

THE ROLE PLAYED BY DYNAMIC GAMES IN THE SPATIAL-TEMPORAL ORIENTATION IN SPECIAL SCHOOL CHILDREN

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Abstract: *Dynamic games can be used both as means of relaxation and as an education and correction method. Spatial-temporal orientation is very well exploited during these games, due to their functions, such as: organizational, adaptive, formative, self-discovery, socialization. This paper aimed to spot the spatial-temporal orientation disorders in special school children and to emphasize the benefits of dynamic games in educating the spatial-temporal orientation.*

Key words: *dynamic game, special school, child.*

1. Introduction

Experience is the basis for the formation of the spatial and temporal orientation ability, experience to which knowledge is added. Space is constructed mentally as a result of seizing the positions, distances and directions. Space perception starts with the location in the environment of one's own body with the help of analysers that have as purpose space orientation, mainly the visual, kinaesthetic and auditory analysers. The alteration of one of these analysers negatively influences the quality of life. Why is space orientation useful to children?

The children's psychomotor development is an essential condition for their development as individuals and for their adaptation in their personal and social life. Elaborating the spatial-

temporal structure, knowing the objects in space, being aware of the position of one's own body, learning the temporal notions, these are essential for a normal and harmonious development of children. When there are orientation or spatial discrimination disorders, the children suffer from dyslexia, dysorthography, dysgraphia, etc. [1, 2].

The purpose of this research is to educate the spatial-temporal disorders in special school children. This research started from the hypothesis stating that the use of dynamic games in primary school children, based on exercises for the education of spatial-temporal orientation determines the improvement, even correction of this psychomotor component. Knowing one's own body, the language used by children to describe their own position and the position of

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objects around them in space, how they react to external stimuli, to changes in space and time, these represent three important components from which one can start the diagnosis and the creation of a physical therapy program meant to correct the possible deficits.

In these authors' opinion, the dynamic game method can be a source of fun, through which the children escapes from reality, entering a parallel world in which they can express freely. The game plays an organizational role, it starts and it ends, being limited in time and space, which confers the children safety, order and balance, especially in the case of spatial-temporal disorders. If one observes the fun-recreational side of dynamic games, one can see that it would be easy for children to complete the tasks of the games.

From a physical therapy standpoint, there are no complete studies regarding spatial-temporal orientation and the role played by dynamic games in special school children.

2. Objectives

The purpose of this paper was to spot the spatial-temporal orientation disorders in special school children and to emphasize the benefits of dynamic games in educating the spatial-temporal orientation.

The following objectives were set for this research: to establish and select the group of subjects, and the means and methods of intervention; to identify and select the application methods to spot the spatial-temporal orientation disorders; to spot the number of subjects with spatial-temporal orientation disorders; to select the appropriate dynamic games; to

elaborate and apply the intervention programs that are specific for the spatial-temporal orientation disorders; to present and interpret the results following the applicative intervention in special school children; to verify the hypothesis; to highlight the importance of using dynamic games for the spatial-temporal orientation disorders in special school children through a series of conclusions.

3. Materials and Methods

The research activity was conducted over a period of 8 months, between October 10, 2016 and May 18, 2017. The actual research, consisting in the application of specific tests on the group of subjects took place between January 13, 2017 and May 14, 2017. The subjects were 12 pupils, aged between 8 and 10, 6 girls and 6 boys.

After the application of the tests and the analysis of the initial results, these authors worked both in group and individually with the pupils who recorded a lower score than expected. The entire research was conducted under the supervision of the school teachers, with whom these authors had a great collaboration. The tests and the dynamic games that were applied were explained at the beginning to the subjects using appropriate language, in order for them to understand what was asked of them.

During the research for how to use the dynamic games for the spatial-temporal orientation in children with deficiencies, the professional literature was studied and 3 specific programs were created. They comprised 3 parts, a beginning part, consisting of warm-up exercises, a fundamental part, consisting of dynamic games for the spatial-temporal

orientation, and a closing part, with cool-down exercises. Each exercise program was 50 minutes long [3, 4], [6].

The *research methods* were: the study of the professional literature, the measurement and assessment method, the statistical-mathematical method, and the graphical representation method.

According to Epuran M., the measurement and assessment method assesses the results of the measurements, based on certain criteria, which are also the purpose of the measurement. The spatial-temporal development level was analysed after a series of specific tests.

