COORDINATION IN FORMATION DANCESPORT AT BEGINNER LEVEL

Mihaela ZAHIU^{1*}, Mihaela MANOS¹, George Florian DRĂGHICI²

¹ National University of Physical Education and Sport, Faculty of Physical Education and Sport, Bucharest, Romania

² Stop & Dance Sports Club Association, Bucharest, Romania

*Corresponding author: mihaela.zahiu@gmail.com

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Abstract. Formation Dancesport is a very complex competitive event due to the presence of the 8-couple group that performs choreography altogether. This involves various changes of formations and dance styles in both Standard and Latin sections. In these conditions, the demands on coordination components are particular and specific. At beginner level, the development through exercise systems adapted to formation dance becomes a necessity. In this paper, we aimed to conduct an intentional pedagogical experiment to see how a number of coordination components could be developed in beginner children. We took into account general coordination, rhythmicity, balance and spatial-temporal orientation for which specific tests were applied, ending with initial and final assessments. The research was carried out at the Stop & Dance Studio in Bucharest, sector 1, over a 4-month period, with 3 training sessions per week. The study involved 16 subjects, 8 boys and 8 girls, aged 10 to 13 years. The research hypothesis is that, by applying a special exercise programme adapted to formation dancesport, the coordination components can develop, and the training methodology can be improved. For each targeted coordination type, sets of exercises adapted to formation dancesport were applied in each lesson, directly working with the entire group of dancers. The results obtained in the final assessment compared to the initial assessment were better for all tests, the level of statistical significance being established with the Wilcoxon Test by calculating the Z-value.

Keywords: team dancesport, general coordination, rhythmicity, balance, spatial-temporal orientation.

Introduction

Currently, a multitude of competitive festivals for formations of children and juniors, most of them from private clubs, take place in Romania. During training, dancers practise the two international styles for team competitions, namely Standard or Latin. However, the lack of a methodological training background makes it difficult to carry out the teaching process. Besides, the lack of an equal number of boys and girls has resulted in introducing a new competitive category, Solo Girls, and creating many teams exclusively made up of girls.

In this context, the growing expansion of dancesport has captured the attention of specialists whose concerns are focused on conducting scientific research that establishes the methodological training directions (Stinson, 2014).

In formation dancesport, the teaching contents are more complex because double communication is involved, namely within each couple and within the team made up of 8 couples.

Several studies address the way of developing the cognitive and creative abilities of athletes. In children, training should be based on creative and cognitive activities that lead to the development of physical, mental and interpretative abilities, but also to the acquisition of

technical elements. There are also scientific attempts to examine pedagogical practices that can bring benefits to sports training. (Giguere, 2011)

Creativity involves the convergence of cognition and emotion, two mental processes that influence the creation of dance and how it is received (Thomson, 2020).

Cognitive development and creativity are thought to be majorly influenced by the choreographic content of the competition programme (Minton, 2008; Chappell et al., 2009).

In dance education, teachers generally have the dilemma of whether to teach the choreographic programme or use the improvisation method. Both directions can be taken into account to create a connection between motor, cognitive and emotional sides. (Biasutti, 2013; Lakes et al., 2016)

Dancesport, as a modern and popular cultural phenomenon, opens up a new area of research when education through dance is chosen as a precisely targeted research object (Soraka & Sapezinskiene, 2015).

There are also studies that highlight the benefits of dancesport for re-education and rehabilitation activities (Premelč et al., 2019).

Dancesport, just as the branches of gymnastics, is a technical and combinatorial sport discipline that largely depends on the development of coordination.

Coordination develops through three main aspects: the quality of training, versatility and the variety of situations in which the subject is placed. It ensures both the learning and performance of specific motor contents. In order to develop the coordination components, the individual's perceptual abilities should be improved: the better and well trained they are, the higher the level of motor acquisitions (motor repertoire). In other words, the level of manifestation of coordination abilities is proportional to the number of motor situations in which the individual is placed. (Macovei, 2019)

By definition, coordination can be considered as a qualitative characteristic of motor performance, which cannot be measured but only conventionally judged. Various definitions also use terms such as agility, precision, accuracy, finesse, grace, skill or address, and more. All of them are actually attempts to highlight the complexity of this motor ability. (Șerbănoiu, 2002)

The best period for the development of coordination components is childhood, at the ages of young- and middle-school students (6-13/14 years). In this regard, research was conducted on the age group 6-10 years to identify the relationships between motor coordination, physical fitness and physical activity (Lopes et al., 2011).

