



EXAMPLE PROGRAM FOR IMPROVING COORDINATION SKILLS AND SPATIAL ORIENTATION IN CHILDREN FROM PRIMARY SCHOOL AGE

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ABSTRACT

The aim of the present research is to prepare a specialized program for improving the coordination abilities and spatial orientation in children of primary school age through the means of aerobic gymnastics. The methods: theoretical analysis of literature sources; internet analysis; sports-pedagogical testing and variation analysis. We studied two groups (A and B) of 21 students aged 9-10 years. To check the level of development of the studied qualities we have used three author's tests. The test results show that in the first test (T1) to check the spatial orientation, both groups show extremely poor results with strong heterogeneity. In test №2 "Laugh clown" the students from group B show slightly better results in their level of development of coordination abilities than those in group A, as far as in the test "Scissors" (T3) the advantage is for the students from group A. In general, the level of development of the spatial orientation and coordination of the students studied by us is unsatisfactory. The prepared sample methodology contains 36 training sessions in which the various means of aerobic gymnastics are used - dance basic steps, their variations and games with a competitive and fun nature.

Key words: coordination, spatial orientation, aerobic gymnastics, primary school age

INTRODUCTION

The main goal of physical education in modern society is the achievement of physical perfection of man, the criteria for which are his health, physical performance and creative longevity. A number of authors point out that physical activity in physical education and sports classes in Bulgarian schools does not meet the needs of the younger generation. This in turn imposes the need to encourage additional physical activity through other forms of exercise and sport (1, 2). Among the variety of forms for physical activity of students, the types of gymnastics occupy a

particularly important place. Their healing, educational and organizational effect imposes them as an integral part of the overall educational process of physical education in schools, and in our opinion aerobic gymnastics is an affordable alternative with its attractive types and styles (3, 4).

"CLASSIC AEROBICS" is a system of movements and exercises performed under musical accompaniment, which improves the functioning of the cardiorespiratory system, builds qualities such as strength, speed, flexibility and agility (5, 6, 7). The tools used in classical aerobics are general development exercises, a variety of dance steps combined with hand coordination, as well as strength exercises for different muscle groups of the body and those for stretching (8).

In the theory of physical education it is accepted to define the individual aspects of motor abilities

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as motor qualities - speed, strength, endurance, flexibility and agility (9, 10), whose development and dynamics during the years of age of children in school are subject to numerous scientific studies, which, however, are partial or serve private purposes (11-14).

The direction of our research is in the field of the development of dexterity or in particular of some of its forms such as coordination abilities and orientation in space.

According to a number of authors, the basis of dexterity are coordination abilities, which the German scientist P. Hirz divides into 5 main components - Ability to react; Rhythmic ability; Equilibrium ability; Ability to orient in space and kinesthetic ability to differentiate (15).

Knowledge of the sensitive periods for the development of motor skills enables the sports pedagogue to influence them in the most favorable age period and on this basis to successfully manage the learning process (16). Authors such as Pisarenkova (17), Zamashkin and Tolstova (18) believe that the improvement of coordination skills (CS) is most favorable in primary school age, and V. Lyakh (19) found that the highest sensitivity to the development of diverse types of CS are the years between 7 and 11-12 years through the use of cyclic and acyclic movements, goal throwing, sports-game and acrobatic motor actions. A. Momchilova and I. Ilieva (20) found that a strong complex sensitivity of coordination abilities is the age of 8 years for girls and 9 years for boys. In her research N. Tankusheva (21) found that over 70% of the students studied by her have a low and very low level of development of the kinesthetic abilities of the upper limbs, and almost one fifth of them have problems with the level of development of coordination abilities of the lower limbs. On this basis, she applies her experimental methodology for improving CS through the means of gymnastics and establishes at the end of the study period its high efficiency.

Based on personal observations and many years of practical experience in coaching, we can say

that most young children lack the pursuit of perfection and they quickly get bored with repetitions of exercises and movements. This in turn affects the slower development of the motor habit and requires sports activities to be more dynamic and interesting, with the predominant use of group and game teaching methods. In our opinion, aerobic gymnastics is such an attractive sport and its means will have a positive impact on the development of certain motor skills of children. Therefore, the **aim** of the present study is to prepare a specialized program for improving coordination skills and spatial orientation in children of primary school age through aerobic gymnastics.

METHODS

Through theoretical and logical analysis of literature sources, we analyzed our available scientific literature related to data on the level of development of coordination skills and spatial orientation of children of primary school age, as well as the proposed methods for their improvement. In our study, we also used methods such as sports-pedagogical testing, expert evaluation and variation analysis to control the level of our studied motor skills and their statistical processing (22).

The testing was held on 6-7.02.2020 in the gym for physical education at the primary school "Stanislav Dospevski" in Samokov. 42 students from two classes were studied (Group A - IIIa class - 21 students; Group B - IIIg class - 21 students). Two sports specialists (study leader and recorder) conducted the testing, first conducting a short warm-up with the students, then demonstrating and explaining how to perform the exercises from the test battery (**Table 1**).

