

Influence of dancesport on segmental coordination development in 6-8-year-old children

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Abstract

Background and Study Aim Dancesport significantly contributes to segmental coordination development in 6-8-year-old children through rhythmic movements and interaction with dance partner. The study aimed to investigate the impact of dancesport on segmental coordination development in children aged 6 to 8.

Material and Methods The study involved a group of 14 children aged 6 to 8 from the National Children's Palace in Bucharest. Research was conducted from February to June 2023. Segmental coordination assessment for upper limbs was done using Witty SEM, with 16 impulses of the smart semaphores (Lap L1-16) at 4 difficulty levels. Parameters measured: visual reaction time for each Lap (seconds), Lap mean (seconds), and total time (seconds). During the study period, a program with dancesport elements (Standard and Latino styles) was implemented for 36 hours, 2 hours per week. Comparative analysis between difficulty levels was done using ANOVA test, Single Factor Analysis of Variance, and Paired Comparison for Means. Statistical significance was set at $p < 0.05$.

Results Comparative analysis between difficulty levels in the initial and final tests reveals an increase in Lap mean from L1-2 (24.5%) in the final test to L2-3 (53.8%) and L3-4 (24.6%) in the initial test. Comparing the average results of difficulty levels between tests, a decrease in visual reaction time by 0.04 seconds at L1, an increase by 0.03 seconds at L2, a decrease by 0.08 seconds at L3, and a decrease by 0.19 seconds at L4 were observed. Comparative analysis results of segmental coordination between tests at each difficulty level show significant differences of 5.6% ($p < 0.05$) and 22.2% ($p < 0.01$). Negative differences, indicating better performance between tests, are also observed at L1 by 33.3%, at L2 by 55.5%, at L3 by 38.9%, and at L4 by 27.8%.

Conclusions The study results reveal a significant increase in difficulty level among 6-8-year-old children, emphasizing the positive influence of dancesport elements on segmental coordination development. Comparative analysis of visual segmental reaction across different difficulty levels highlighted significant differences. Superior performances observed at lower difficulty levels comparing initial with final tests indicate an improvement in segmental coordination abilities.

Keywords: difficulty level, visual reaction, comparative analysis, performance

Introduction

Dance has been proposed as a means to elevate physical activity levels among youth. However, the physiological attributes of youth dance classes, particularly in terms of achieving moderate to vigorous physical activity levels during sessions, remain underexplored [1, 2]. Engaging in dancesport

activities offers manifold advantages for the psychomotor development of children aged 6-8 years. These advantages encompass improvements in motor coordination through intricate and synchronized movements, betterment of balance and posture via specific exercises, and enhanced flexibility and joint mobility. Additionally, dancesport fosters cognitive skill development by requiring the memorization and synchronization of movements with music [3, 4, 5, 6]. Beyond physical and cognitive benefits, dancesport encourages

social interaction through group or team-based activities, facilitating avenues for communication and collaboration. These elements significantly contribute to children's holistic development, bolstering their physical, cognitive, and social capabilities [7].

Numerous studies have demonstrated that children aged 5 to 12 possess the potential to develop artistic-sports motor skills, particularly in areas related to general coordination and balance [8, 9]. As children grow, the interaction between experience and maturation significantly influences the development of their musculoskeletal and neuromotor systems. This interaction facilitates the enhancement of motor skills with age. While the development of movement coordination skills is commonly associated with chronological age, it is recognized that these skills are age-related but not strictly age-determined [10]. The development of segmental coordination in children aged 6-8 years is a critical component of their early physical and cognitive development. Segmental coordination involves the ability to control and synchronize movements of various body parts to execute precise and efficient motor actions. This capability is crucial not only for their engagement in sports activities but also for their overall performance in daily activities.

As children grow, they experience changes in body size, shape, and gross motor coordination (GMC). Furthermore, GMC is anticipated to correlate with variations in body size, physical activity levels, and fitness in children [11]. Dancesport, in particular, stands out as a discipline with a significant impact on the development of segmental coordination among children in this age bracket. It encompasses rhythmic and coordinated movements of the entire body, demanding precision and synchronization. Additionally, the process of learning and practicing dancesport — through the repetition and refinement of complex movement sequences — prominently supports the enhancement of motor skills and coordination during this critical period of development [12].

