

The movement games: A methodical approach in the intellectual – motric development of preschoolers

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Abstract. In this study, we aimed to analyze if movement games represent a methodical approach in the intellectual-motric development of pre-schoolers and also if there are significant changes regarding their ability and motric performance. The present theme has been initially introduced as a pilot study and continued up to the present with further analysis on an extended group of subjects. Because of the experiment's enlargement, the actual study has tracked important differences concerning the pre-schoolers' intellect, their scholarly achievements and exams or test papers. It has been discovered the fact that active scholars, who are involved in movement activities (daily physical education classes) have greater performance at school, whereas the rest (having a single physical education class a week, known as the physical activity moment in the curriculum with a duration of 50 minutes/week) do not. The research was achieved on two groups: A - The pilot group-composed of 12 children (boys and girls); B - The group of fundamental observation made up of 80 children-divided into two groups: An experimental group (E.G.) of 39 children (boys and girls): A control group (C.G.) of other 41 children (boys and girls). Children are aged between 5-6 years old attending the same kindergarten. Findings - During a game and through play, children discover how to learn by adopting a working method that involves activities that follow a step-by-step logical sequence. In conclusion, the movement game is an essential methodical approach in the intellectual-motric growth of pre-schoolers. Used regularly, the movement game will have a positive impact both on the capacity of movement guidance and the intellectual development.

Keywords: Lesson, physical education, intellect, schedule, kindergartens.

INTRODUCTION

In games and through play, a child will only gain benefits, a statement that represents the reason for the proposed theme. The game is the second nature of the child and does not put pressure on him. Through this survey, we have developed an extensive and comprehensive analysis of the use of movement games as a methodical strategy in the intellectual and motric growth of pre-schoolers by investigating, examining and identifying the key features of the present research. The main purpose was to offer a more precise understanding of the subject

and its applicability in life using basic information about the importance of games in the process of learning from literature, in relation to the proposed schedule. This approach may seem a little avant-garde because the school curriculum stipulates only moments of physical education activities and we are recommending circular lessons with instructional content, a test battery of motric activities unstated in the curriculum but in agreement with particularities required by age, gender and level of study.

Due to this new method, our study differs from common

research and makes the proposed programme more attractive by using the time barometer and the evolution of the young generation, which needs another perspective in education. We are witnessing a sequence of changes in the field of knowledge nowadays, the matter which requires brand new approaches, causes multiple debates and demands argumentation, in order to exploit information.

“Existing measures of perfectionism for adults and children have not been clearly underpinned by a theoretical model” (Lauren *et al.*, 2008).

“The United Nations raised the importance of Education for Sustainability in 2005, with a paradigm shift that aimed at drawing educators’ attention to transformative agenda. The primary vision for education was set to change people’s minds for a sustainable future” (Ampartzaki *et al.*, 2021).

In this context, the game may have “...double significance. On the one hand...the game represents a setting in which a child can show and express his feelings.

On the other hand, the game serves as the main training tool in the process of mental development of a child”

(<https://www.rasfoiesc.com/educatie/didactica/gradinita/Jocul-de-miscare-la-copiii-pre48.php>, 2021). This increase shall be made on several levels, which support different mechanisms ready to trigger in order to facilitate human adaptation to the environment. “From a dialectical point of view, the movement constitutes the way of existence of living matter” (Dragnea and Bota, 1999).

The motric skills- features of the human body have a level of initial manifestation which depend upon the hereditary genetic background. Epigenetics is present all around us and gives us information about “the study of genes function changes”. Moreover, the study of epigenetics encourages this research because it points out that we are “...what we eat, where you live, with whom we interact and how often do you exercise...” (Vasiliu, 2018). Considering that, the movement games would be the right methodical approach in the intellectual-motric development of preschoolers.”

Children who interact well with others early in their preschool year have greater cognitive, social and motor abilities at the end of the year than those who do not interact as successfully (cf. Fantuzzo, Bulosky-Shearer and McWayne, 2006 cited from Mark *et al.*, 2009). Early childhood is a crucial period for children’s development, and it is expected that a set of essential skills is acquired to minimize difficulties...in life. (cf. Yıldırım *et al.*, 2021 cited by Papadakis *et al.*, 2021).

Therefore, “...the games approach represents the main methodical strategy used to generate knowledge, which

is important for preschoolers during kindergarten. The study is referring to movement on its own and not as different learning approaches through play, which is meant to learn numbers, letters, and how to read. In this manner, children would be able to expand creativity and gain the ability to search and find the most suitable solutions to problems. This process will lead them to success” (Lupu, 2011).

It is important to mention that in Romania, physical education activity does not have a programme that serves in a complete achievement between movement games, intellect, and motric activities, while the curriculum does not offer lessons of physical education, but moments of physical education activities. Planning the educational approach is just based on motric objectives, even if the affective-cognitive targets have been mentioned in the curriculum. The already mentioned aspects are completely disregarded in preschoolers’ preparation (Ministry of Education, Youth and Sports, 2008). The development, training, motric skills and habits are done alongside the process of growth and improvement and will be influenced by the activities specific, living conditions, inheritance, the geographical and climate environment and school exercises. Considering the above-mentioned aspects, we truly believe that the introduction of daily movement games in pre-schoolers programme can develop abilities “... perceptive motric abilities, which shall be considered as cognitive skills that support motric behaviour” (Stănescu, 2002), because “behavioral and emotional engagement increases enjoyment and participation and enhances the pre-schoolers....appeal and disposition towards learning...” (Sailer *et al.*, 2017 cited by Kalogiannakis *et al.*, 2021) and are also seen as a methodical approach in preschoolers intellectual-motric growth. The game is an extremely important aspect of a preschooler’s life, it represents a way in which children can express their point of view, both physical and mental. On the other side, games serve as important learning and developing tools of their personality (Vlaicu, 2016). Not getting enough physical activity and not playing games “determine frustration among children and have a negative impact on their further evolution. As long as they move and play together, these young children gain experience... (Ferencz, 2015) and their physical and intellectual-motric skills flourish.