RESULTS

The tests selected by us are author's and tested in practice. They are informative about gymnastic sports and take into account the level of development of their specific qualities such as coordination skills and spatial orientation (23, 24, 25).

Table 1. Methodical instructions for performing the tests

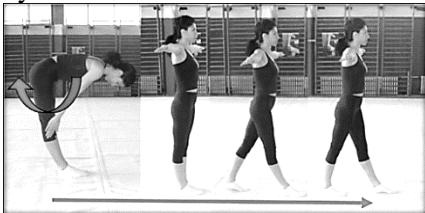
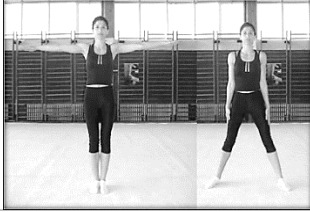

NAME OF THE TEST	METHODOLOGICAL INSTRUCTIONS
Test 1 "Spatial-orientation" by Maria Gateva 	The test starts from the starting position horizontal slope, hands down. Followed by five turns in place (1800 degrees) in this position, after which the body stands up with his hands to the side and continues forward walking in a straight line (five meters). The deviation from the lines is reported with an accuracy of 1 cm.
Test 2 "Laugh clown" by Kaloyana Tsoncheva 	From the starting position standing, arms to the side, a jump is performed to a standing position, hands down and return to starting position. * These movements are performed repeatedly for a minimum of 30 seconds at a moderate pace, set with a metronome or audio recording (122 - 128 beats per minute). The time to error is detected with an accuracy of 0.1 sec.
Test 3 "Scissors" by Dimka Nestorova 	From the starting position "standing" is performed: • 1- jump to right lunge with raising the left hand forward; • 2- jump with an exchange of legs to the left lunge by raising the right hand * These movements are performed repeatedly for a minimum of 30 seconds at a moderate pace, set with a metronome or audio recording (122 - 128 beats per minute). The time to error is detected with an accuracy of 0.1 sec.

Table 2 presents all values from the variational analysis of the tested groups of students. It shows that the scatter range (R), standard deviation (S)

and coefficient of variation (V%) are quite large, which shows the strong heterogeneity of the groups in all tests.

Table 2. Variation analysis of the trait

		n	mean	min	max	S	X _s	A _s	R	V%
TEST 1 "Spatial-orientation"	Group A	21	56.7	13	200	45.2	4.1	1.9	187	79.7
	Group B	21	145.9	25	377	91.8	1.2	1.1	352	62.9
TEST 2 "Laugh clown"	Group A	21	6.2	0	29	7.5	3.1	1.8	29	120.4
	Group B	21	8.9	0	24	6.8	-0.6	0.4	24	76.5
TEST 3 "Scissors"	Group A	21	19.2	0	68	23.1	0	1.1	68	120
	Group B	21	16	0	37	13.8	-1.6	0.2	37	86.4

For a more in-depth analysis of **Figure 1**, we present the results of the study of students from both groups for control of their spatial orientation (Test 1).

It shows that group A has a better average value of the studied trait than group B (56.7 cm and

145.9 cm). Also, group A has better minimum and maximum values than group B. The registered maximum deviations from the rights in both groups (Group A - 200 cm and group B - 377 cm) make a serious impression, which shows a rather weak spatial orientation in these children.

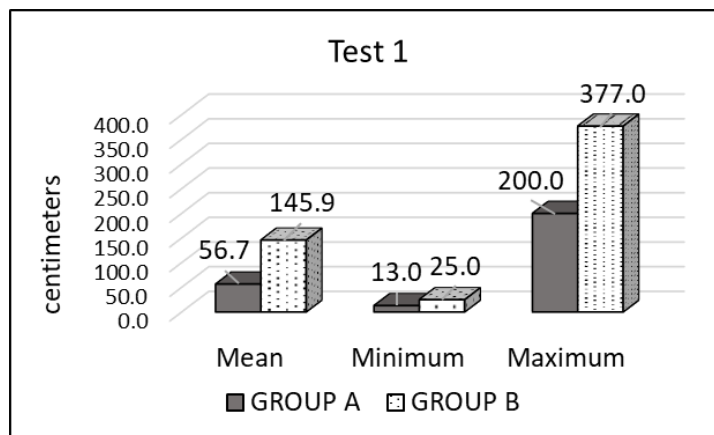


Figure 1. Comparative graph of the values of Test 1 "Spatial-orientation"

In the second test (**Figure 2**) for the students from both groups, we reported zero minimum values, which means that these children could not start

the exercise at all and made a technical error with the first movement.