Key elements of dancesport, such as music, choreography, and interaction with dance partners, serve as facilitating factors that positively influence segmental coordination in children [13, 14]. Dancesport commonly requires the coordinated use of upper and lower limbs in a manner that is both synchronized and collaborative. Engaging in such activities can substantially bolster motor control and segmental coordination.

Purpose of the Study: The aim of this study was to investigate and assess the impact of dancesport activities on the development of segmental coordination among children aged 6 to 8 years.

Materials and Methods

Participants

The study engaged 14 children, ages 6 to 8, all of whom were enrolled at the National Children's Palace in Bucharest. Prior to the commencement of the research, parental consent was obtained and documented, adhering to the ethical guidelines set forth in the Declaration of Helsinki. The research protocol received approval from the Ethics Committee of the Doctoral School of Physical Education and Sport Science (ID: 09/17.11.2024), at the National University of Science and Technology Politehnica Bucharest, University Center Pitești, Romania.

Research Design

The research was conducted from February 2023, starting with the initial testing, through to June 2023, concluding with the final testing. Throughout this period, the children attended two classes per week, accumulating approximately 36 hours of participation in total. The assessment of segmental coordination for the upper limbs utilized the Witty SEM device (Microgate SRL, Bolzano - Italy), which features 16 impulses from smart semaphores (Lap L1-16) across four levels of difficulty. These semaphores were arranged in a linear fashion, side by side, at a height of one meter.

Each participant was required to respond to 16 visual stimuli emitted by the semaphores, tailored to four distinct difficulty levels. The visual reaction time for segmental coordination was recorded in seconds, providing precise measurements for analysis.

The content of the tools used:

1) The curriculum for the standard dance category, including the slow waltz, Viennese waltz, and tango, comprises:

- Education in rhythm and movement coordination aligned with the music's rhythm.
 - Slow Waltz: Introduction to the dance style, music appreciation, and learning the basic steps.
 - Practicing choreography in the Slow Waltz with a partner.
 - Viennese Waltz: Introduction to the dance style, music appreciation, and learning the basic steps.
 - Practicing choreography in the Viennese Waltz with a partner.
 - Quick Step: Introduction to the dance style, music appreciation, and learning the basic steps.
 - Integrating all three learned dance styles (Slow Waltz, Viennese Waltz, Quick Step) through practice.
 - Presentation of a mini dancesport show.
- 2) Latin Dance Style (Cha-Cha, Samba, Jive):
- Music and Movement: "Dance with Me!" introduction to the joy and rhythm of Latin

- dance.
- Cha-Cha: Introduction to the dance style, including music appreciation and learning the basic steps.
- Performance of a Cha-Cha choreography with a partner.
- Samba: Acclimatization to the dance style, music listening, and mastering basic step execution.
- Jive: Getting familiar with the dance style through music appreciation and learning of basic steps.
- Practice Session: Rehearsing all learned dance steps and choreographies in preparation for the end-of-year school celebration.
- Final Show: “The Best Dancers” presentation, showcasing the students’ progress and achievements in Latin dance.

Statistical Analysis

The statistical analysis was performed using KyPlot version 6.0 software (©1997-2020, KyensLab Inc). This involved the calculation of the mean, standard deviation (SD), and other pertinent indicators. To compare segmental coordination variables across different difficulty levels, an Analysis of Variance (ANOVA) test, specifically a Single Factor Analysis of Variance (Completely Randomized Design), and Bartlett’s Test for Homogeneity of Variances were employed. Additionally, a Paired Comparison for Means was utilized to contrast variables across difficulty levels between tests. The threshold for statistical significance was established at $p < 0.05$.

Results

To assess the impact of dancesport elements on the development of segmental coordination in children aged 6 to 8, a comparative analysis was conducted across different difficulty levels and among their respective tests. The findings for the examined variables are detailed in Tables 1, 2, and 3, along with Figure 1.

The initial testing results for segmental coordination in children aged 6 to 8, as detailed in Table 1, demonstrate a progressive increase in mean Lap times across difficulty levels. Specifically, there was an increase of 0.17 seconds (22.2%) from Level (L) 1 to L2, an increase of 0.64 seconds (53.8%) from L2 to L3, and an increase of 0.45 seconds (24.6%) from L3 to L4. Additionally, the total time taken escalated by 2.88 seconds (17.7%) between L1 and L2, by 10.12 seconds (52.8%) between L2 and L3, and by 7.19 seconds (24.5%) between L3 and L4.