The impact of movement games in the intellectual-motric development of pre-school children was studied by Alecu (2009), who observed the following aspect “An hour of motric activity per day in early childhood constitutes an indispensable minimum.” (Alecu, 2009) because “a normal development of physical abilities conducts to a better adaptation and inclusion of children,

both in scholar and intellectual activities, but in society as well" (Apostol, 2009).

The impact of movement games on the intellectual-motric development of pre-schoolers has been initially introduced as a pilot study in "Study regarding the impact of motion games in the intellectual-motric development of preschool children (Lupu, 2011). It should be mentioned that the earlier research stands as a pilot approach for further analysis continued on an extended group of subjects, known as "The group of fundamental observation".

The initial study has referred to intellectual and motric development and their efficiency in school's performance (good marks in tests and challenges) of a group, aleatory selected from "Kindergarten no.1 Boldesti-Scaieni-structure of Secondary School "Mihai Viteazul" Prahova-Romania". Our subjects have enjoyed a motric routine of 55 minutes per day, divided into two sequences for the purpose of intellectual and motric progress. This routine was formed of movement games played during the week for an entire school year.

We have observed in parallel another group of children from the same kindergarten with a standard school schedule (moments of physical education activities) composed of "Self-selected games and activities" listed in the school curriculum, once a week for 50 minutes.

After implementing the new programme by increasing the number of hours a week, and also by introducing a test battery for motric activity, aspects unspecified in the "Curriculum for pre-schoolers", "...but corresponding to the characteristics of age and level of preparation of pre-schoolers, an improvement in the overall effect has been achieved. There have been positive changes caused by the specially designed programme, because the perceptive motric skills have been considered cognitive skills that maintain the motric behavior." (Stănescu, 2002). The basis for establishing the research hypothesis has come from literature (psychology, pedagogy, research methodology, physical education methodology, analytical curricula) and the experience gained during the training process.

REVIEW QUESTIONS

The following questions were used in order to examine what exists in the current literature about motion games and methodical strategies used in the intellectual-motric growth of pre-schoolers:

Research question 1: What methodical strategy different from classical strategies (moments of physical education) aims to highlight the present research in order

to emphasize the intellectual-motric development of pre-school children?

Research question 2: In which context, the study can be applied in the present research?

Research question 3: Do you think that the proposed program can have a viable application in the children's motric and intellectual development?

Research question 4: What were the motivational and/or educational results regarding the intellectual-motric level?

All research questions derived from the study itself form the connection of the research results with the methodical strategy tackled in the intellectual-motric development of pre-school children and the way of evaluating the conclusion.

HYPOTHESIS

This research was based on the assumption that children who benefit from a program composed of movement games taught by a specialist (a physical education teacher) and used as a methodical strategy during the learning process throughout the week, for a school year, can develop a superior intellectual-motric growth than those who do not have similar motric activities, but only moments of physical education once a week with their educator.

During the actual study, I have recorded the following partial tasks:

1. If preschoolers have the possibility of everyday motric activities through movement games, that will determine significant positive changes in their intellectual-motric development, as well as the school performance. The already mentioned changes could occur for those preschoolers who were involved in movement games, throughout the week, for a year and not for those who did not develop similar activities, having physical education classes once a week.
2. According to the first point, it is possible to formulate that "the perceptive and motric abilities are considered to be cognitive skills that sustain the motric behavior" (Stănescu, 2002).
3. In order to make the research more conclusive, we have undertaken a "pilot study" on a group of 24 children (a class) and afterwards, we have extended it on a bigger group, formed of 80 preschoolers, which were randomly picked from kindergarten. The group composed of 80 children represents "The group of fundamental observation"-constituted of members of the same

population, that we have already observed in similar conditions as in the pilot study.

4. We have to consider the idea of building and introducing a methodical approach (a new program for preschoolers full of movement games taught by a specialist (physical education teacher) during the entire week, for a school year. We would not limit the motric activities according to the school curriculum, then the quality of training and creativity will increase. Children will be able to search and find the right solution to a problem, achieving success. In this manner, their self-esteem will grow and they will encourage physical activities without emotional boundaries that lock development.

5. We find that in Romania, the physical education activity does not have a programme that serves in a complete achievement between movement games, intellect and motric activities. This process shall be carried out separately in moments of physical education activities so-called self-selected games and activities, an hour of games and free activities that do not require movement. By implementing a program that ensures the intellectual-motric connection, such as the one proposed by us, we will demonstrate on the basis of the recorded results, the optimization of the educational process and the efficiency of the methodical strategy.

MATERIALS AND METHODS

The actual research has been achieved since 2009 (pilot study), data collection and centralisation took time and the study has been published in 2011 by E. Lupu. I have stagnated for a while in order to deepen this research. I have considered the present study to be challenging, full of interest for the specialists and it can be applied on a large lot, bigger than the number of subjects from the pilot group. I have continued with this study in the coming years.

The unexpected came up and the conditions were not favorable to finish the entire process, the Pandemic period made us delay. In order to publish the study, we had to collect and access the necessary documentation for planning the teaching activities: "School Curricula" (2000), "The Curriculum of Educational training activities in children's kindergarten" (2000) in comparison with the newly curriculum for early education (2019, p.6-8) and "The methodology for implementing the early Education" Plan (2019, p.8-13). Under these circumstances, we have noticed there were no modifications in the methodology of 2019 compared with the methodology of 2000.

This finding strengthened our conviction that the study is current, useful and can change the methodical strategies used in kindergartens for pre-school children.

The pre-schoolers represent the digital generation, born in the age of technology with high intelligence who perceive different and can positively respond to intellectual-motric stimulus. But why? We cannot separate the motric from the intellect, cognition or affectivity because all together represent a whole. Kindergarten no.1 Boldesti-Scaieni-structure of Secondary School "Mihai Viteazul" Prahova- Romania has become the main stage of the study.