An examination under the form of exercises, adapted after Piaget-Head, was used to assess the space perceptive-motor level. The children performed various movements at the examiner's request, aiming to indicate the elements of their own body (hand, leg, ear), locate certain objects (up, down, sideways, backwards, above, beneath).

An individual assessment was conducted, to observe the space perceptive-motor level, asking the subject to perform the following motions:

Space orientation test

Table 1

Action to perform	Points given
1. To indicate elements of their own body:	
a. using their right hand, to indicate their left ear;	2.5 points
b. using their left hand, to indicate their right ear;	2.5 points
c. using their right hand, to indicate their left leg;	2.5 points
d. using their left hand, to indicate their right leg.	2.5 points
2. To indicate elements of another person's body:	
a. to touch the right hand of the examiner;	2.5 points
b. to say in which hand the examiner holds the ball;	2.5 points
c. to say what foot the examiner used to kick the ball.	2.5 points
3. To locate objects or directions in relation to their own body:	
a. in front/in the back;	2.5 points
b. left/right	2.5 points
c. up/down	2.5 points
Total	25 points

In order to assess the subjects' perception of size, volume and distance, 3 tests were chosen, adapted after Epuran, M. et al.:

- choosing between two balls, first the one closer, then the one farther;
- choosing between two balls of different sizes, first the biggest, then the smallest;

- choosing between two sticks of different thickness, first the thinnest, then the thickest;
Score: 2.5 points are given for each correctly performed task, with a maximum of 15 points [1, 2], [7].

In order to assess the subjects' temporal orientation, a series of figures with the time of day and the seasons were used.

Score: One point is given for each correctly chosen season and time of day, with a maximum score of 8 points.

Indications:

The test was conducted in the classroom, for one hour, as a game, in order to create a pleasant atmosphere. At the end, individual charts were written with the results recorded during the assessment, noting the difficulties of each child. The researchers also discussed with the teachers and the parents, requesting information about the way in which the subjects are organized, their school, lunch, homework, resting, playing hours. Based on the gathered information, the psychomotor program was created, aiming to improve their spatial-temporal orientation through dynamic games, helping them to learn the necessary elements for knowing time and space, but also their own body in relation to their environment [1, 2], [7].

4. Results and Discussions

The research comprised a number of 12 subjects, aged between 8 and 10. The first assessment took place on January 13,

2017, each child being tested individually, and the final assessment, also individual, on May 14, 2017. The purpose of the initial and final tests was to highlight the spatial and temporal perception development level, and the role played by dynamic games in improving the spatial-temporal orientation in special school children with deficiencies. The applied tests contained a series of items with a score that was later analysed and has emphasized the spatial-temporal development level of each subject.

Figure 2 presents the initial and final test values that highlight the research subjects and their progress following the application of the physical therapy dynamic games program. The results recorded were not smaller than the ones in the initial testing. During the final testing, considering the subjects' progress, there was an improvement in regards to their social skills - their participation in the games, and interaction with each other. The maximum score was recorded by only one subject, 48 points, and there was a difference between the maximum and the minimum score of 37 points, which was recorded also by only one subject.

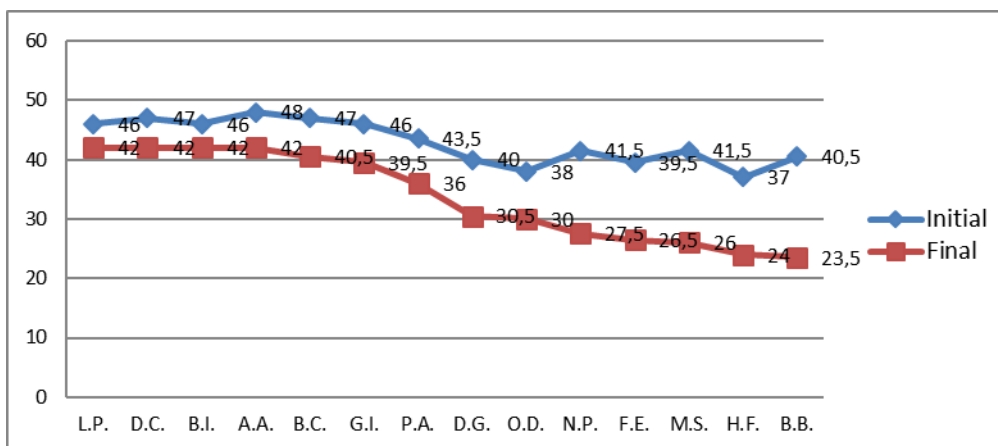


Fig. 1. *The initial and final test results for the spatial-temporal orientation*

During the initial spatial orientation test, 3 subjects recorded 22.5 points. The lowest score, of 15 points, was recorded by 5 subjects. During the final testing, however, the maximum score of 25 was recorded by subject A.A., followed by subjects B.C. and D.C., with 24 points.