When examining the variability in performance, indicated by the range between the minimum and maximum Lap times at each difficulty level, a notable variation is observed. At L1, the range is 0.43 seconds (between Lap11 and Lap13), at L2 it narrows to 0.32 seconds (between Lap4 and Lap15),

expands to 0.66 seconds at L3 (between Lap5 and Lap14), and further widens to 1.01 seconds at L4 (between Lap6 and Lap12).

In the comparison of Lap means across difficulty levels, conducted using ANOVA - Single Factor Analysis of Variance (Completely Randomized Design), significant differences were noted: 50% of these differences were significant at $p < 0.05$, and another 50% were highly significant at $p < 0.001$, according to Bartlett’s Test for Homogeneity of Variance. Additionally, a striking 94.4% of differences were highly significant at $p < 0.001$, with the remaining 5.6% significant at $p < 0.01$ (specifically noted in Lap13). These notable differences between difficulty levels in the initial testing underscore the escalating challenge of the segmental coordination tasks faced by children aged 6 to 8.

The final testing results for segmental coordination among children aged 6 to 8, as depicted in Table 2, indicate an increase in the average Lap time of 0.24 seconds between Levels (L) 1 and 2 (24.5%), 0.53 seconds between L2 and L3 (43.4%), and 0.34 seconds between L3 and L4 (19.4%). Additionally, the total time taken rose by 3.78 seconds between L1 and L2 (23.9%), 8.47 seconds between L2 and L3 (43.3%), and 5.46 seconds between L3 and L4 (19.5%). When examining the range between the minimum and maximum Lap times at each difficulty level, variations are noted as follows: 0.24 seconds at L1 (between Lap4 and Lap14), 0.41 seconds at L2 (between Lap8 and Lap15), 0.49 seconds at L3 (between Lap7 and Lap3), and 1.00 seconds at L4 (between Lap1 and Lap8).

In the comparison of average Lap times across difficulty levels using the ANOVA test, significant differences were identified: 22.2% at $p < 0.05$, 11.1% at $p < 0.01$, and a notable 50% at $p < 0.001$ according to Bartlett’s Test for Homogeneity of Variance. Additionally, 94.4% of differences were highly significant at $p < 0.001$, with 5.6% not reaching statistical significance ($p > 0.05$, specifically noted in Lap3). These significant variations in Lap times underscore the increasing challenge presented by the different levels at final testing and reflect the positive impact of dancesport elements on segmental coordination development in children aged 6 to 8.

The influence of dancesport elements on the development of segmental coordination in children aged 6 to 8 is depicted in Figure 1. Specifically, the comparison of average difficulty levels between tests revealed changes in visual reaction times: a reduction of 0.04 seconds at Level (L) 1, an increase of 0.03 seconds at L2, a reduction of 0.08 seconds at L3, and a significant decrease of 0.19 seconds at L4. These variations, particularly the reductions in visual reaction time, suggest an enhancement in segmental coordination among children in this age group, attributable to the engagement with dancesport elements.

Table 1. Segmental coordination results and differences between difficulty levels at initial testing for 6-8-year-old children (n=14)