All subjects involved in the research were from this kindergarten. The Boldesti-Scaieni Kindergarten has got amenities similar to all Romanian kindergartens (it has got classrooms, which can be easily transformed into halls for motric activities and a playground for outdoor playing).

We would like to highlight that we have respected the relation imposed by the research norms between science and society.

From the beginning until the end of the study, everything had been done according to Romanian legislation on data and subjects protection. The entire activity was accomplished with the agreement of the kindergarten management, based on the voluntary involvement of subjects who participated with dedication and pleasure. When applying the protocol, no personal data was provided, children were not exposed to the public. The physical environment has been kept constant in all lessons (in the classroom, in the playground, there have been equipment, accessories and a constant working temperature inside).

The social atmosphere is very important because it can influence subjects' availability, we have excluded the presence of strangers or familiar faces. We have also avoided disturbance in order to obtain a guarantee of the information required. This ensured both the confidentiality of the data and the protection of our subjects, who worked smoothly on the new program without emotional barriers. Moreover, we had the assurance that every piece of information is true and mirrors the scientific truth.

Research methods

The strategy is subsequently a structure of operations organized to achieve a goal, in our case to discover the scientific truth.

The main methods underlying the research that represent the intent of this paper are:

1. The literature review method;
2. The observation method;
3. The sociological research (conversation, survey etc);

4. The pedagogical experiment method;
5. Measuring subjects performance method;
6. The mathematical statistics method;
7. The graphoanalytical method.

1. The literature review method: The study of foreign and domestic literature referred to the method of teaching motric acts in pre-school and later, in school “was required by the complexity of the research and was determined by the versatility of the practical activities present in the experiment, customized according to the specific nature of the research”(Lupu, 2007).

2. The observation method: consisted of systematic observation (on purpose) of data, actions and motric activities.

3. The sociological method: used interviews (conversation). This method aimed to present different categories of subjects and motric activities. The main stages of the survey were: presenting the object (theme); selecting the subjects; choosing survey tools; the pilot research used to verify and finalize the study; the implementation of a new school schedule; analysis and interpretation of data; formulating conclusions. Using the sociological method, I had the opportunity to explain the behavioral mechanisms of the participants.

4. The pedagogical experiment method has allowed us to see the reality. This method has entailed an active state of the subjects and has involved an activity focused on a specific purpose: hypothesis verification. The entire activity was accomplished with the notification and consent of the kindergarten’s management and also, based on the voluntary involvement of the subjects that have participated with dedication and enjoyment throughout the suggested activities. It is worth mentioning that, in applying the protocol, the subjects did not provide any personal information (name, surname, address, class, etc.). This ensured both the confidentiality of data and the protection of our subjects, having the guarantee that all the information required is true. It has been working cursive on the actual study. The experiment took place both in a sports hall and class, in good conditions of working with the study participants. The manipulated factor was called **independent variable**, while the modified factor was called **dependent variable**. In this case, the independent variable was the physical education curriculum, whereas the dependent variable was represented by the motric aims. “The participants to this research presented different and changing

availabilities that required special “**control**” measures.

The situation variable featured three aspects:

- Physical and social environment;
- The experimental condition;
- The call sign.

The physical environment was kept constant during the physical education lessons (temperature, in the sports hall or the playground, equipment, accessories).

We consider that the social environment would have influenced the availability of our participants by the presence of an audience, thus we have tried as much as possible to avoid these types of events. The examination or the independent variable management was precisely realized following strict protocols taking into account stimulus (games, the dosage and their succession in time, etc.).The call sign or the task was accurately expressed. We used the subject variable claimed as being nonexperimental, when the action of independent variable induced changes in the dependent variable, according to the subject characteristics (age, gender, education, etc.).The response variable outlined particular features as regards children’s feedback to the proposed schedule.

Participants

All subjects came from the same kindergarten, theoretically forming a homogeneous group that includes members who are the same age (5 to 6 years old) and have similar education levels, with a well-balanced distribution by gender.

The research of the pre-school child population has been divided into three stages and two lots:

- Stage A - The pilot stage;
- Stage B - The stage of the basic experiment;
- Stage C - The assessment stage.

Stage A – The pilot group formed of 24 children-divided into two groups:

- an experimental group (**E.G.**) made up of 12 test subjects (boys and girls);
- a control group (**C.G.**) composed of other 12 participants (boys and girls);

I mention that the necessary details of the present study have been already stated in the article “Study regarding the impact of motion games in the intellectual-motric

development of preschool children” published in (Procedia-Social and Behavioral Sciences, Volume 30, 2011, Pages 1209-1214, <http://dx.doi.org/10.1016/j.sbspro.2011.10.235>)

People interested in this article could access **Science Direct** database.

Stage B - The group of fundamental observation formed of 80 children– divided into two groups:

- an experimental group (**E.G.**) made up of 39 test subjects (boys and girls);
- a control group (**C.G.**) composed of other 41 participants (boys and girls);

Please note that “The group of fundamental observation” is not numerically balanced because children moved to another kindergarten to be closer to their home.

Stage C – The assessment stage. Analysis and data interpretation, conclusions.

Research purpose

Based on the present study, we have intended to highlight the importance of movement games, seen as a methodical approach in the intellectual-motric development of preschoolers.

Moreover, we have hoped to record significant changes regarding the children’s intellect and motric performances. All the necessary details of the present study were already mentioned in the article, written by Lupu (2011) study regarding the impact of motion games in the intellectual-motric development of preschool children.

