

# THE IMPACT OF THEMATIC DANCE ON THE COGNITIVE AND PHYSICAL DEVELOPMENT OF PUPILS IN THE PREPARATORY SCHOOL YEAR

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**Abstract:** *This study examines the impact of thematic dance on the physical and cognitive development of pupils in the preparatory school year. The research was conducted over an eight-week period, involving 46 children divided into an experimental group and a control group. The experimental group participated in structured dance lessons twice a week, while the control group followed the usual curriculum without the intervention of thematic dance. To assess the effects, specific tests were applied, such as the Stork static balance test, an immediate word memory test, and a questionnaire for parents which aims at finding out their opinion on the benefits of this activity. Statistical analysis, using the t test for pair and independent samples, showed significant improvements in balance (mean increase from 2.70 to 4.04 seconds) and children's memory (from 3.83 to 5.26 words). The questionnaire confirmed these results, with 86.36% noticing motor improvements and 77.27% an increase in static balance. The results highlight the benefits of thematic dance in the development of motor coordination and cognitive functions. It is recommended to integrate structured dance activities into the school curriculum to support physical education and artistic expression.*

**Key words:** *dance, motor development, physical education, pupils.*

## 1. Introduction

Dance is a universal expression of emotions, relationships and ideas, having deep roots in all cultures throughout human history. The elements it combines

are movement and rhythm, constantly evolving through various genres, styles and traditions [10]. In physical education, dance plays an essential role, providing

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benefits for the physical, psychological and social development of children [13].

The notion of physical education, as the term indicates, falls within the broader concept of education, in the general sense of the word [2].

Since ancient times, exercise has been used to maintain health and harmonious development of the individual. Famous educators, such as J. A. Comenius, J.J. Rousseau and J.H. Pestalozzi, emphasized the importance of movement in the educational process, highlighting its role for a healthy body. [3] In this context, thematic dance proves to be an effective method of developing children's motor, cognitive and social skills. Rhythmic movements stimulate the development of proprioception and coordination, while participation in choreographic activities encourages collaboration and respect for group rules [11].

Careful planning of physical activities is of significant importance in the development of children's coordination and motor skills, thereby preparing them for more complex activities such as dancing [6]. Concurrently, the empathy exhibited in the educational process fosters the establishment of a favourable learning environment, thereby enabling the adaptation of teaching methodologies to the unique characteristics of each child [8].

Dance, as a medium for bodily expression, exerts a considerable influence on the motor and emotional development of children, thereby facilitating their active engagement in educational activities of a high degree of complexity [12].

In today's era, where computers and television dominate daily life, and physical activities and sports take up less and less of our time, it is vital that the school fully

and well compensate for these deficiencies by implementing and deploying physical education activities according to the new curriculum. According to him, 'the psychomotoric field encompasses the coordination and control of body movements, general mobility and physical endurance, motor and manipulation skills, as well as elements of knowledge related especially to the autonomy and physiognomy of man. The activities by which pupils can be brought into contact with this field are activities involving body movement, competitions between individuals or groups, concerning psychomotor abilities, as well as activities that may enhance flexibility, strength, endurance or posture' [18].

In the school environment, the practice of different forms of dance aims to achieve the following objectives: achieving an optimal general physical training, exercising motor memory, learning and strengthening choreographies, educating motor expressiveness, educating emotional factors, self-mastery, self-control, developing rhythmicity and spatial-temporal orientation [7].

Thematic dance constitutes a fundamental component within physical education activities/lessons, playing a pivotal role in the cultivation of children's special qualities and skills from an early age [17]. It serves as a bridge between physical education and aesthetics, thereby enabling the cultivation of artistic sensitivity through the kinesthetic sense, the education of the musical sense, and the nurturing of a musical culture. These aspects facilitate the child's comprehension and articulation of the essence and substance of musical compositions through active engagement in movement [3].

Recent studies have highlighted the positive effects of dance on children's development, demonstrating significant improvements on the development of proprioception, rhythm, balance and motor competence, which supports the integration of dance in early educational programs [4], [1], [15].

In line with the above, the purpose of this study is to demonstrate the positive effects that regular practice of theme dances has on the physical and cognitive development of pupils in the preparatory school year.

