

UDC 796.412:796.012.2

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The development of coordination abilities at a stage of the previous basic preparation in sports dances

Abstract. Purpose: to prove a technique of the improvement of special physical fitness due to the development of coordination abilities at a stage of the previous basic preparation. **Material and Methods:** theoretical analysis and synthesis of data of scientifically methodical literature and empirical materials of the scientific research, pedagogical methods of the research, tool methods: program of diagnostics of the development of psychophysiological abilities (APC "Sports psychophysiologicalist"), methods of mathematical statistics. **Results:** the technique is developed which includes means of the general physical preparation, the specially developed complexes of danced-jumped exercises, the dancing combinations and means which are picked up taking into account the leading motive, functional abilities and special technical characteristics of movements and also has a strictly certain sequence of the realization of means during each cycle of classes. **Conclusions:** the application of the experimental technique of the improvement of special physical fitness of sportsman in the training process led to the improvement and enhancement of their technical preparedness and the increase of the competitive productivity of their performances.

Keywords: sports dances, training process in sports dances, physical fitness, coordination abilities.

Introduction. The development of competition in sports ballroom dances demands an additional attention to the organized educational-training process of sportsmen. As sports dances are carried out in couples, and additional loadings are created in the conditions of competition, a question of improvement of special physical fitness and technical training in sports dances at a stage of the previous basic preparation become relevant.

The objective of the research: to prove a technique of improvement of special physical fitness due to the development of coordination abilities at a stage of the previous basic preparation.

Material and methods of the research: theoretical analysis and synthesis of data of scientifically-methodical literature and empirical materials of the scientific research; pedagogical methods of the research: pedagogical supervision, pedagogical testing, pedagogical experiment; tool methods: program of diagnostics of the development of psychophysiological abilities (agrarian and industrial complex "Sports psychophysiologicalist"); methods of mathematical statistics.

Results of the research and their discussion. At the beginning of the research the expert video analysis of performances of couples was carried out at the greatest competitions of the season by the rules of The World dancing organization for the purpose of identification of a couple which owns the highest level of sports skill. It was revealed that couple No. 4 showed the best results during the season (tab. 1).

Table 1

Results of the main competitions of the season

Competition № 1			Competition № 2			Competition № 3			Total	
Nº of couples	Place	Points	Nº of couples	Place	Points	Nº of couples	Place	Points	Nº of couples	Points
1	2.0	5.0	1	1.0	6.0	1	2.0	5.0	1	16.0
2	4.0	3.0	2	4.0	3.0	2	5.0	2.0	2	8.0
3	6.0	1.0	3	5.0	2.0	3	6.0	1.0	3	4.0
4	1.0	6.0	4	2.0	5.0	4	1.0	6.0	4	17.0
5	3.0	4.0	5	3.0	4.0	5	3.0	4.0	5	12.0
6	5.0	2.0	6	6.0	1.0	6	4.0	3.0	6	6.0

The testing of the level of development of coordination abilities was held at participants of the research.

Table 2

The general indicator of the level of coordination abilities (n=12) to the experiment

Nº	The name of the test	X	σ	cv (%)
1	Time of reaction to a light (hand), ms	293	15,3	5,2
2	Time of reaction to a sound (hand), ms	409,3	26,2	6,4
3	Time of reaction to a moving object, ms	92,6	12,5	13,5
4	An assessment of speed of movement of an object (error, %)	14,9	1,7	11,4
5	An assessment of size of the offered pieces (error, %)	10,3	1,2	11,6
6	Measuring of pieces (error, %)	13,5	1,5	11,1
7	Recognition of the offered angles (error, %)	2,5	0,3	12,5

As showed the results of the research, the average value of reaction to a light made 293 ms, a standard deviation – 15,3, a variation coefficient – 5,2%; time of reaction to a sound – 409,3 ms, a standard deviation – 26,2, a variation coefficient – 6,4%; time of reaction to a moving object – 92,6 ms, a standard deviation – 12,5, a variation coefficient – 13,5%; an assessment of speed of movement – 10,3%, a standard deviation – 1,2%, a variation coefficient – 11,6%; an assessment of size of the offered pieces – 10,3%, a standard deviation – 1,2%, a variation coefficient – 11,6%; measuring of pieces – 13,5%, a standard deviation – 1,5%, a variation coefficient – 11,1%; recognition of the offered angles – 2,5%, a standard deviation of 0,3%, a coefficient of a variation of 12,5%. The coefficient of a variation fluctuates from 5,2% to 13,5% among all indicators. The variety of indicators of the development of coordination abilities in all six couples was low, and it allowed making the assumption that, in principle, the group is similar and the level of the development of coordination abilities is low at everybody.