The earlier research stands as a pilot approach for further analysis continued on an extended group of subjects, known as “The group of fundamental observation”. The initial study has referred to intellectual and motric development and its efficiency in school’s performance (good marks in tests and challenges) of a group of preschoolers who are involved in movement games during a week, for a year compared with a group of children who had physical education lessons once a week. The research has been realised step-by-step, during a school year at „Kindergarten no.1, Boldesti-Scaieni-structure of Secondary School “Mihai Viteazul” Prahova- Romania”, a kindergarten having the same material conditions as in other Romanian kindergartens (the classroom is large enough to be easily transformed into a room for motric activities by removing materials that could cause accidents, including the foldable tables)

Physical education lessons are mandatory and need to be done once a week. Furthermore, physical education classes are included in The Education Syllabus (2000). The curriculum of instructive-educational activities in kindergarten has been endorsed by The National Specialized Commission on 4th January 2000, completed-as a result of the consultation of The National Council for Curriculum and Assessment in August 2000 by the order of Ministry of Education.

The education plan has been approved by the order of Ministry of Education no.4 481/8.09.2000 and it presents a systematic approach towards providing continuity within the same curricular course and also brings openness for optional methods of learning (The curriculum of instructive-educational activities in kindergarten, 2000, 10). *The Curriculum for Early Childhood Education (0-6 years old)* described in the order of Ministry of Education no. 4.694/02.08.2019 (2019) captures an updated vision on early education, mirrored in *The Curriculum for Early Education (2019)*, *The Education Syllabus for Early Education (2019)* and *The Methodology for Applying the Curriculum for Early Education (2019)*. We shall be taken into account the necessity of linking the requirements and recommendations from the papers listed above.

I note that the curriculum from 2000 and up to the present, in 2020 did not suffer significant changes regarding *the educational-instructive activities in kindergarten*. It is recommended to point out that the curriculum includes a single hour of physical education per week. More accurately, it includes 2 hours of „Games and other activities”, a single hour of games and another hour of free activities, which does not involve motion. The curriculum is insufficient and it does not lead preschoolers to intellectual-motric development. We try to change the curriculum a bit by adding more physical education classes for the preschoolers.

The renewed curriculum represents a novelty in the education field and it was not tested, being applied for the first time. Through the present research, we intended to observe in comparison the significant changes that occurred in the intellectual-motric development of preschoolers in tests and challenges.

The experimental group (E.G.) - has tried an everyday plan of 55 minutes of movement games, while the other group has followed the basic education syllabus with a single physical education class per week (50 minutes and a different structure of the lesson). Children from the experimental group (E.G.) have a routine of everyday activities based on movement games, whereas, the other group allocates only an hour a week to physical education. Their lesson is composed of basic physical exercises or free activities.

In order to make the research more conclusive, we

have undertaken a “pilot study” on a group of 24 children (a class) and afterward, we have extended it to a bigger group, formed of 80 preschoolers, which were randomly picked from kindergarten.

The group composed of 80 children represents “The group of fundamental observation” - constituted of members of the same population, that we have already observed in similar conditions as in the pilot study.

The test fidelity was demonstrated and taken into consideration when interpreting data and differences after the measurement of the real performances recorded for the first group. The test-retest-reliability coefficient known as the stability coefficient scored $r = 0.74$ ($p < 0.01$) measured fairly stable the definite construct.

Preschoolers who recorded good marks in the first test also obtained great performance in the second test. The teaching activity has been focused on achieving the proposed routine. All physical education lessons were held in the kindergarten’s sports center (composed of sports hall and playground) in accordance with the stage, the moment of training and the season.

The educational intervention was an uninterrupted process throughout the training. The researched variables were checked at the beginning of the training cycle and also, at the end of it.

The instruments used in this research were the timer, the measuring tape and some record sheets. We have realized the present study by using two different groups, the experimental group (E.G.) on which the independent variable operated (a Motric Programme of “55 minutes every day”) and the control group (C.G.) on which the independent variable did not act.

Research tasks

The research tasks resulted from the formulation of the topic and the need for theoretical-methodical preliminary work, as follows:

- Knowing the theory and the methodology of preschool training in order to form a proper curriculum for achieving the educational goal;
- Knowing the concepts regarding the right circumscription of the pursued objectives;
- The elaboration of research design, the operationalization of intellectual-motric objectives in physical education activity with preschoolers;
- The application of the proposed programme;
- Evaluating the effects of training in a customized manner;
- Evaluation of the researched aspects: applied on two groups, the experimental group (E.G.) and the control

group (C.G.);

- The motric assessment of preschoolers by testing them in three different situations. I mentioned that the test battery of motric activities is unstated in the curriculum but in agreement with particularities required by age, gender and level of study and principles underlying the teaching process, starting from known to unknown, from simple to complex, from easy to difficult.

- This test battery was composed of the following motric tasks:

1. Speed running on a distance of 20 m starting off their feet;
2. Standing long jump;
3. Throwing the sheep ball, at a distance, without momentum.

- The evaluation of intellectual-motric qualities developed through a test “*Journey based on the stories of Hans Christian Andersen and the Brothers Grimm*”;

- Data recording in tables, statistical processing and interpretation;

- The graphic representation of essential indicators used in the present study;

Research tasks have been focused on the experimental situation according to the groups, the experimental one and the control group.

Research tasks – The experimental group (E.G)

- **The initial testing (I.T)** - testing the motric capacity before bringing “The motric routine - 55 minutes” of daily exercises and movement games.

- Stage of introduction motion games in class, during physical education lessons for a whole year.

- **The final testing (F.T)** - testing the motric capacity after bringing “The motric routine - 55 minutes” exercises and movement games.

Research tasks - The control group (C.G.):

- **The initial testing (I.T.)** - testing the motric abilities of the control group;

- The introduction stage of games for 50 minutes, once a week, during a school year. We named this activity “Physical education” for the control group.

- Final testing (F.T) of intellectual-motric abilities- control group

A comparative presentation, analysis and data interpretation of the groups.

Important explanation: Please note that the physical education class is not called “lesson” in the curriculum, but moments of it are known as “Self selected games and activities”. To give uniformity of research and similarity in action and interpretation, we named the activity of the control group “physical education class” throughout the text for both groups. I have explained and pointed out the word for those education specialists who might be confused about the meaning of the term “physical education lesson”.