In performance sport and not only, the young- and middle-school stages are recommended as appropriate ages to learn the sports technique and some more refined motor skills. During these stages, useful coordination skills can be developed as a basis for achieving future performance. What is not learned now will be later caught up very difficultly, at a much too high price (Weineck, 1994).

Premise and purpose

Performance in dancesport, as in other sport disciplines, is based on the quality of training. Năstase (2011) suggests a motto for training, saying: "Give high quality to super-complexity in training, and the criterion of competitive value will be found in the results" (p. 44).

We aimed to carry out this research in order to provide support for coaches participating with their athletes (especially children and juniors) in formation/team competitions.

Currently, the literature does not provide sufficient information on the methodology of developing coordination and the training in formation dancesport.

In this context, we have started from the premise that the characteristics of ontogenetic development favour the development of coordination and implicitly the creation of choreographies, conditioning the learning of the technique.

The purpose of the paper was to initiate an intentional pedagogical experiment to see whether the use of organized sets of exercises for some coordination components led to their development.

Objective pursued

The objective of this research was to improve the training methodology for formation/team dancesport.

Research hypothesis

The application of a special exercise programme adapted to formation dancesport develops the coordination components and improves the training methodology.

Methodology

This experimental research used the following methods: documentation, observation, intentional pedagogical experiment, assessment, mathematical and statistical analysis, graphical method.

The research was conducted at the Stop & Dance Studio in Bucharest, sector 1.

The subjects were children aged 8 and 13 years, beginner level, 8 girls and 8 boys, members of the formation team. The selection criteria for the subjects were as follows: to practise dancesport for at least 2 years, to dance at least 3 Latin dances (samba, cha-cha and jive) and to have participated in at least 5 festivals/dance competitions with their teams. Subject selection for participation in this study was made with the written consent of their parents.

All subjects were authorised by the Romanian DanceSport Federation. The composition of the experiment group is shown in Table 1.

Table 1. *Subjects of the experiment*

Item no.	Name initials	Gender	Age
1	C.A.	M	9 years
2	D.I.	F	9 years
3	A.D.F.	M	10 years
4	E.A.	F	8 years
5	P.V.	M	10 years
6	M.M.	F	10 years
7	F.M.	M	12 years
8	F.B.	F	10 years
9	P.O.	M	11 years
10	T.N.	F	11 years
11	M.D.	M	11 years
12	D.M.	F	12 years
13	C.C.	M	13 years
14	G.M.	F	13 years
15	C.F.	M	13 years
16	D.R.	F	13 years

Given that subjects were beginners, they performed 3 training sessions per week with a duration of 90 minutes each.

The content of the tests and training programme is described within the developed strategy, which consists of several intervention stages.

We present below the methodological guidelines included in this strategy.

Introductory notions

Sports training is a complex pedagogical process that aims to develop performance capacity in parallel with the personality of athletes (Dragnea & Mate-Teodorescu, 2002).

Proper training involves the notion of design as an anticipatory activity. It promotes thinking through objectives that can be achieved by means of contents, methodologies and assessment tools.

In order to carry out our training programme within the experiment, we took into account the stages and operations of the teaching design such as establishing the training objectives and resources, developing an operational instructional strategy, implementing that strategy, performing the assessment (Colibaba, 2010).

The operational objectives pursued (what we want to achieve) consisted in developing coordination abilities specific to formation/team dancesport, but especially coordination and body technique elements, rhythmicity and motor musicality, spatial-temporal orientation ability and balance.

Training process resources (with whom and with what)

Athletes included in the experiment are members of the Stop & Dance Sports Club (affiliated to the Romanian DanceSport Federation) in Bucharest and are presented in Table 1.

The content of the training programme is shown in Table 2.