Variables, sec	Mean±SD				Single Factor Analysis of Variance	
	Level 1	Level 2	Level 3	Level 4	t; P-value	F; P -value
Lap L1	1.00±0.47	1.27±0.56	1.73±0.82	2.27±0.99	8.52; 0.036*	7.95; 0.0001***
Lap L2	0.95±0.29	1.05±0.29	1.80±0.92	1.91±0.55	22.75; 0.0001***	10.49; 0.0001***
Lap L3	0.99±0.26	1.19±0.42	1.84±0.95	2.46±0.52	21.34; 0.0001***	17.54; 0.0001***
Lap L4	0.94±0.28	1.05±0.27	1.66±0.49	1.92±0.54	9.60; 0.022*	18.21; 0.0001***
Lap L5	1.01±0.36	1.10±0.34	1.51±0.49	2.29±1.38	36.72; 0.0001***	7.93; 0.0002***
Lap L6	0.98±0.31	1.13±0.44	1.95±0.72	1.71±0.62	9.75; 0.021*	10.00; 0.0001***
Lap L7	0.99±0.50	1.31±0.33	2.05±1.37	2.34±0.77	26.86; 0.0001***	7.85; 0.0001***
Lap L8	0.95±0.51	1.12±0.25	1.68±0.50	2.12±0.72	12.47; 0.006*	14.81; 0.0001***
Lap L9	1.03±0.48	1.18±0.34	1.72±0.57	2.15±0.79	8.74; 0.033*	11.36; 0.0001***
Lap L10	1.05±0.35	1.34±0.55	1.74±0.51	2.69±1.68	38.67; 0.0001***	8.24; 0.0001***
Lap L11	0.90±0.33	1.26±0.33	1.68±0.53	2.42±0.74	11.86; 0.008*	5.98; 0.0001***
Lap L12	1.08±0.19	1.12±0.32	2.11±0.98	2.72±1.03	38.88; 0.0001***	16.51; 0.0001***
Lap L13	1.33±0.63	1.30±0.30	2.05±1.17	2.04±0.46	23.89; 0.0001***	4.79; 0.005**
Lap L14	1.04±0.39	1.18±0.39	2.17±0.63	2.91±1.19	22.15; 0.0001***	20.44; 0.0001***
Lap L15	1.03±0.36	1.37±0.43	1.91±0.66	2.22±0.82	10.44; 0.015*	11.22; 0.0001***
Lap L16	1.01±0.35	1.19±0.49	1.69±0.35	2.27±0.72	9.19; 0.027*	17.68; 0.0001***
Mean Laps	1.02±0.09	1.19±0.10	1.83±0.19	2.28±0.32	28.21; 0.0001***	138.6; 0.0001***
Time	16.29±3.54	19.17±3.13	29.29±6.63	36.48±6.54	10.99; 0.012*	44.38; 0.0001***

Note. Lap L1-16 - impulses of the smart semaphores; Single Factor Analysis of Variance (Completely Randomized Design); t Test statistic - Bartlett's Test for Homogeneity of Variance; F – ANOVA test, df = 3; * - p<0.05; ** - p<0.01; ***- p<0.001

Table 2. Segmental coordination results and differences between difficulty levels at final testing for 6-8-year-old children (n=14)

Variables, sec	Mean±SD				Single Factor Analysis of Variance	
	Level 1	Level 2	Level 3	Level 4	t; P-value	F; P -value
Lap L1	1.03±0.27	1.13±0.25	1.60±0.32	1.54±0.35	1.93; 0.587	6.51; 0.0008***
Lap L2	0.93±0.25	1.16±0.39	1.61±0.58	2.19±1.09	28.37; 0.0001***	9.62; 0.0001***
Lap L3	0.98±0.38	1.19±0.35	2.03; 1.26	1.76±0.69	21.19; 0.0001***	2.31; 0.087
Lap L4	0.89±0.19	1.19±0.28	1.67±0.52	1.87±0.78	26.54; 0.0001***	11.38; 0.0001***
Lap L5	1.05±0.49	1.21±0.30	1.67±0.50	1.92±0.71	8.18; 0.042*	8.26; 0.0001***
Lap L6	0.97±0.32	1.24±0.58	1.56±0.48	1.96±0.78	9.29; 0.026*	7.82; 0.0002***
Lap L7	0.94±0.34	1.15±0.31	1.54±0.35	2.13±0.85	20.32; 0.0001***	14.45; 0.0001***
Lap L8	1.02±0.26	1.03±0.24	1.89±0.72	2.54; 1.12	37.49; 0.0001***	15.95; 0.0001***
Lap L9	0.89±0.28	1.43±0.66	1.85±0.68	2.05±0.71	10.86; 0.012*	9.75; 0.0001***
Lap L10	0.94±0.29	1.19±0.32	1.86±0.95	2.53±1.10	30.30; 0.0001***	12.32; 0.0001***
Lap L11	0.92±0.32	1.20±0.37	1.66±0.52	2.15±0.74	10.71; 0.013*	15.27; 0.0001***
Lap L12	0.99±0.26	1.29±0.47	1.80±0.51	2.23±0.76	12.89; 0.004**	14.49; 0.0001***
Lap L13	1.06±0.30	1.31±0.40	1.97±0.90	2.07±0.27	22.46; 0.0001***	6.60; 0.0007***
Lap L14	1.13±0.30	1.25±0.36	1.75±0.53	2.13±0.84	15.49; 0.0014**	9.92; 0.0001***
Lap L15	1.01±0.32	1.44±0.44	1.78±0.52	2.35±1.01	18.69; 0.0003***	11.17; 0.0001***
Lap L16	1.03±0.44	1.14±0.34	1.79±0.66	2.09±0.65	7.07; 0.069	12.64; 0.0001***
Mean Laps	0.98±0.07	1.22±0.11	1.75±0.14	2.09±0.26	27.21; 0.0001***	155.4; 0.0001***
Time	15.79±3.55	19.57±4.02	28.04±5.66	33.50±6.89	6.92; 0.074	33.30; 0.0001***

