put them back in place before continuing running. The game could be played by increasing the number of cones and, consequently, the running distance.

Rules: The players must dodge the cones and they are not allowed to take them down. The game may be repeated 2 or three times.

RELAY NO. 4 – THE CONTINUOUS RELAY (V.9)

Educational goals: the speed-of-movement and coordination ability development, attention development

Game description: The teacher draws two parallel lines at the distance of 20, 30, 40, 50 metres one from the other.

Materials: a relay baton for each team

Game description: The whole class is divided into two teams, arranged in two rows, facing each other. The first pupils from each group receive a relay baton. At the teacher's whistle, the pupils who have the relay batons in their hands, run towards the group that is in front of them, hand the baton to the first pupil from that group and go to the back of the row. Then, the pupils who got the baton run towards the opposite group and so on and so forth. The winning team is the one whose players manage to run faster between the two lines.

Methodical guidelines: After a player begins running, the whole group will take a step forward so that the next-in-row player could reach the start line; nevertheless, the start line will not be stepped on until receiving the baton.

Rules: the baton is handed and not thrown to the next-in-row pupil; pupils cannot switch places. The game may be repeated 2 or three times.

RELAY NO. 5 – SWITCH PLACES (V.10)

Educational goals: speed-of-reaction and movement speed development, attention development

Game description: The class is divided into two equal teams and each team, in its turn, is divided into two groups, facing each other, behind the start line. The distance between the groups may be of 5 – 15 m. At the teacher's whistle, the groups switch places. The winning team is the one that succeeded in switching places faster and arrange itself as it was at the beginning of the game.

Rules: Pupils are not allowed to go beyond the start line and they are not allowed to start running before the teacher's whistle. The game may be repeated four times. This exercise may be used at the beginning and at the end of the PE class.

7. Results and disscusions

The initial and final test results were statistically processed so that we could objectively assess whether the use of movement games and relays could contribute to the improvement of the speed motor quality manifestation indices.

The statistical analysis was performed separately for the group of girls and for the group of boys. Also, the analysis was performed both within the group and between the groups. The results recorded at the initial and final tests for the two groups of boys are presented in Table 1.

Table 1. Initial and final test results for the group of boys

GROUPS / TRIALS	BOYS							
	The control group **(n=15)**				The experimental group **(n=14)**			
	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	p	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	p
	6.34±0.20	6.21±0,12	6.10	< .000	6.32±0.17	6.07±0.15	14.38	< .000

From the table above we may deduce that, in the initial tests, the two group of boys achieved similar performance. The control group obtained an average performance value of 6.34 seconds, whereas the experimental group obtained an average performance value of 6.32 seconds. This fact shows us that the pupils have a similar development level, specific to their age group.

The final test results recorded by the group of boys show a favourable evolution for both groups involved in the experiment. From this perspective, both the control group and the experimental group recorded some progress, which may be considered significant from a statistical point of view ($p<0.000$).

As a result of the statistical analysis performed within the groups, we may assert that the methods used in both situations were efficient, fact which demonstrates that the educational process has favourable effects on pupils.

Further on, we carried out a statistical analysis between the final test results obtained by the two groups of boys. These results are presented in Table 2.

Table 2. Final test results for the groups of boys

TRIALS	BOYS – Final test			
	G.M **(n=15)** $\bar{x} \pm m$	G.E **(n=14)** $\bar{x} \pm m$	t	P
	6.21±0.12	6.07±0.15	0.77	< .009

As we previously asserted, the results recorded by the experimental group were noticeably better than the ones obtained by the control group. In Table 2, we may notice that the progress recorded by the experimental group is also significant in statistical terms ($p<0.009$).

In order to highlight the initial and final test results obtained by the groups of boys, regarding the evolution of performance recorded in the "25-metre sprint with the start from a standing position" trial, Figure 1 was drawn up.

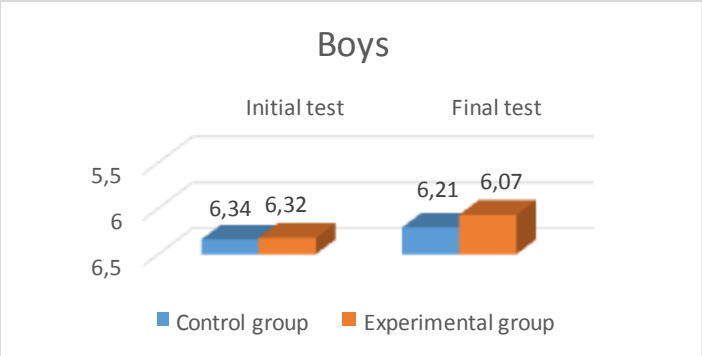

Figure 1 – Speed-of-movement test results for the group of boys

The same type of result analysis was performed in the case of the group of girls, too. The results obtained by them are presented in Table 3.

From the analysis performed within the groups we could deduce the fact that the initial level of physical training was similar for both groups involved in the test, the control group obtaining an average performance value of 6.69 seconds, whereas the experimental group obtained an average performance value of 6.74 seconds.

In the final test, the control group of girls obtained an average performance value of 6.54 seconds, whereas the experimental group obtained an average performance value of 6.39 seconds. The analysis performed emphasized the idea that both groups recorded significant progress in the final test as compared to the initial test ($p<0.000$), even if a group used specific, traditional methods and the other group used movement games and relays.