Table 2. *Content of the training programme*

Item no.	Content	Number of workouts
1.	Initial testing for: <ul style="list-style-type: none"> • Coordination • Rhythmicity • Spatial-temporal orientation • Balance 	2
2.	Development of coordination and body technique elements	9
3.	Development of rhythmicity and motor musicality	9
4.	Development of spatial-temporal orientation ability	9
5.	Balance development	9
6.	Creating choreographic structures for Latin dance styles: Samba, Cha-Cha, Jive	7
7.	Designing choreography for competitions and shows	9
8.	Final testing for: <ul style="list-style-type: none"> • Coordination • Rhythmicity • Spatial-temporal orientation • Balance 	2
9.	Participation in the “Kaleidoscope Dance Festival” competition	7 November 2019

Material resources of the training process:

- the training was performed 3 days per week (for 27 weeks, 90 minutes per session);
- the training took place in the gym of the “Nicolae Iorga” High School, sector 1 (the gym was rented for dance training sessions);
- the teaching aids used during the workouts consisted of: a CD-player, specific music, a blackboard, coloured markers, a camera, a video camera.

Teaching strategy

Field-specific methods were used, like explanation and conversation as verbal methods, repetition as a training method and demonstration and audio-visual observation as intuitive methods.

The means of training used in the experiment were as follows:

- For the development of coordination and body technique elements, we used dance steps specific to different dance styles, travel with variation of steps, hopping in place and in motion and segmental movements like flexion - extension, raising up - lowering, twists.
- For the development of rhythmicity and motor musicality we listened to various musical styles and used simple movements performed by the upper body or lower body, where each gesture has a well-defined duration that corresponds to the value of a musical note – double, quarter, eighth, whole note, and we did Rhythmicity exercises simultaneously performed with variation of steps, rhythmic walk exercises accompanied by arm movements, rhythmic walk exercises accompanied by upper body movements and exercises to perceive rhythm variations in different dance styles.

- For the development of spatial-temporal orientation ability we used games for delimiting and defining space, individual and group exercises to frame movements in time and space, movement games that include travelling on various routes, accompanied by body rotations around an axis and stopping at fixed points, exercises with figure travels and exercise for making up and changing formations.
- For balance development we used elements of static and dynamic balance, turns and pirouettes.

Practical application

The dance lesson structure was formed by the introductory part, fundamental part and final part.

Introductory part – aimed to prepare the body for exercise with variations of walking and running to music, segmental movements (flexion - extension, raising up - lowering, twists, coordination exercises performed to music), listening to music with percussion and variations of travels to music at different musical tempos.

Fundamental part with exercises for learning and consolidating the coordination skills or abilities specific to formation/team dancesport (which are presented below).

Choreographic structures per dance style that include different changes for various musical styles, changes of both formations and parts of choreography.

Final part with cool-down after workout – breathing exercises in place and while moving, stretching exercises and lining-up – discussion, conclusion, recommendations, greeting.

A dance lesson lasts 90 minutes.

We present below variations of exercises used in dance lessons during the experiment.

- Examples of exercises for Coordination

All exercises are performed to music (2/4 musical measure) on slow and faster counting, also using their variations.

Exercise 1

Initial position: Standing with legs apart

T1: raising the right arm forward and the left arm sideways;

T2: return;

T3: raising the left arm forward and the right arm sideways;

T4: return;

T5: jump to stand;

T6: clapping;

T7: jump to straddle stand;

T8: lowering the arms.

Exercise 2

Initial position: Standing with hands on hips

T1-2: forward lunge with the right leg, arms extended sideways;

T3-4: return;

T5-6: forward lunge with the left leg, arms extended sideways;

T7-8: return.

Exercise 3

Initial position: Standing, arms rounded forward and downward, palms facing inward

T1-2: raising the arms sideways;

T3: punctuating with the right leg forward;

T4: return;

T5-6: raising the arms forward and upward in a crown shape;

T7: punctuating with the left leg forward;

T8: return.

Exercise 4

Initial position: Standing

T1-2: jump to squat;

T3-4: jump to straddle stand on tiptoes, arms raised sideways and upward;

T5-6: jump to stand with arm rotation backward;

T7: 180-degree jump to the right;

T8: 180-degree jump to the right.

Exercise 5

Initial position: Standing back to back in pairs at arm's length from each other

T1: 90-degree jump to the right - each partner;

T2: 90-degree jump to the right - each partner;

T3-4: jump to squat (girls) and jump to straddle stand on tiptoes, arms raised sideways and upward (boys);

T5-6: jump to squat (boys) and jump to straddle stand on tiptoes, arms raised sideways and upward (girls);

T7: standing face to face with clapping;

T8: 180-degree jump to the left - each partner.