CONTENT OF THE RESEARCH

The research lasted one year and it was similar for both groups, it was organized by evolutionary growth stages of the experimental situation. The study wanted to recreate an experimental model and highlight the significant changes that occurred in the intellectual-motric development and the school performance of the children. Children who are involved in different movement games all week long, during a year tend to have better marks than those with similar status having a single physical education lesson per week.

The suggested programme was identical for both groups and it was divided into two distinct stages: Stage I the game stage- games used to develop motric skills and Stage II a game stage with games that develop the intellectual-motric qualities.

The difference has been made by “The motric routine of 55 minutes per day for a week” by introducing daily motric activities of 55 minutes in pre-schoolers schedule- The experimental group. Lessons featured a predominant content of movement games, based on which we tried to develop numerous qualities, motric abilities and intellectual-motric ones.

Significant - Mixing the games for memory and imagination development with movement games and physical exercises have been inserted in the experimental group’s routine for five days per week for one year. Whereas, the control group has benefited from a single physical education class per week for a year. I will point out that the test “*Journey based on the stories of Hans Christian Andersen and the Brothers Grimm*” was applied to both groups (under the form of initial and final testing) at the same time and in the same conditions. Games used to develop children’s mind, motric skills and the intellectual-motric qualities were organized on stages as well.

Stage I - The game stage: Games aimed for skills development and motric activities. There are many other

games implied but we will only describe some of them:

- Examples of running games- these games improved both reaction and movement speed. Dog chasing cat, Bunnies’ trap; Running amongst the trees;

Games description

Describing the game A

Dog chasing cat: children are facing each other, standing in two rows. When the teacher shouts “Woof, woof”, the pupils who play as dogs run after the so-called “cats”. A cat who gets caught turns into a dog. However, the cats are not easy prey because they can find shelter, resting on the playground’s benches. When the teacher says “Meow, meow”, the cats start chasing dogs and so on. A team wins when it captures the majority of team players.

Describing the game B

Bunnies’ trap- the kids stand in a row, waiting for a signal to start moving. They have to reach a certain point on the ground (marked with chalk). Whoever gets there first wins.

Describing the game C

Running amongst the trees- children are divided into two groups, standing behind a white line. In front of them, there are three cones, replacing the trees. When the game starts, every first kid should race amongst the trees (cones). After reaching the last obstacle, the player comes back running and the following teammate takes over the race. The first team who finishes the race wins the game.

Examples of games involving jumping- *these games increase lower-extremity muscle strength;* Leapfrog, Single leg stance, Long jump.

Describing the game- Long jump- This game takes place in the form of a contest. Children are standing in line and will jump over an imaginary lake full of dragons. Those who do not succeed to cross the lake will be eaten by the dragons and they are out of the game. The last three competitors will triumph. Every participant receives a silver star, while winners gain a golden one.

Examples of games involving throwing- *these games*

Table 1. Indicators recorded when testing the motric capacity of the experimental group (E.G); the control group (C.G.)- Initial testing (I.T.).

Types of experiment	The number of children involved in the experiment		Speedrunning at a distance of 20 m starting off their feet (s) \bar{x}		Standing long jump (m.) \bar{x}		Weight throw with one hand over the shoulder (m.) \bar{x}	
	E.G.	C.G.	E.G.	C.G.	E.G.	C.G.	E.G.	C.G.
Pilot	12 children	12 children	E.G. I.T.	C.G. I.T.	E.G. I.T.	C.G. I.T.	E.G. I.T.	C.G. I.T.
The pilot group \bar{x}	Total = 24 children		5.05	4.86	1.03	1.12	4.89	5.85
The fundamental experiment	39 children	41 children	E.G. I.T.	C.G. I.T.	E.G. I.T.	C.G. I.T.	E.G. I.T.	C.G. I.T.
The group of fundamental observation \bar{x}	Total = 80 children		5.02	4.81	1.04	1.10	4.90	5.80

Legend: Experimental Group (E.G.); Control Grup (C.G.) - Initial Testing (I.T.); Average (\bar{x})

increase upper-extremity muscle strength and ability; basketball, dodgeball, throwing over the line, etc.

Describing the game - Throwing over the line: This game takes place in the form of a contest. The participants wait for their turn, standing in a row. They toss the ball over a line marked on the ground. Whoever throws the ball further wins. However, every contestant will be praised and encouraged by receiving heart-shaped stickers. The winners' names will appear written on the school's honor board for a week.

Stage II- games aimed for developing intellectual-motric skills- "Guess who I am and follow me!" **The children were engaged in an imaginary journey based on the fairytales of Hans Christian Andersen and the Brothers Grimm-** The above-mentioned activity triggers memory improvement, enhances creativity, vocabulary and motricity. The preschoolers were divided into two groups: "The Giants" (E.G.) versus "The Titans" (C.G.) and then discussed the heroes that appeared in the stories. Children also impersonated the characters while describing them. The opposing team had to guess the character. The team that recognized most of the characters wins the contest. Combining both physical exercise and motric activity, we focused on boosting creativity, imagination and speaking skills among the experimental group. However, the members of the control group were not included in this programme.

Examples of activities

The story of "Fairytale of the Salad"- the character is the prince who sings in order to conquer the heart of the

princess "Fairytale of the Salad" is represented by a randomly picked child from the experimental group. This pupil enters the stage waving his hands, singing, jumping, doing detachments from squatting and doing twirls, simulating that he is climbing on a ladder and singing a beautiful song for the princess. Kids should guess the missing words from the song and have fun.

The story of Snow-White - the character of this story is the Queen, impersonated by a child randomly picked from the experimental group. This pupil enters the stage waving his hands, singing, jumping, doing detachments from squatting and doing twirls and simulating that he is looking in the mirror and singing so: "Looking-glass upon the wall, Who is fairest of us all? The child impersonating the Queen waits for a response from the other participants. They should recall the following words "Queen, you are full fair, 'tis true, but Snow-White fairer is than you" (Andersen and Grimm, 2005).