Table 3. Initial and final test results for the groups of girls

GROUPS / TRIALS	GIRLS							
	The control group **(n=15)**				The experimental group **(n=16)**			
	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	p	T.I. $\bar{x} \pm m$	T.F. $\bar{x} \pm m$	t	p
	6.69±0.22	6.54±0.20	3.89	< .000	6.74±0.19	6.39±0.14	9.29	< .000

Following the previously made assessment, we continued the statistical analysis between groups, as well, at the level of the final test results, in order to see if the recorded differences are significant. The results of this analysis are presented in Table 4.

Table 4. Final test results for the groups of girls

TRIALS	GILRS – The final test			
	G.M **(n=15)** $\bar{x} \pm m$	G.E **(n=16)** $\bar{x} \pm m$	t	P
	6.54±0.20	6.39±0.14	2.41	< .022

We may notice that, in the final test, both groups of girls involved in the experiment recorded better results than in the initial tests, fact which makes them significantly more successful at PE. The performance average values are favourable to the experimental group. By calculating the materiality $p<.022$, we could assert that the results obtained by the experimental group were significant not only within the group but also in comparison with the control group.

As in the case of the groups of boys, we drew up a concise and suggestive presentation of the girl group result evolution at the "25-metre sprint with the start from a standing position" trial. This presentation may be seen in Figure 2.

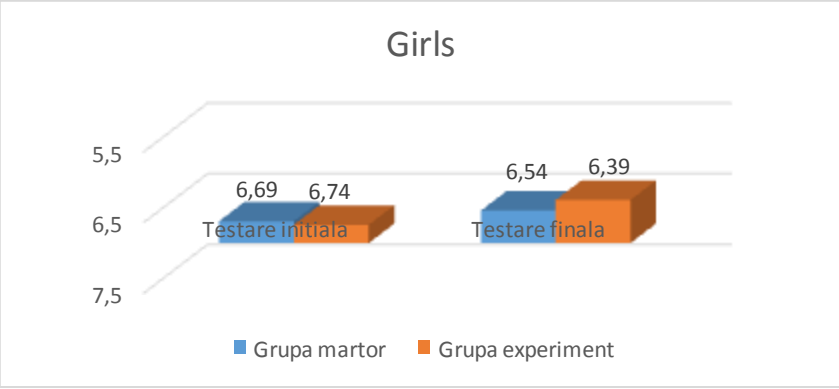

Figure 2 – Speed-of-movement test result evolution for the group of girls

8. Conclusion

Taking into account the results presented above, we could assert that movement games had the expected effect regarding the improvement of speed as motor quality.

The pupils from the experimental groups obtained favourable results, superior to the control groups, and these results have a significant character both for the group of boys ($p < .009$) and for the group of girls ($p < .022$).

The use of movement games all through the school year, which were selected according to the age and sex particularities of the pupils, will lead to the achievement of the general competences presented in the PE school curriculum.

The use of movement games during the PE class increases the degree of effective participation, develops attention and the level of interaction between pupils, which represents another component of the primary school level general competences.

The exploitation of games and their use during the PE class aims at transforming the content of the lesson. Thus, physical exercise becomes a means of maintaining health and a means of social integration through sport, which is in accordance with the new curricular guidelines for this school subject.

The assessment test used for the PE class highlights, nevertheless, only the sport performance achieved by the pupils, which is not in accordance with the view that physical exercise should be used as a means of maintaining health and general well-being.

References

Carse N. (2015) Primary teachers as physical education curriculum change agents, *European Physical Education Review,* Vol. 21, no. 3, pp.309-324

Currie J .L. (2013) *Teaching Physical Education in Primary School - An integrated health perspective*, Publisher: ACER Press, 112-118,

Griggs G. (Ed.), (2012) *An Introduction to Primary Physical education*, Publisher: Routdlege, 151-161,

Iconomescu T.M. (2013) Didactics of Physical Education and Sport / Course notes, Publisher: Zigotto, Galati,

Iconomescu TM., Talaghir LG., (2014) Teaching approach to enhance motor skills for students in primary school, Procedia - Social and Behavioural Sciences, Volume 152, 746-751

Jess M., Carse N., Keay J., (2016) The primary physical education curriculum process: more complex that you might think!!, *Education 3-13 International Journal of Primary, Elementary and Early Years Education*, Vol. 44, no. 5, 502-512

O'Sullivan M., (2013) New directions, new questions: relationships between curriculum, pedagogy, and assessment in physical education,, Sport Education and Society, Vol. 18, no.1, 1-5

The Ministry of National Education, (2013) Curriculum for Physical Education, The preparatory grade, the first grade and the second grade, Bucureşti

The Ministry of National Education (2014) Curriculum for Physical Education, The third grade and the fourth grade, Bucureşti

Experimental Study on the Importance of Improving Physical Training in Middle-Distance and Long-Distance Track Running Trials

Andreea-Georgiana Dobre [a], Dragoș Bondoc-Ionescu [b], Claudiu Mereuță [a]

[a] "Dunarea de Jos" University of Galati, Faculty of Physical Education and Sport, Romania
[b] "Transilvania" University of Brasov, Faculty of Physical Education and Mountain Sports, Romania

Abstract

All the fields and aspects of athletics and sport training are characterised by the occurrence of various progression and perfection elements, innovative elements, but also by updating and adjusting to superior parametres. The competition for all the levels of performance is very tight and numerous specialists investigate and select the latest information, from various fields of activity, to adjust them to athletics, in the hope that they might become means and measures to improve and perfect the sport area and the training procedure. Physical training for athletes is highly superior to physical training specific to other sports and covers two aspects: general or multilateral physical training and specific or special physical training. The purpose of this study is to highlight the importance of the improvement of physical training for middle-distance and long-distance running athletes. Starting from the idea that performance is achieved subsequent to a very well developed training process, comes the hypothesis according to which there is a possibility of improving the sport performance of middle-distance and