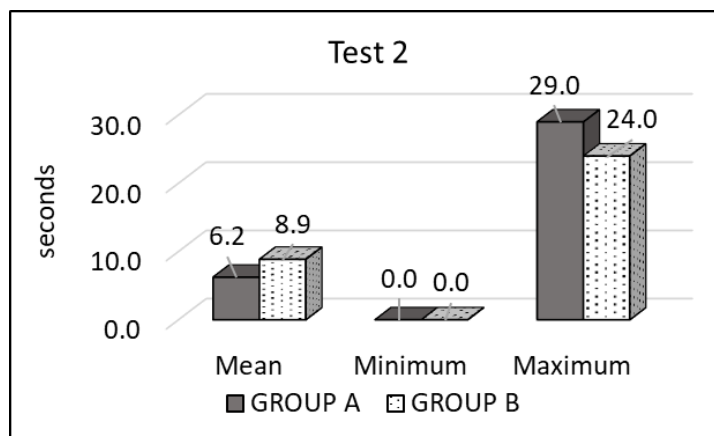


Figure 2. Comparative graph of the values of Test 2 "Laugh clown"

The mean value of the sign of group A is lower than that of group B because the children from group A made a mistake on the 6th second, and those from group B on the 9th. At the same time, however, a student from group A achieved the best result by making a mistake only in the 29th second.

In the following figure (3) we have illustrated the results of the third coordination test "scissors". It shows that again we have registered minimum zero values for both groups of students, which is actually a poor result.

The average value of the studied trait in the first group (A) is 19.2 seconds, and for the second (B) with 3.2 seconds less - 16. Very good maximum result of 68 seconds we reported in the study of students in group A, while the best result for group B is 31 sec. less (37 sec.).

Comparing our data with the normative tables of the authors of the tests (23-25), we believe that the results we reported are quite unsatisfactory. This gives us a serious reason to offer a sample program for improving the studied qualities, including in it the rich variety of means of aerobic gymnastics.

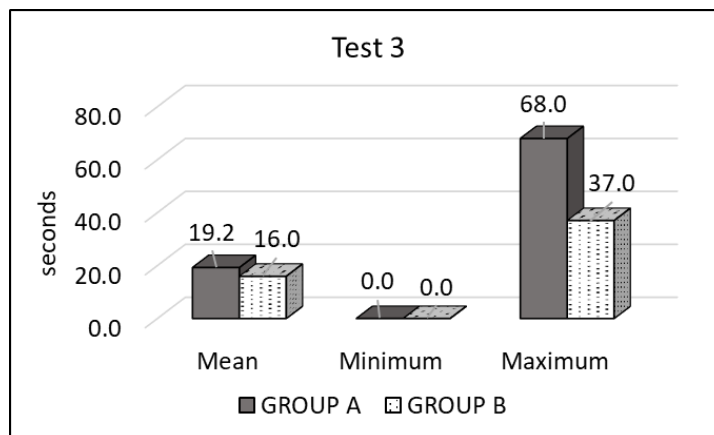


Figure 3. Comparative graph of the values of Test 3 "Scissors"

In our methodology we have included the study and improvement of the basic dance steps in aerobic gymnastics and their variations, mobile gymnastic games with a competitive and fun

nature and the study of a creative combination (routine). All exercises are distributed thematically (**Table 3**). The total number of classes is 36, each with its own variety.

Table 3. Content of the studied specific means of aerobic gymnastics

TRAINING PERIOD	THEMATIC ORIENTATION		
1st - 11th lesson	I. Learning the basic dance steps and their variations.	II. Learning basic difficulty elements	III. Exploring other components of the routine
	1. March 2. Jog 3. Jumping jack and lunge 4. Jump with knee lift 5. Skip 6. Touching step 7. Cross step	1. Burpee 2. Push up with knees on the floor 3. From front support full twist 4. Forward Roll 5. Static strengft: a) hold in tuck and pike seat b) hold in L-support with heels on the floor 6. Air jumming jack 7. Half air turn 8. Standing on one leg	1. Starting position - lifting 1 2. Physical interaction 3. Final position-lifting 2
12th - 20th lesson	Initial study of a creative combination (routine). In pieces – first, second, third and fourth.		
21st - 30th lesson	In-depth study of the creative combination (routine). In pieces – first and second.		
31st - 36th lesson	Complete improvement of the set creative composition (a whole routine) .		

CONCLUSION

The level of development of the spatial orientation and coordination of the third grade students studied by us is unsatisfactory. The poor results show that the means used for training in physical education classes for primary school students are not effective enough to develop the

qualities we have studied. In the studied scientific literature we did not find developed complexes with movements and exercises from aerobic gymnastics to improve the motor skills studied by us for students from the initial course of study. There are such for secondary school and for initial training in sports aerobics. The rich variety of tools in aerobic gymnastics gave us the opportunity to develop a meaningful curriculum

to improve coordination skills and spatial orientation in children of primary school.

RECOMMENDATIONS

We recommend the activities from our sample curriculum to be integrated in the physical education classes of children of primary school age for a period of time as a new sport. The offered means of aerobic gymnastics should be performed in the regular hours of physical education, occupying no more than 20-25 minutes of the hour.

In order to observe the specifics of teaching aerobic gymnastics in the preparatory part of the classes, the warm-up movements should be performed with musical accompaniment, and the methods for teaching these movements should be streamlined and serially-streamed (26).

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