Note. Lap L1-16 - impulses of the smart semaphores; Single Factor Analysis of Variance (Completely Randomized Design); t- Test statistic - Bartlett's Test for Homogeneity of Variance; F – ANOVA test; df = 3; * - p<0.05; ** - p<0.01; ***- p<0.001

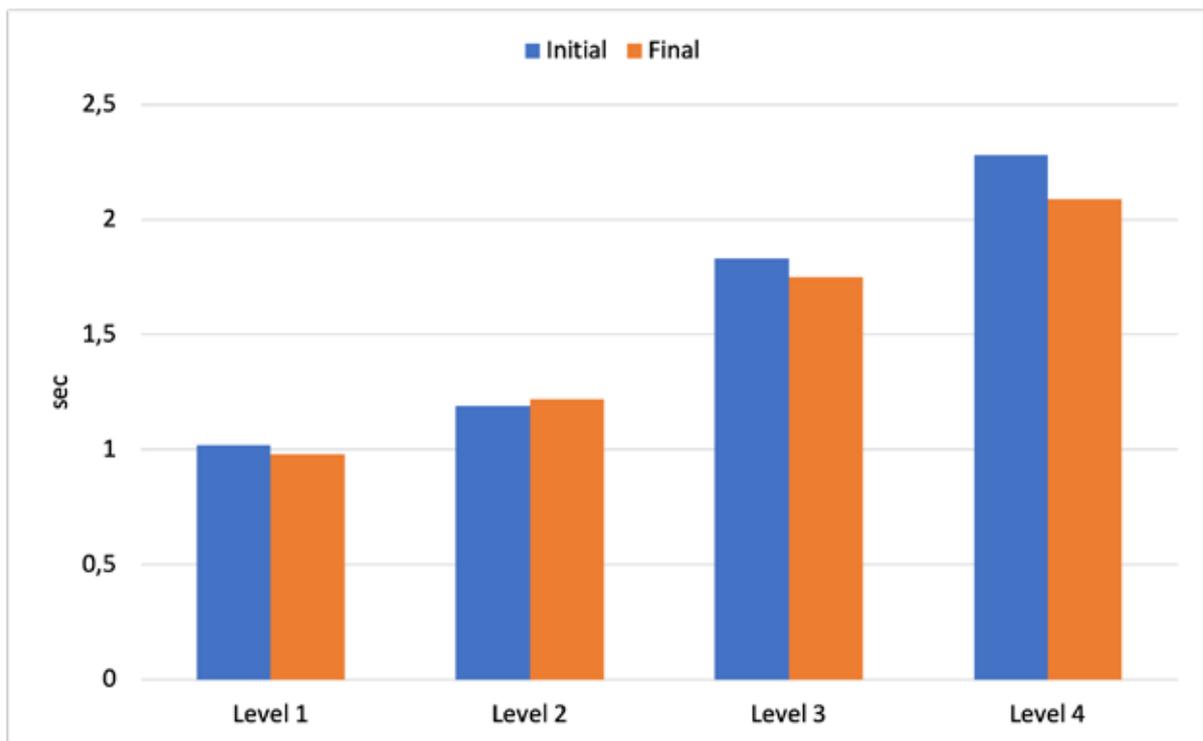


Figure 1. Average difficulty levels of segmental coordination in 6-8-year-old children

Table 3. Results indicating the significance of differences in segmental coordination between tests at each difficulty level (n=14)