## **2. Materials and Methods**

### **2.1. Subjects**

The sample of subjects consists of 46 pupils belonging to the preparatory grade 'A' and 'B', comprising 22 and 24 children aged between 5-6 years, of which 20 children are boys and 26 are girls. The pupils of the preparatory grade designated 'A' will comprise the experimental group, upon which the independent variable will act, and the control group, which is used to compare the effects of introducing the independent variable to the experimental group, will be composed of pupils of the preparatory grade 'B'. The latter is defined as a witness group, over which the independent variable exerts no effect.

The involvement of children in the study activities was contingent upon written parental consent. In a sample of 60 children, 46 were selected for participation in the study, as they had explicitly indicated their consent to take part.

### **2.2. Research organization**

The independent variable is indicated by the regular practice of thematic dances by the pupils in the experimental group and the dependent variable is given by the level of cognitive and physical development of pupils in the preparatory grade following the implemented sports programme.

The research was conducted in three stages: The preliminary stage involved the selection of subjects and the composition of experimental groups, on which the initial tests were performed (Stork standing test and sample to highlight the immediate memory of words). In the second stage of the study, the experimental group participated in thematic dance lessons over a period of eight weeks. The lessons were held twice a week, with each session lasting for one hour. In the final stage, the same tests were applied as in the initial stage, the purpose being to highlight the extent to which the practice of thematic dances influenced or not the development, both physical and cognitive of the pupils in the preparatory grade.

### **2.3. Evaluation tools**

The evaluation of the sample was conducted through the implementation of specific assessments designed to evaluate physical abilities (static balance) and cognitive development in pupils (assessment of immediate memory of words).

#### **2.3.1. The Standing Stork test**

It aims at monitoring the development of the pupil's ability to maintain a balanced state in a static position. How to perform the test: from sitting comfortably

on both legs, hands on the hips raise one leg and place the toes on the opposite knee. The, when indicated, the heel is raised from the floor and the athlete will stand on the ball of the foot. The timer will start. The athlete will maintain balance as possible without touching the floor with the heel or without the other leg moving off the knee. The time during which the athlete maintains balance shall be measured.

### **2.3.2. Sample to highlight immediate memory of words**

In this test, a list of words such as: chair, pencil, butterfly, mountain, flower, sun, tulip, hall, curtain, soap, scissors, carrot, coffee, ear, cabbage, cork, hen, soldier, radio, parent. Children are warned that they will be read a series of words and that they are required to recall as many of these as possible, irrespective of the sequence in which they were originally presented.

In this research, given that the possible progress of pupils, both physically and cognitively, that can be seen from the practice of dance, may also have repercussions in other contexts outside of school. To test this hypothesis, a questionnaire was distributed to the parents of the pupils in the experimental group. The purpose of this questionnaire was to ascertain parents' opinions on how their children's dance practice influenced their developmental progress.

### **2.3.3. Questionnaire for parents**

The questionnaire consisted of 8 questions, designed to ascertain information regarding the child's gender and age, the frequency with which they engage in thematic dance, and the parents' perceptions of the benefits of this

activity. The first two questions are demographic, specifically related to their gender and age. The next question refers to the frequency of practice in thematic dance. The subsequent inquiries delve into the repercussions of dance on motor skills, balance, cognitive development and memory, as well as regular practice of this activity. The answers are closed, facilitating a clear statistical analysis.

### **2.4. Statistical analysis**

The statistical-mathematical processing of the data collected during the research carried out was conducted by calculating the main statistical indicators. These included the central trend parameters (arithmetic mean, module, median, dispersion and amplitude) followed by the determination of the materiality threshold using the 'T' test for equivalent groups. This was done in order to verify whether the results obtained were due to chance, some subjective factors, or as a result of the introduction of the independent variable.

Since the questionnaire used lacked standardization, we tested internal consistency of the instrument using SPSS software version 26 (IBM Corp., Armonk, New York, USA), with the Alpha Cronbach validity index being calculated.

As demonstrated in Table 1, the obtained value was a positive one of 0.725, which indicates a good level of fidelity, with the items being correctly formulated.