Statistical analysis and interpretation

Stage I - The result are listed in Tables 1 and 2, and Figure 1. We can note that in the initial testing of motric challenges, both groups seem to have a similar motric growth.

The control group (C.G.) within the "Pilot Group" obtained better results (1.12 m) at the Standing long jump compared to The experimental group (1.03 m). As well, children from the control group "Pilot Group" achieved superior scores at speed running (an average of 4.86

Table 2. Indicators recorded when testing the motric capacity of the experimental group (E.G.); the control group (C.G.) - Final testing (F.T.).

Types of experiment	The number of children involved in the experiment		Speed running on a distance of 20 m starting off their feet (s)		Standing long jump		Weight throw with one hand over the shoulder (m.)	
	E.G.	C.G.	\bar{x}	\bar{x}	\bar{x}	\bar{x}	\bar{x}	\bar{x}
Pilot	12 children	12 children	E.G. F.T.	C.G. F.T.	E.G. F.T.	C.G. F.T.	E.G. F.T.	C.G. F.T.
The pilot group \bar{x}	Total = 24 children		3.97	5.05	1.20	1.13	7.15	5.94
The fundamental experiment	39 children	41 children	E.G. F.T.	C.G. F.T.	E.G. F.T.	C.G. F.T.	E.G. F.T.	C.G. F.T.
The group of fundamental observation \bar{x}	Total = 80 children		3.96	5.00	1.25	1.12	7.30	5.95

Legend: Experimental Group (E.G.);the Control Grup (C.G.)- Final Testing (F.T.); Average (\bar{x})

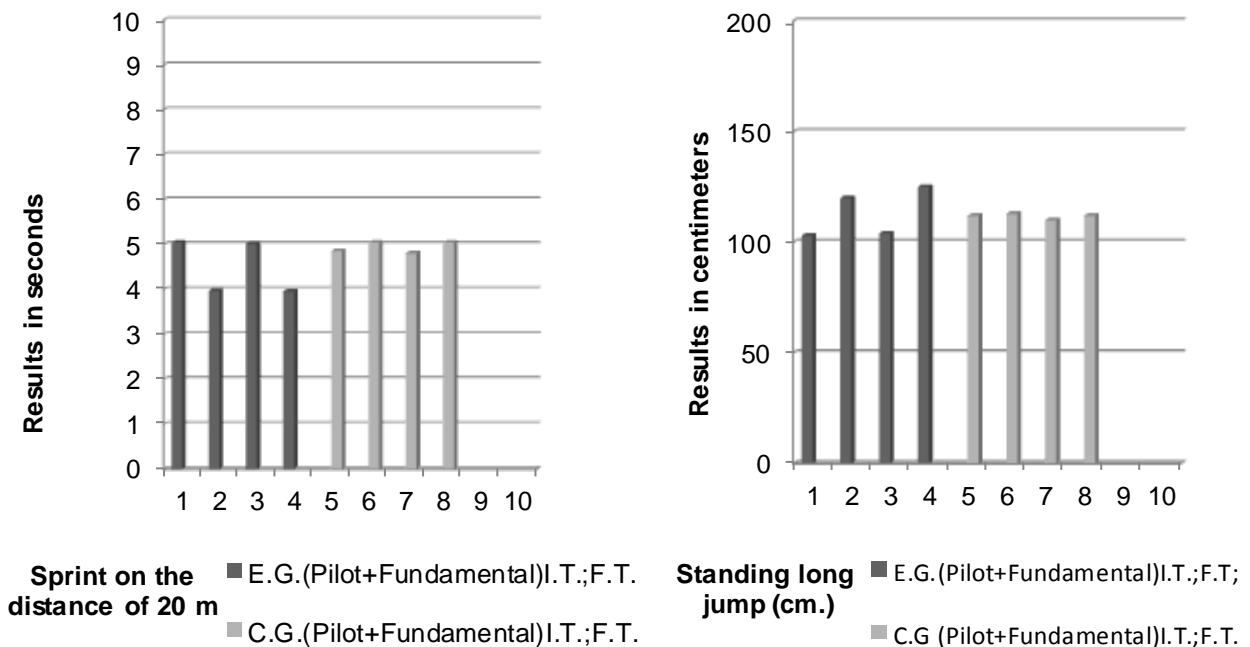


Figure 1. Graphic representation of the recorded indicators for the motric activity. Experimental Group (E.G.); the Control Grup (C.G.); Initial Testing (I.T.); Final Testing (F.T.)

m/s) than those from “The group of fundamental experiment”.

The experimental group (The group of fundamental observation) gained an average of 5.02 m/s. values show an insignificant gap (0.3 m/s) for the study group age.

This gap of 0.3 m/s can be easily and rapidly caught up by training and physical exercises. In this case, the assumptions have proved to be right and a new programme aimed at increasing training efficiency is required.

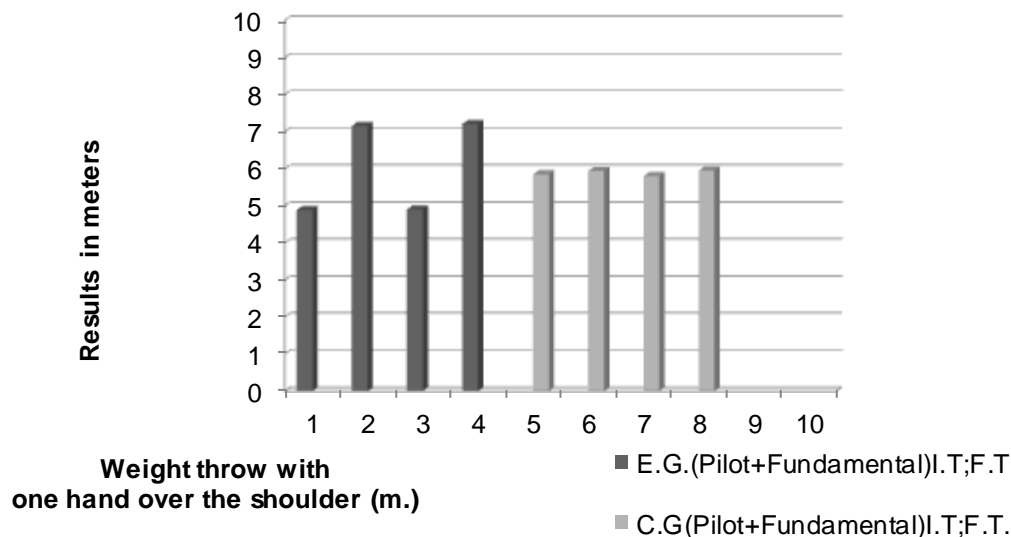


Figure 2. Graphic representation of the recorded indicators for the motric activity. Experimental Group (E.G); the Control Group (C.G); Initial Testing (I.T); Final Testing (F.T)