Variables, sec	Paired Comparison for Means, n=14 (t-Test; P-value)			
	Level 1	Level 2	Level 3	Level 4
Lap L1	-0.26±0.79	0.88±0.39	0.52±0.61	2.73±0.017*
Lap L2	0.41±0.69	-1.18±0.26	0.69±0.49	-0.86±0.408
Lap L3	0.04±0.96	0.004±0.99	-0.47±0.64	3.98±0.0016**
Lap L4	0.74±0.47	-1.98±0.07	-0.08±0.94	0.41±0.69
Lap L5	-0.24±0.81	-1.62±0.13	-0.79±0.44	0.99±0.33
Lap L6	0.04±0.97	-0.81±0.43	2.97±0.011*	-1.01±0.33
Lap L7	0.48±0.63	1.55±0.14	1.39±0.18	1.15±0.27
Lap L8	-0.64±0.53	1.19±0.25	-1.35±0.19	-1.18±0.26
Lap L9	1.47±0.16	-1.31±0.21	-0.53±0.60	0.46±0.65
Lap L10	1.80±0.09	1.06±0.31	-0.55±0.59	0.41±0.69
Lap L11	-0.16±0.87	0.42±0.68	0.10±0.92	1.51±0.16
Lap L12	1.08±0.29	-1.99±0.07	1.37±0.19	1.69±0.11
Lap L13	1.78±0.09	-0.08±0.93	0.25±0.81	-0.10±0.92
Lap L14	-0.72±0.48	-0.70±0.49	2.04±0.06	2.42±0.03*
Lap L15	0.19±0.85	-0.51±0.62	0.63±0.54	-0.38±0.71
Lap L16	-0.15±0.88	0.31±0.76	-0.59±0.56	0.72±0.48
Time	1.23±0.24	-0.64±0.53	1.26±0.23	3.33±0.005**

Note. Lap L1-16 - impulses of the smart semaphores; * - p<0.05; ** - p<0.01

In the comparative analysis of segmental coordination between initial and final tests across each difficulty level for children aged 6 to 8, as detailed in Table 3, notable significant differences were observed: 5.6% at Level (L) 3 with a p-value less than 0.05, and 22.2% at L4 with a p-value less than 0.01. Furthermore, improvements in performance, indicated by negative differences, were recorded between the tests across all levels: 33.3% improvement at L1, 55.5% at L2, 38.9% at L3, and 27.8% at L4.

Discussion

The study aimed to investigate and assess the impact of dancesport elements on the development of segmental coordination in children aged 6 to 8 years. The examination of segmental coordination and the differences between difficulty levels at both initial and final testing (Tables 1 and 2) revealed an increase in mean Lap times between Levels 1 and 2 (24.5%) during the final testing, and between Levels 2 and 3 (53.8%) and Levels 3 and 4 (24.6%) during the initial testing. Similarly, the total time taken showed increases between Levels 1 and 2 (23.9%) at the final testing, and between Levels 2 and 3 (52.8%) and Levels 3 and 4 (24.5%) at the initial testing. These significant differences in Lap means underscore an elevation in the difficulty of the levels examined at the final testing and illustrate the effect of dancesport elements on segmental coordination in 6-8-year-old children. The analysis of the results, as depicted in Figure 1, further emphasizes the positive influence of dancesport elements on the development of segmental coordination in this age group.

When comparing the average difficulty levels between tests, changes in visual reaction time were noted: a reduction of 0.04 seconds at Level (L) 1, an increase of 0.03 seconds at L2, a reduction of 0.08 seconds at L3, and a significant reduction of 0.19 seconds at L4. These reductions in visual reaction time among children aged 6 to 8 years suggest an enhancement in segmental coordination, attributable to the engagement with dancesport elements. Regarding the comparative analysis of segmental coordination between tests for each difficulty level in children aged 6 to 8 (Table 3), significant differences were observed: 5.6% at $p < 0.05$ and 22.2% at $p < 0.01$. Moreover, improvements in performance, as indicated by negative differences, were seen between tests, with a 33.3% improvement at L1, 55.5% at L2, 38.9% at L3, and 27.8% at L4. These findings underscore the beneficial impact of dancesport on the development of segmental coordination in young children.

Numerous studies underscore the critical role of psychomotricity in children's development, emphasizing the integration of physical movement with mental processes. An evaluation of psychomotor

development and cognitive-adaptive functions in relation to sports activities among primary school students demonstrated a pronounced correlation between engagement in sports and advancements in both psychomotor and cognitive development [15, 16]. Such an integrated approach is deemed essential in early education, fostering holistic growth across motor skills, cognitive functions, and socio-affective dimensions. Psychomotricity promotes the comprehensive development of various psychomotor domains, including gross and fine motor coordination, laterality, balance, spatial and temporal orientation, rhythm, and body schema [5, 17, 18]. Reflecting the importance of these skills, the Italian national guidelines for the primary school curriculum, issued in 2012, place a significant emphasis on motor skills development. These guidelines mandate achieving specific goals in balance and motor coordination as critical objectives for students by the end of their primary education [19].