- Examples of exercises for Rhythmicity

All exercises are performed to music (2/4 musical measure) on slow and faster counting, also using their variations.

Exercise 1

Initial position: Sitting with bent legs

T 1: clapping;

T 2: snap of fingers;

T 3: floor slapping;

T 4: leg slapping with palms;

T 5-8: same as T1-4.

Exercise 2

Initial position: Standing

T 1-2: raising the right arm forward and upward;

T 3-4: raising the left arm forward and upward;

T 5-6: lowering the right arm sideways and downward;

T 7-8: lowering the left arm sideways and downward.

Exercise 3

Initial position: Standing

T 1 &: two claps;

T 2 &: jump to straddle stand – jump with return;

T 3-4: arm rotation backward;

T 5-6: jump to squat;

T 7-8: straight jump with snap of fingers.

Exercise 4

Initial position: Standing

T 1-2: forward step with the right leg;

T 3-4: forward step with the left leg;

T 5-8: walking in a circle to the right starting with the right leg;

T 1-2: forward step with the left leg;

T 3-4: forward step with the right leg;

T 5-8: walking in a circle to the left starting with the left leg.

Exercise 5

Initial position: Standing face to face in pairs at arm's length from each other

T 1: sidestep to the right, each one with hands on hips;

T 2: return with a clap;

T 3: sidestep to the left, each one with hands on hips;

T 4: return with a clap;

T 5: 90-degree jump to the right, each one with a clap;

T 6-7: 180-degree jump to the right, each one with a clap;

T 8: 90-degree jump to the right, each one with a clap.

- Examples of exercises for Spatial-Temporal Orientation

All exercises are performed to music (2/4 musical measure) on slow and faster counting, also using their variations.

The number of dancers is 8 boys and 8 girls who perform in couple and in formation.

Exercise 1

Initial position: In pairs, face to face, holding hands

Formation – Row

T 1-4: switching from lined up in a row to lined up in two rows;

T 5-8: return;

T 1-4: switching from lined up in a row to lined up in three rows;

T 5-8: return.

Exercise 2

Initial position: In pairs, shoulder to shoulder, the girl to the left of the boy, holding hands

Formation – File by two

T 2 X 8: loosening the file (from a file by two to two files by one – boys move to the right, and girls move to the left);

T 2 X 8: return to file by two.

Exercise 3

Initial position: In pairs, face to face, holding hands

Formation – Row

T 1-8: from lined up in a row to a closed V-shape;

T 1-8: from the closed V-shape, return to lined up in a row;

T 1-8: from lined up in a row, switch to a closed V-shape;

T 1-8: from the closed V-shape, return to lined up in a row.

Exercise 4

Initial position: In pairs, face to face, holding hands

Formation – Lined up in two rows

T 1-8: from two rows, switch to a circle, with girls facing the inner part of the circle;

T 1-8: from the circle, return to lined up in two rows;

Exercise 5 – Movement game

Initial position: In pairs, face to face, holding hands

Formation – Lined up in two rows

T 1-8: from two rows, boys form a small circle, and girls form a larger circle behind the boys holding hands;

T 2-8: each one performs 4 jumps with turn to the right and 4 jumps with turn to the left (each jump is performed in two sequences: 1 X 8 to the right – 1 X 8 to the left);

T 1-8: from the two circles, return to the initial formation – lined up in two rows.

- Examples of exercises for Balance

Exercise 1

Initial position: Standing

Gymnastics formation

T 1-8: standing on tiptoes with arms extended sideways;

T 1-4: return;

T 1-8: standing on tiptoes with legs apart and raised arms;

T 1-4: return.

Exercise 2

Initial position: Standing face to face in pairs, arms extended forward and hands on the partner's shoulder

T 1-8: lifting the left foot on the tiptoe, with the right leg in passé (the leg is bent, with the knee facing outward) and holding position;

T 1-4: return;

T 1-8: lifting the right foot on the tiptoe, with the left leg in passé (the leg is bent, with the knee facing outward) and holding position;

T 1-4: return.