Table 1  
*Alpha Cronbach Index*

Reliability Statistics	
Cronbach's Alpha	N of Items
.725	8

### 3. Results and Discussion

#### 3.1. 'T' test results for pair sample

*Statistics of pair sample results*

Table 2

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Preliminary results of the balance test	2.70	46	1.245	.184
	Final results of the balance test	4.04	46	2.309	.340
Pair 2	Preliminary results of the memory test	3.83	46	1.582	.233
	Final results of the memory test	5.26	46	2.154	.318

*T test for pair samples*

Table 3

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Preliminary results of the balance test - Final results of the balance test	-1.348	1.728	.255	-1.861	-.835	-5.289	45	.000
Pair 2	Preliminary results of the memory test - Final results of the memory test	-1.435	1.587	.234	-1.906	-.964	-6.133	45	.000

As illustrated in Table 2, the mean time recorded for children in the initial sample of the balance test is 2.70, and then, after holding the thematic dance lessons at the experimental group, it made significant progress, the value being 4.04.

Considering the value of *t* being 5,289 (Table 3) and the fact that Sig. (2-tailed) is less than 0.05 we can conclude that there is a significant difference between the results obtained by the two groups for the two tests, which means that regular practice of thematic dances leads to improvement of static balance, as an

indicator of the physical development of the pupils.

As for the immediate word memory tests that were applied to the two samples of pupils, we can also note an increase in the average number of words retained by children, from 3.83 at initial testing to 5.26 at final testing (Table 2). This, together with the *t* index value of 6,133 and *p*<0.05 (Table 3), confirms the existence of a significant difference between the results obtained in this test before and after the intervention of the independent variable.

### 3.2. T' test results for independent samples

*Statistics of the two groups' results*

Table 4

	Category of group to which it belongs	N	Mean	Std. Deviation	Std. Error Mean
Preliminary results of the balance test	Experimental group	22	2.77	1.378	.294
	Control group	24	2.63	1.135	.232
Final results of the balance test	Experimental group	22	5.77	1.901	.405
	Control group	24	2.46	1.285	.262
Preliminary results of the memory test	Experimental group	22	4.14	1.612	.344
	Control group	24	3.54	1.532	.313
Final results of the memory test	Experimental group	22	6.89	1.642	.350
	Control group	24	3.79	1.382	.282

As illustrated in Table 4, in the absence of substantial disparities between the averages of the initial results of both parametric tests applied to the two groups (in the balance test the control group recording an average result value of 2.63 and the experimental group 2.77, while in the memory test the values are 3.54 for the control group and notably 4.14

for the experimental group), after conducting thematic dance lessons, the differences between the average values of the results obtained by the pupils in the two groups increased significantly (5.77 – balance test and 6.86- memory test for the experimental group, compared to only 2.46 - balance test and 3.79 - memory test, for the control group).

*'T' test for independent samples*

Table 5

		Levene's test for Equality of variations		t-test for Equality of Means						
		F	Sig.	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Preliminary results of the balance test	Equal variances assumed	1.252	.269	.398	44	.692	.148	.371	-.600	.895
	Equal variances not assumed			.395	40.827	.695	.148	.374	-.608	.903
Final results of the balance test	Equal variances assumed	5.182	.028	6.982	44	.000	3.314	.475	2.358	4.271
	Equal variances not assumed			6.867	36,437	.000	3.314	.483	2.336	4.293

		Levene's test for Equality of variations		t-test for Equality of Means						
		F	Sig.	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Preliminary results of the memory test	Equal variances assumed	.012	.914	1.283	44	.206	.595	.464	-.340	1.529
	Equal variances not assumed			1.280	43.153	.207	.595	.465	-.342	1.532
Final results of the memory test	Equal variances assumed	.688	.411	6.885	44	.000	3.072	.446	2.173	3.971
	Equal variances not assumed			6.833	41.259	.000	3.072	.450	2.164	3.980

According to the data presented in Table 5, as the T-test values obtained, namely 6,982 for the balance test and 6,885 for the memory test, are higher than the reference value of .05 and the values of SIG. there are .000 ( $<0.05$ ) in both cases, it is confirmed that we have a statistically significant difference between the variances.

### 3.3. Results of the questionnaire for parents

As illustrated in Figure 1, the results of the questionnaire indicate a balanced distribution of the experimental group from a gender point of view, with a slight predominance of girls.