By analyzing the values recorded in Table 1 and 2, and Figures 1 and 2, we note a better performance of the control group for the I.T. than those enrolled in The experimental group.

As a result of applying “The motric programme of 55 minutes daily”, positive changes occurred in preschoolers' daily schedule of “The experimental group”, as well as an improvement of the motric parameters. The above-described situation is similar to that recorded during “The pilot experiment” when we reported changes after implementing the motric programme among the preschoolers (F.T.). In this manner, we attempt to demonstrate the programme's utility and the authenticity of the suggested tests (Tables 1 and 2; Figures 1 and 2).

Note. For a better interpretation of the charts, please follow the explanation below:

- 1. Black colour** - is representative for **The Experimental Group (E.G)** as it follows – for The “Pilot” Experiment, the indicators are numbered with 1 and 2 (I.T. - 1.; F.T. - 2.); for “The Fundamental Experiment”, the indicators recorded are numbered with 3 and 4 (I.T. - 3.; F.T.- 4);
- 2. White colour** - is representative for **The Control Group (C.G.)** as it follows – for The “Pilot” Experiment, the indicators are numbered with 5 and 6 (I.T. - 5.; F.T. - 6.); for “The Fundamental Experiment”, the indicators recorded are numbered with 7 and 8 (I.T. - 7.; F.T.- 8);

There was visible progress regarding the speedrunning test- the experimental group (3.96 m/s) compared to the control group's results (5.00 m/s). Moreover, another

remarkable improvement was noted during the “Weight throw with one hand over the shoulder” test (Table 2) (7.30 m- E.G. and 5.95 m- C.G.).

The control group (C.G.) indicated either decay or stagnation of the results compared to subjects of The Experimental Group (E.G.).

This tendency was observed in both experimental stages (pilot and fundamental), a fact which concludes that motric education is a methodical approach in intellectual-motric development of preschoolers, confirming our hypothesis.

It is worth mentioning that both Pilot and Fundamental Groups (E.G.; C.G) have similar initial results which demonstrate there is uniformity regarding age and training level. A visible difference between groups was noted after following the motric programme of 55 minutes daily, certifying that the proposed program represents a useful methodical strategy in intellectual-motric growth of pre-schoolers, a different approach that marks a new stage in the educational training process.

Stage II - games aimed for developing intellectual-motric skills - “*Imaginary journey based on the fairytales of Hans Christian Andersen and the Brothers Grimm*”

The second stage was carried out similarly to The Pilot Stage mentioned in the article “*Study regarding the impact of motion games in the intellectual-motric development of preschool children*” (Lupu, 2011: 1209-1214). Teachers had to constantly read 13 stories to the

Table 3. The recorded results of the experimental group (E.G.) and control group (C.G.) presented comparatively in Stage II - games aimed for developing intellectual - motric skills.

Types of experiment	The number of children involved in the experiment		The number of unfamiliar characters Max. no.-10		The number of familiar characters, Max. no.-10		Execution time(20 min) %		Execution time (20 min) %	
	E.G.	G.C.	E.G. I.T.	E.G. F.T.	C.G. I.T.	C.G. F.T.	E.G. I.T.	E.G. F.T.	C.G. I.T.	C.G. F.T.
Pilot	12 children	12 children								
The pilot group %	Total = 24 children		4 characters 40%	10 characters 100%	5 characters 50%	8 characters 80%	20 min	15 min	20 min	20 min
The fundamental experiment	39 children	41 children								
The group of fundamental observation %	Total = 80 children		3 characters 30%	10 characters 100%	4 characters 40%	7 characters 70%	20min	14 min	20 min	20 min

Legend: Experimental Group (E.G.); the Control Grup (C.G.) - presented in a comparative way in Stage II; Average (\bar{x})

children of The Experimental Group during a period of 30 days. In order to help preschoolers memorize the fairytales, they were being read three times. After that, the kindergarten teacher named a child to impersonate a character of the story. This activity was scheduled to happen at the end of P.E classes.

The other classmates were encouraged to mimic the moves of their colleague who was presenting the character as a way of entertainment (using physical exercises, verses or short paragraphs from the story related to the character described). In the final testing (F.T.), the

kindergarten teacher presented 10 well-known fictional figures, using a flipchart.

The characters had their familiar facial features, but the colour did not correspond with the description used in the initial testing (I.T.).

The children were asked to identify the differences and mimic the characters in 20 minutes. Preschoolers pertaining to The fundamental group – Experimental group (E.G.) mimicked and named only 3 out of 10 characters (I.T.), which equals a percentage of 30%. Whereas, children pertaining to The Control Group (C.G.) named and mimic 4 out of 10 characters, which equals a

percentage of 40%.

After implementing the programme, children named and mimic all the characters (10 out of 10), which equals a percentage of 100% in only 14 minutes.

This positive result was recorded during the final test (F.T.). In parallel, children of the control group guessed and presented only 7 out of 10 story protagonists, a percentage of 70% in 20 minutes.