Exercise 3

Initial position: Standing on tiptoes

T 2 X 8: forward walking on tiptoes on a line drawn on the ground;

T 2 X 8: backward walking on tiptoes on a line drawn on the ground;

T 1 X 8: walking on tiptoes with added step to the right on a line drawn on the ground;

T 1 X 8: walking on tiptoes with added step to the left on a line drawn on the ground.

Exercise 4

Initial position: Standing

T 1-6: support scale on the right leg and holding position;

T 7-8: return;

T 1-6: support scale on the right leg and holding position;

T 7-8: return.

Exercise 5

Initial position: Standing on tiptoes, arms extended sideways

T 1-2: forward lunge on the right leg, with the right arm forward and the left arm sideways;

T 3-4: passé pirouette to the right, arms forward in a crown shape;

T 5-6: completion in demi-plié, with arms sideways;

T 7-8: lifting on tiptoes, arms extended sideways;

T 1-8: same on the opposite side.

*at the beginning, 4 repetitions on the right side and 4 repetitions on the left side are performed; the next stage involves 2 repetitions on each side, followed by 1 repetition on each side;

*exercises are performed on slow counting.

The forms of organising the activity during lessons were training with the entire group, individual training, pair training and pair-group training.

Assessment

The research subjects were tested before and after applying the training programme. The tests used in the experiment were: Coordination Test, Rhythmicity-Musicality Test, Balance Test (Standing Stork Test) and Spatial-Temporal Orientation Test (Matorin).

- Coordination Test

For this test, the exercise described below was used. It was explained and demonstrated only once.

Initial position – Standing

T1: jump to straddle stand, with the left arm extended sideways and the right arm extended forward;

T2: return;

T3: jump to straddle stand, with the right arm extended sideways and the left arm extended forward;

T4: return;

T5: lifting the left leg bent to 90 degrees simultaneously with raising the right arm upward while keeping the left hand bent on the hip;

T6: return;

T7: lifting the right leg bent to 90 degrees simultaneously with raising the left arm upward while keeping the right hand bent on the hip;

T8: return.

Judging: subjects were rated with grades from 1 to 10 for the accuracy of reproducing the exercise. For each fault, 0.5 points were deducted. The demonstrated exercise was performed only once.

Table 3. *Score scale for the Coordination Test*

Score scale	
No. of faults	Grade
0	10
2	9
4	8
6	7
8	6
10	5
12	4
14	3
16	2
18	1

- Rhythmicity-Musicality Test

For this test, we used the exercise described below. Musical measure was 2/4. Palm percussion is performed according to the duration of musical notes. The exercise is demonstrated two or three times, and the scores achieved by subjects for performing the rhythmic theme through steps - walk with clapping are recorded.

Table 4. *Score scale for the Rhythmicity-Musicality Test*

Score scale	
No. of faults	Grade
1	10
2	9
3	8
4	7
5	6
6	5
7	4
8	3
9	2
10	1

Rhythmic theme:

- Expressing musical values through walk and percussion

- Balance Test (Standing Stork Test)

This test aims to assess the ability to maintain a static position for a duration measured by a stopwatch. The subject stands on the left leg and places the other leg against the inside knee of the supporting leg. When the stopwatch is started, the heel of the supporting leg raises to balance on the ball of the foot. The duration of keeping balance is assessed. The test is then performed on the opposite leg after a 3-minute break. The test can also be conducted with the eyes closed. (Tudor, 2013)

- Spatial-Temporal Orientation Test (Matorin)

This is a famous test recognised in the field of psycho-pedagogy, whose objective is to measure spatial-temporal orientation, but also dynamic balance. The subject must perform a standing vertical jump with turn to the right or to the left. The required material consists of a compass, chalk, a flat field and a measuring tape. They are used to draw on the ground a graduated circle with a diameter of 40 cm and the starting line for jumping. The magnitude of the degrees of rotation in the vertical axis is measured: the higher it is, the more the assessment is positive. (Horghidan, 1998)

Results

Coordination Test

In this test, subjects were rated with grades from 1 to 10 for the accuracy of reproducing the exercise. For each fault, 0.5 points were deducted. Minimum values obtained by the experiment group subjects were grade 6 in the initial test and grade 8 in the final test, and maximum grades reached the value 9 in the initial test and the value 10 in the final test. Average values were 7.94 in the initial test and 9.38 in the final test, with a statistically significant increase of 1.44 points. Table 5 shows the descriptive statistics for the results obtained by subjects in the Coordination Test, indicating both the number of faults and the grades received according to the faults made. The statistically significant positive evolution is demonstrated by the calculated Z-value using the Wilcoxon Test (-3.624) and the p-value (0.000) less than 0.05.