During the initial test of assessing the size, volume, and distance, only one subject, L.P. recorded 15 points, which was the maximum score. At this test, 2 subjects, M.S. and H.F. recorded the lowest score, of 5 points.

There were difficulties recorded in regards to spatial orientation - in locating their own body segments, getting the directions wrong (right, left, up, down, forward, backward), identifying the body parts in relation to another person. Also, during the temporal test, there were confusions in regards to the month, time of day, and time organization.

The progress of the results was highlighted through figures, being a visible growth from the initial to the final testing.

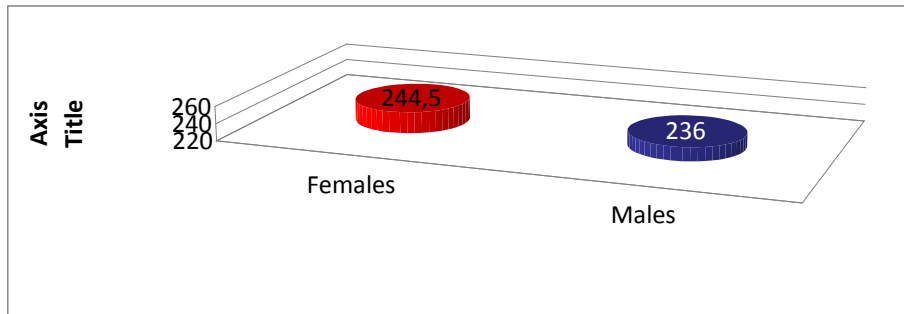


Fig. 2. Comparative analysis on genders - initial testing

In regards to the gender results, one can see that during the initial testing, the female subjects cumulated a score of 51%, higher than the male subjects of 49%. As shown in figure 3, the score recorded by the female subjects during the initial

testing was of 244.5, while the male subjects recorded a score of 236 points. One can see that the female subjects recorded a higher score than the male subjects during the initial test of spatial-temporal orientation.

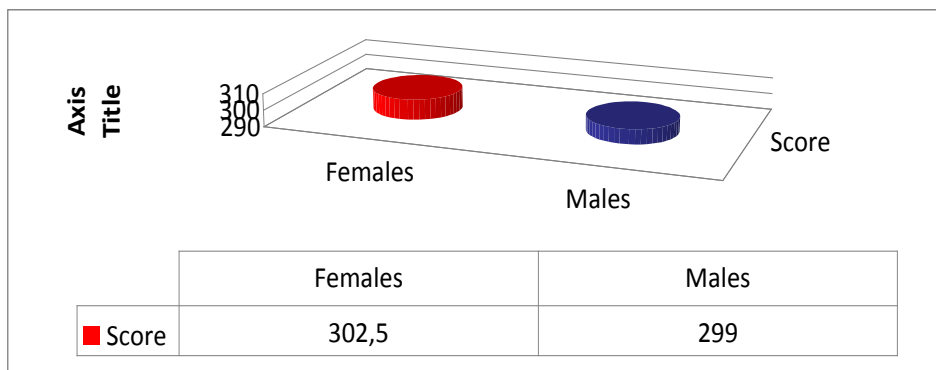


Fig. 3. Comparative analysis on genders - final testing

During the final testing, one can see that the female subjects continued to record a higher score than the male subjects throughout the 3 dynamic game programs. According to the final results, the difference between the two genders was of 3.5 points. Figure 4 highlights the fact that during the final testing, the female subjects continued to have a higher score than the males - 302.5 points and 299 points, respectively.

5. Conclusions

Based on the results recorded during this study, the following aspects can be concluded:

- Dynamic games represent an important link in the chain of actions influencing the education of the spatial-temporal orientation, being a harmonious combination between educational-instructive elements and the leisure-recreational ones;
- Dynamic games, together with physical activity in general, result in a harmonious physical development, and in a development of motor and communication skills;
- This research has confirmed even more the idea that the existence of a physical therapist in special schools is beneficial for the children's psychomotor development.

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