The recorded result for the experimental and control group are presented comparatively in Table 3 and Figure 3. All the values were quite similar at the beginning of the study, showing

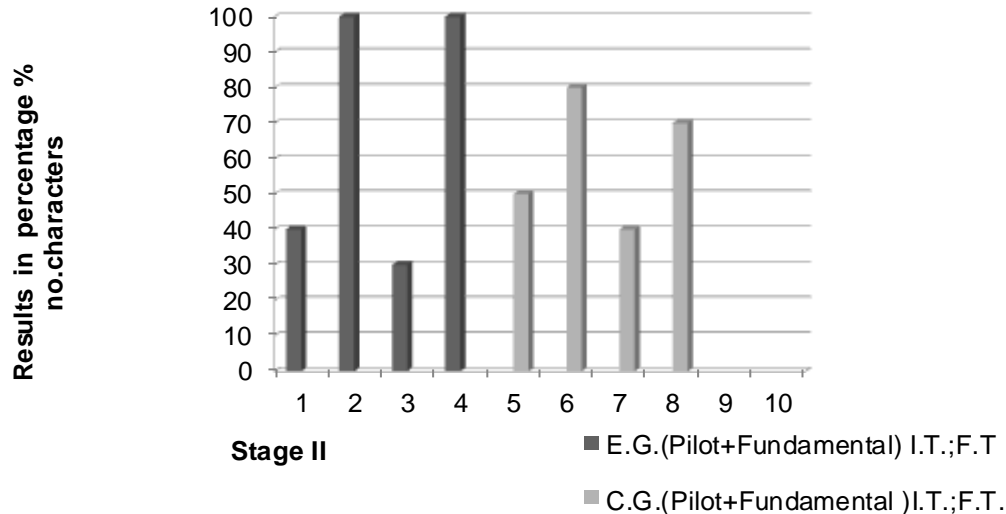


Figure 3. The recorded results of the experimental group (E.G) and control group (C.G) presented in Stage II - games aimed for developing intellectual-motric skills. Experimental Group (E.G.); the Control Grup (C.G.); Initial Testing (I.T.); Final Testing (F.T.); presented in a comparative way in Stage II).

visible changes after the implementation of “Motric Programme of “55 minutes daily” within The experimental group (E.G.) of The fundamental batch- based on movement games.

This proves the increase of the capacity to engram information for subjects in the experimental group, confirming the hypothesis of the research.

RESULTS

It is worth noting that the positive changes that occurred after implementing the motric programme do not appear in the final testing among the recorded results of the Control Group (C.G.), (according to the tables and figures). The data recorded in Table 3 and Figure 3 are illustrative for the experiment. Figure 3 is also suggestive for the topic.

All these changes just go to prove that memory practicing and motric activities, in the form of games, determine a greater capacity of focusing and engaging among preschoolers.

The ability of focusing would grow up to 100%, a fact which was demonstrated by quick-witted answers and reactions. It is very important and interesting to track the time factor and its variation during the initial testing (I.T.) and the final(F.T.) one (Table no.3).

The results of this last stage are considered to be representative, confirming the researcher's assumption

and the implemented programme (Table 3 and Figure 3). Based on the recorded indicators and the comparative presentation of the groups (“The Pilot Group” and “The group of fundamental experiment”), we can state that movement games represent an essential methodical approach in the intellectual-motric growth of preschoolers.

Used regularly, the movement game will have a positive impact both on the capacity of movement guidance and intellectual-motric development.

CONCLUSION

Preschool teachers should choose and develop working methods for physical education classes. Picking the most relevant ones and applying them is essential for better efficiency of the educational-training process.

Movement games are specific tools used in physical education classes in order to create a favourable environment for motric skills development, using the children's imagination and creativity and also improving their memory (Lupu, 2011).

Based on this study, we would like to draw attention to some aspects regarding the topic, not so common nowadays in foreign and Romanian literature.

Children who benefit from a school programme consisting of movement games taught by a specialist (a physical education teacher), throughout the week, for a

school year would have better intellectual-motric development than those who did not have physical education classes every day and they are taught by an educator, once a week.

Movement games are considered to be a methodical approach to improving preschoolers' intellectual-motric abilities.

Despite this, they have not been thoroughly analyzed by sports and exercise specialists and movement games tend to be disregarded in favour of other activities (music lessons, visual arts and mathematics, etc.)

During a game and through play, children discover how to learn by adopting a working method, a learning technique that involves activities that follow a step-by-step logical sequence.

The way children act while playing games serves as behavioral psychology phenomenon, which allows further research.

The "perceptive motric abilities, which shall be considered as cognitive skills that support motric behaviour" (according to Stănescu, 2002, cited by Lupu, 2011).

We can note that in the initial testing of motric challenges, both groups seem to have a similar motric growth (see the recorded values in tables and figures).

Based on the recorded indicators and the comparative presentation of the groups ("The Pilot Group" and "The group of fundamental experiment"), we can state that movement games represent an essential methodical approach in the intellectual-motric growth of preschoolers. Used regularly, the movement game will have a positive impact both on the capacity of movement guidance and intellectual-motric development.

The experimental group had a better performance compared to the control group (both "Pilot group" and "Fundamental experiment group") as a consequence of following the motric programmers for a year, a fact which concludes that physical education is a methodical approach in intellectual-motric development of preschoolers, confirming our hypothesis.

The positive effect of movement games can be observed comparing the data listed in the tables and figures.

Memory boosting exercises combined with motric activities, in the form of games ensure a greater capacity for focusing and engaging among preschoolers. The ability of focusing will increase which was demonstrated by quick-witted answers and reactions (Tables 1 to 3; Figure 3) (Lupu, 2011).

Daily physical activities put together as movement games have determined significant positive changes in intellectual-motric development and noteworthy trial results.

Movement games serve as essential methodical tools in the intellectual-motric growth of preschoolers. Used regularly, the movement games will have a positive impact both on the capacity of movement guidance and intellectual-motric development.

The proposed topic can be further elaborated, adjusted or improved and opens new research perspectives for specialists in the field.

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