The coefficient of variation shows a very high homogeneity of the group in both the initial test (10.8%) and the final test (7.7%).

Table 5. Results for the Coordination Test

	Faults		Grade	
	Initial test	Final test	Initial test	Final test
Number of cases	16	16	16	16
Arithmetic mean	2.94	0.94	7.94	9.38
Difference (FT-IT)	-2.00		1.44	
Median	3.00	0.50	8.00	9.50
Standard deviation	1.29	1.24	0.85	0.72
Coefficient of variation	43.9%	-	10.8%	7.7%
Minimum	1	0	6	8
Maximum	6	4	9	10
Wilcoxon Test	calculated Z		-3.561	
(Initial vs. Final)	P		0.000

Figure 1. Results for the Coordination Test

Rhythmicity Test

In this test, subjects were rated with grades from 1 to 10. For each fault, 1 point was deducted. Minimum values obtained by the experiment group subjects were grade 6 in the initial test and grade 8 in the final test, and maximum grades reached the value 9 in the initial test and the value 10 in the final test. Average values were 8.06 in the initial test and 9.31 in the final test, with a statistically significant increase of 1.25 points. Table 6 shows the descriptive statistics for the results obtained by subjects in the Rhythmicity test, indicating both the number of faults and the grades received according to the faults made. The statistically significant positive evolution is demonstrated by the calculated Z-value using the Wilcoxon Test (-3.704) and the p-value (0.000) less than 0.05.

The coefficient of variation shows a very high homogeneity of the group in both the initial test (10.6%) and the final test (8.5%).

Table 6. Results for the Rhythmicity Test

	Faults		Grade	
	Initial test	Final test	Initial test	Final test
Number of cases	16	16	16	16
Arithmetic mean	2.94	1.69	8.06	9.31
Difference (FT-IT)	<i>-1.25</i>		<i>1.25</i>	
Median	3.00	1.50	8.00	9.50
Standard deviation	0.85	0.79	0.85	0.79
Coefficient of variation	29.1%	47.0%	10.6%	8.5%
Minimum	2	1	6	8
Maximum	5	3	9	10
Wilcoxon Test	calculated Z		-3.704	
(Initial vs. Final)	P		0.000

Figure 2. Results for the Rhythmicity Test

Balance Test (Standing Stork Test)

For this test, the stopwatch was used to count the seconds, first recording the time achieved when performing the test with the right leg, and then with the left leg.

On right leg, minimum values achieved by the experiment group subjects were 1.87 seconds in the initial test and 3.77 seconds in the final test, and maximum values reached 5.31 seconds in the initial test and 7.36 seconds in the final test. Average values were 3.29 seconds in the initial test and 5.36 seconds in the final test, with a statistically significant increase of 2.07 seconds. Table 7 shows the descriptive statistics for the results (in seconds) obtained by subjects in this test. The statistically significant positive evolution is demonstrated by the calculated Z-value using the Wilcoxon Test (-3.516) and the p-value (0.000) less than 0.05.

The coefficient of variation shows an average homogeneity of the group in both the initial test (27.7%) and the final test (20.4%).

On left leg, minimum values achieved by the experiment group subjects were 1.68 seconds in the initial test and 2.17 seconds in the final test, and maximum values reached 5.13 seconds in the initial test and 7.04 seconds in the final test. Average values were 3.71 seconds in the initial test and 5.18 seconds in the final test, with a statistically significant increase of 1.59 seconds. The statistically significant positive evolution is demonstrated by the calculated Z-value using the Wilcoxon Test (-3.413) and the p-value (0.001) less than 0.05.

The coefficient of variation shows an average homogeneity of the group in both the initial test (27.6%) and the final test (23.5%).