The relationship between the quality of dance performance and coordination as a motor skill was evaluated using five different measurement tools. The data revealed statistically significant correlations between dance performance quality and levels of motor coordination [20]. Furthermore, a study aimed to demonstrate the impact of educational dance on children's motor development compared the motor skills of children engaged in educational dance with those who did not participate in dance activities, based on assessments conducted over a 6-8 month period [21]. Experts have emphasized the critical importance of developing coordination skills at an early age, particularly in selecting 6-7-year-old children for advanced stages of sports training and rehabilitation. It was found that enhancing balance skills during this pivotal developmental stage lays the groundwork for the acquisition of future motor skills and competencies [22].

An analysis of segmental coordination and postural control during complex multi-joint dance movements, such as the 'développé arabesque,' illustrates the profound effects of prolonged practice on the intricate coordination of limbs and posture. The study identified essential motor control parameters necessary for managing sequential movements of the trunk and extremities [23]. Considering that children who are slim and physically fit exhibit higher levels of coordination, physical education programs should prioritize enhancing physical fitness. Key focus areas include muscle strength, speed, agility, aerobic capacity, and nutritional education aimed at reducing fat mass [24]. To explore the development of various coordination components in children, aspects such as general coordination, rhythm, balance, and spatial-temporal orientation were examined. Specific tests designed for these components were

administered, accompanied by initial and final assessments to gauge progress [25].

Dance holds a pivotal role in cultivating a well-rounded educational experience for young children, serving as a critical component of early childhood arts education [26]. A comprehensive study delved into the mental state and neurodynamic and cognitive traits of young dancers, categorizing them by their proficiency in choreographic skills. The findings suggest a strong correlation between success in dance and various cognitive attributes, including attention, speed of visual perception, and levels of operative and logical thinking. Notably, the study identified that in the realm of dancesport, the most crucial cognitive trait is the verbal domain of information perception and processing [13].

Proprioceptive training within dancesport is generally acknowledged to positively impact agility skills enhancement. Consequently, this form of training is recommended for incorporation into regular dance classes, owing to its potential to significantly improve agility [27]. Similarly, engaging in recreational physical activities also plays a crucial role in fostering the development of key skills that facilitate effective performance in both daily tasks and sports activities. The effects of contemporary dance as a recreational activity on static balance and attention levels were specifically investigated in girls aged 6 to 9. Results indicated that participating in this training twice a week over a period of six months could positively affect attention span and postural control [28].

The studies outlined above underscore the critical roles that psychomotricity and physical activities, including dance, play in the holistic development of children. These activities impact far beyond mere motor skills, extending to cognitive and socio-affective dimensions. The implementation of educational programs and interventions that incorporate these elements could have a significant and positive effect on children's overall development. Furthermore, such approaches could contribute to the nurturing of mentally and physically healthy, well-balanced adults.

Conclusions

The results show a notable increase in average lap times across difficulty levels L1-2, L2-3, and

L3-4 during the final testing phase. This progression underscores the improvement in performance among 6-8-year-old children throughout the testing period, indicating that the children were capable of engaging with and surmounting higher levels of difficulty by the time of the final testing.

Further analysis of the results underscores the beneficial impact of dancesport elements on the development of segmental coordination in children aged 6 to 8 years. A comparative analysis of the average difficulty levels between tests reveals a significant enhancement in visual reaction times. This observed improvement affirms that participation in dancesport practices can play a crucial role in advancing segmental coordination skills within this age group.

A comparative analysis of segmental visual reaction times between tests across each difficulty level highlighted significant distinctions between levels L3 and L4. This variation underscores that different difficulty levels can notably affect children's segmental coordination performance. Recognizing these disparities is crucial for the development and customization of training programs.

Furthermore, an improvement in performance, as indicated by negative differences, was noted at the lower difficulty levels (L1 and L2) between the initial and final tests. These findings suggest that over the course of the testing period, children managed to enhance their performance at these foundational levels. Such progress is likely attributed to the consolidation and refinement of basic segmental coordination skills.

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Conflict of interest

There are no conflicts of interest to declare.

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