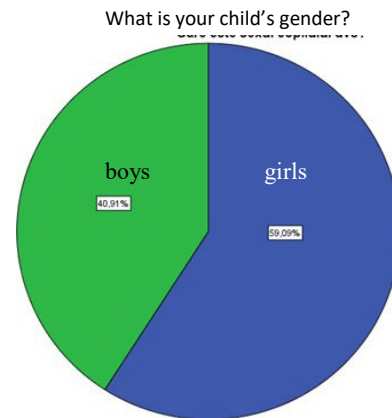


Fig. 1. *The percentage value of the gender distribution of the experimental group composition*

In the second part, we find that the age of children falls, between 5 and 6 years, with a slight predominance of the little ones, as can be seen in Figure 2.

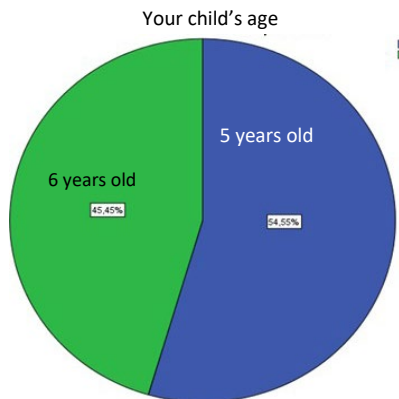


Fig. 2. The percentage value of the age distribution of the experimental group

In the third item of the questionnaire, we can see the constant participation of all children in the thematic dance lessons, held twice a week.

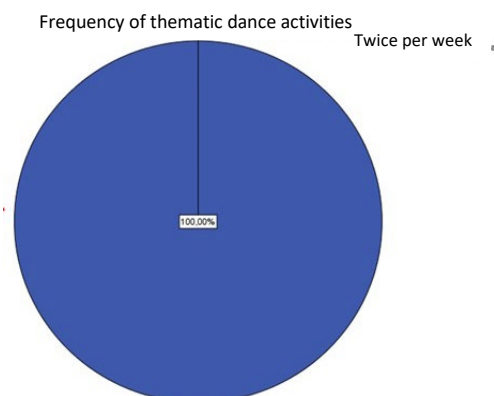


Fig. 3. The percentage value related to frequency of practicing thematic dance by the pupils in the experimental group

In the fourth item of the questionnaire, one can observe the positive perception of parents about the impact of thematic dance on the development of motor skills, most of them noticing significant improvements, according to the data presented in Figure 4.

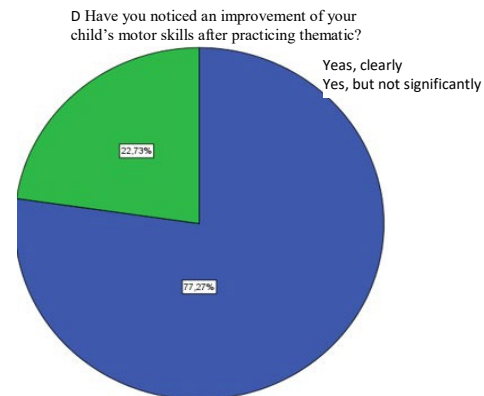


Fig. 4. Graphic representation of the share of children whose motor skills have been improved following the practice of thematic dance

According to the data presented in Table 5, as the T-test values obtained, namely 6,982 for the balance test and 6,885 for the memory test, are higher than the reference value of .05 and the values of SIG. there are .000 ( $<0.05$ ) in both cases, it is confirmed that we have a statistically significant difference between the variances.

Do you believe that practicing thematic dancing helps your child improve balance?

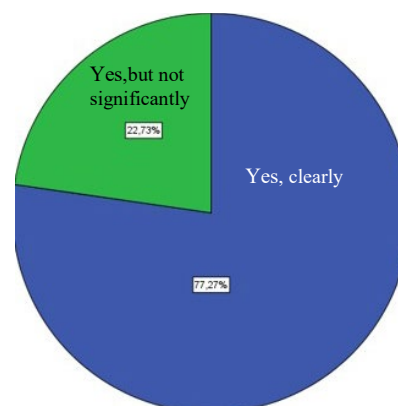


Fig. 5. Graphic representation of the share of children whose static balance was improved after practicing thematic dance



With regard to the sixth item of the questionnaire, as illustrated in Figure 6, the general favourable perception of parents regarding the influence of thematic dance on the cognitive development of children is emphasised.

In your opinion, did thematic dance contribute in the cognitive development of your child?