Table 7. *Results for the Balance Test (Standing Stork Test)*

	Right leg		Left leg	
	Initial test	Final test	Initial test	Final test
Number of cases	16	16	16	16
Arithmetic mean	3.29	5.36	3.59	5.18
<i>Difference (FT-IT)</i>	2.07		1.59	
Median	3.34	5.49	3.71	5.27
Standard deviation	0.91	1.10	0.99	1.22
Coefficient of variation	27.7%	20.4%	27.6%	23.5%
Minimum	1.87	3.77	1.68	2.17
Maximum	5.31	7.36	5.13	7.04
Wilcoxon Test	calculated Z		-3.413	
(Initial vs. Final)	P		0.001	
	-3.516		-3.413	
	0.000		0.001

Figure 3. Results for the Balance Test (Standing Stork Test)

- *Spatial-Temporal Orientation Test (Matorin)*

In this test, the size of the angle was first measured for the jump with turn to the right, and then with turn to the left.

Jump with turn to the right - minimum values achieved by the experiment group subjects were 190° in the initial test and 220° in the final test, and maximum values reached 350° in the initial test and 360° in the final test. Average values were 275° in the initial test and 303° in the final test, with a statistically significant increase of 28°. Table 8 shows the descriptive statistics for the results (in grades) obtained by subjects in this test. The statistically significant positive evolution is demonstrated by the calculated Z-value using the Wilcoxon Test (-3.431) and the p-value (0.001) less than 0.05.

The coefficient of variation shows a high homogeneity of the group in both the initial test (19.9%) and the final test (16.8%).

Jump with turn to the left - minimum values achieved by the experiment group subjects were 180° in the initial test and 200° in the final test, and maximum values reached 360° in both the initial and final tests. Average values were 272° in the initial test and 294° in the final test, with a statistically significant increase of 22°. The statistically significant positive evolution is demonstrated by the calculated Z-value using the Wilcoxon Test (-3.071) and the p-value (0.002) less than 0.05.

The coefficient of variation shows an average homogeneity of the group in both the initial test (22.8%) and the final test (20.4%).

Table 8. Results for the Spatial-Temporal Orientation Test (Matorin)

	Right		Left	
	Initial test	Final test	Initial test	Final test
Number of cases	16	16	16	16
Arithmetic mean	275°	303°	272°	294°
Difference (TF-TI)	28°		22 °	
Median	265°	315°	270°	300°
Standard deviation	55°	51°	62°	60°
Coefficient of variation	19.9%	16.8%	22.8%	20.4%
Minimum	190°	220°	180°	200°
Maximum	350°	360°	360°	360°
Wilcoxon test	calculated Z		-3.431	
(Initial vs. Final)	P		0.001	
			-3.071	
			0.002

Figure 4. Results for the Spatial-Temporal Orientation Test (Matorin)

Discussion

Analysis of the results at the initial and final tests shows improvements in the values for all the samples and tests used. We consider that the training programme used was effective for both the development of some coordination components and the improvement of the training system. However, we emphasise the limitations of the research, given the very modest information on other research that addresses the specific preparation for the test of figures in dancesport. We add to this the lack of other research investigating how the exercises used in figure dance influence the specific development of motor skills and particularly the coordination components. We want to continue research in this direction in order to expand the area of documentation.

Conclusion

Within the pedagogical experiment carried out, the positive evolution of the results is found in all the coordination tests applied. The group of subjects shows a high level of homogeneity, which helps to create the composition and implicitly to synchronise the executions. Differences between the final test and the initial test are statistically significant. The Wilcoxon Test was used to establish the level of significance by calculating p and Z values.

At the end of the experiment, the research subjects successfully participated in the “Kaleidoscope Dance Festival” competition organised on 7 November 2019 at the “Apollo” Sports Centre, where they were ranked 2nd out of 5 formations/teams participating in their age category. The criteria followed by judges and the grades obtained by the team were as follows:

- Technical quality of the dance – 8 (out of 10 points)
- Musicality – 9 (out of 10 points)
- Synchronisation, staging – 9 (out of 10 points)
- Choreography and originality – 9 (out of 10 points)

Our results also confirm other studies stating that dancers’ movements must prove a higher coordination ability, special musical sense, an increased ability to adapt the motor programme and very good spatial-temporal orientation (Grigore, 2014).

Given the significant results obtained, we believe that the research hypothesis according to which “the application of a special exercise programme adapted to formation dancesport develops the coordination components and improves the training methodology” has been validated.

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