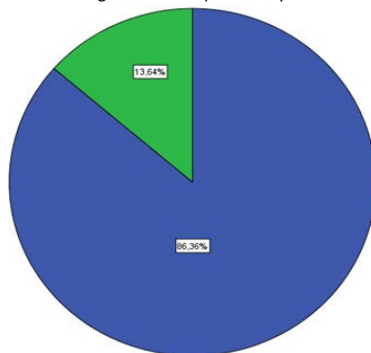


Fig. 6. Graphic representation of the share of children whose cognitive skills have been improved following the practice of thematic dance

In the seventh section, all parents reported an enhancement in their children's memory capacity, highlighting the positive impact of thematic dance on cognitive processes, as illustrated in Figure 7.

Do you believe that practicing thematic dance is helping your child improve their memory?

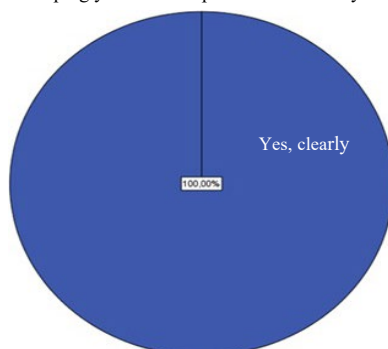


Fig. 7. Graphic representation of the share of children whose cognitive skills have been improved following the practice of thematic dance

The last item in the questionnaire points out that all parents agree with the importance of a regular thematic dance program for children, according to the data illustrated in Figure 8.

In your opinion, is it important for pupils to attend thematic dancing regularly?

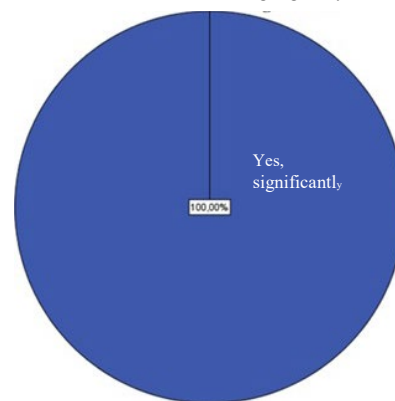


Fig. 8. Percentage of answers on the importance of practising themed dance regularly

### 3.4. Discussions

The results obtained from the application of balance and memory tests clearly indicate the effectiveness of thematic dance lessons in the physical and cognitive development of preschool children.

First, significant differences between initial and final tests at the experimental group level suggest a direct positive impact of the proposed intervention. The increase in the average scores on the balance test, from 2.70 to 4.04 and on the memory test, from 3.83 to 5.26, shows a clear improvement in motor and cognitive abilities. These results support the literature that highlights the role of rhythmic and choreographic activities in

the development of postural balance and executive functions in children [5], [9].

The results obtained from the application of the thematic dance programme indicate significant improvements in the motor and cognitive development of pupils in the preparatory school year. This finding is supported by Tsompanaki's study (2019), which demonstrated that the use of creative movement and dance among children significantly contributes to the development of basic motor skills [16]. Research by Tao and Gao (2022) also highlights the physiological and psychological benefits of dance, highlighting improvements in executive functions and the overall well-being of children and adolescents [14]. These studies confirm that the integration of thematic dance into educational activities can have a positive impact on the holistic development of children.

Moreover, the comparison between the experimental and control groups shows that progress cannot be attributed to the natural evolution of children, but is the direct result of regular participation in thematic dance lessons. The control group showed no significant changes in performance, while the experimental group had a considerable evolution.

The data obtained from the questionnaire for parents complete the test results by subjectively validating the progress of the children. The parents mostly noted improvements in overall balance, memory, and cognitive development, which shows that the effects of thematic dance are felt outside the strict context of testing.

However, it should be noted that the study also has certain limits. The sample size is relatively small, as well as the

intervention time limit. In the future, it is recommended to extend the study to a larger number of participants and assess long-term effects.

#### 4. Findings

The research findings highlight the significant benefits of thematic dance on the overall development of pupils. Regular dance helps improve static balance and motor skills, supporting physical development. It also positively influences memory and concentration, demonstrating a beneficial impact on cognitive development. On the socio-emotional level, thematic dance facilitates collaboration, communication and empathy between peers. In view of these effects, it is recommended to integrate thematic dance into the school programme, through structured activities held twice a week, monitoring the progress of pupils and promoting parental involvement, to maximize the positive impact on their development.

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