Table 3

Indicator of coordination abilities of sportsmen before the experiment (n=12)

Nº of couples	Sportsmen	Time of reaction to a light (hand), ms	Time of reaction to a sound (hand), ms	Time of reaction to a moving object, ms	Time of reaction of a choice, ms	An assessment of speed of movement of an object (error, %)	An assessment of size of the offered pieces (error, %)	Measuring of pieces (error, %)	Recognition of the offered angles (error, %)
1	Male partner	342,6	562,2	168,2	467,3	24,5	17,3	21,8	2,4
	Female partner	338,2	523,5	151,2	438,7	23,8	12,4	18,4	3,1
2	Male partner	305,3	452,9	92,1	421,5	18,2	15,3	16,4	2,9
	Female partner	310,8	483,7	98,3	398,8	19,4	14,9	17,6	2,1
3	Male partner	279,8	423,2	101,7	315,7	15,6	7,8	10,8	1,7
	Female partner	304,7	398,4	90,4	385,2	16,8	9,6	14,6	2,1
4	Male partner	182,2	282,2	20,1	261,8	5,2	4,2	5,7	1,2
	Female partner	197,4	294,1	18,3	278,3	6,4	4,5	5,3	1,3
5	Male partner	289,1	312,3	83,5	308,3	11,3	8,4	16,4	4,2
	Female partner	291,4	326,2	91,5	313,5	12,1	7,6	10,5	3,8
6	Male partner	351,1	421,5	81,2	402,1	11,9	10,5	14,6	1,9
	Female partner	323,2	431,7	115,3	385,7	13,7	11,4	10,5	2,5

The technique of physical fitness due to the development of coordination abilities. Couples were distributed on two groups at the following stage of researches – control and experimental, on three couples. Additional trainings for the development of coordination abilities which included at themselves a set of exercises were introduced in the training process of the experimental group. The development means of coordination abilities are presented in the Addition A.

The volume of training tasks for the development of coordination abilities was the following: the preparatory period made 40% of the general time of special physical preparation; the competitive period made 30% of the general time of special physical preparation; the transition period made 30% of the general time of special physical preparation.

Trainings in CG were given according to the program of preparation in sports dances which is recommended by the federation of dance sport of Ukraine; in the experimental group (EG) – according to the developed program of formation of special physical capacities of sportsmen due to the corresponding coordination abilities. During the research positive dynamics of sports results of sportsmen was noted that testifies to the prospect of the growth of their skill. Researches were conducted in dynamics with intermediate cuts of indicators of the general and special physical fitness of sportsmen. Groups were completed for the research taking into account the age of sportsmen and their qualification.

The program of preparation was aimed at the development of physical capacities of an organism of sportsmen. Experimental and control classes were given at 11 o'clock in the morning. The main (dancing) trainings began at 16 o'clock. Training took place three times for a week for 1,5 hours in all groups. Such lesson schedule answers the data of questionnaire of specialists in sports dances and is usual for sportsmen. In the course of each training sportsmen found time for studying and improvement of technique of special physical exercises during 30–50 minutes.

The repeated research of the development of coordination abilities was conducted in the control and experimental groups after carrying out the pedagogical experiment. The data on indicators are given in tab. 4 and 5.

Table 4

Indicator of coordination abilities in the control group after the experiment

Nº	The name of the test	\bar{X}	σ	cv (%)
1	Time of reaction to a light (hand), ms	285	13,2	5,2
2	Time of reaction to a sound (hand), ms	365,2	22,1	6
3	Time of reaction to a moving object, ms	85,3	10,5	12,3
4	Time of reaction of a choice, ms	322,5	15,3	4,7
5	An assessment of speed of movement of an object (error, %)	12,4	1,3	10,5
6	An assessment of size of the offered pieces (error, %)	9,2	1	10,8
7	Measuring of pieces (error, %)	11,5	1,2	10,4
8	Recognition of the offered angles (error, %)	2,3	0,2	8,7

By the results of the research in the control group the average value of reaction to a light made 285 ms, a standard deviation – 13,2, a variation coefficient – 5,2%, time of reaction to a sound – 365,2, a standard deviation – 22,1, a variation coefficient – 6%, time of reaction to a moving object – 85,3 ms, a standard deviation – 10,5, a variation coefficient – 12,3%, time of reaction of a choice – 322,5 ms, a standard deviation – 15,3, a variation coefficient – 4,7%, an assessment of speed of movement of an object – 12,4%; a standard deviation – 1,3, a variation coefficient – 10,5%, an assessment of size of the offered pieces – 9,2%, a standard deviation – 1, a variation coefficient – 10,8%, measuring of pieces – 11,5%, a standard deviation – 1,2, a variation coefficient – 10,4%, recognition of the offered angles – 2%, a standard deviation 0,2, a coefficient of a variation of 10%. The coefficient of a variation fluctuates from 4% to 12,3% among all indicators. The minor change of indicators of sportsmen is observed.

Table 5

Indicators of coordination abilities in the experimental group after the experiment

Nº	The name of the test	\bar{X}	σ	cv (%)
1	Time of reaction to a light (hand), ms	252	10,1	4
2	Time of reaction to a sound (hand), ms	332	15,2	4,5
3	Time of reaction to a moving object, ms	65,2	5,3	8,1
4	Time of reaction of a choice, ms	275,5	10,3	3,7
5	An assessment of speed of movement of an object (error, %)	8,5	0,7	8,2
6	An assessment of size of the offered pieces (error, %)	6,3	0,5	7,9
7	Measuring of pieces (error, %)	7,2	0,6	8,3
8	Recognition of the offered angles (error, %)	1	0,05	5

By the results of the research in the experimental group the average value of reaction to a light made 252 ms, a standard deviation – 10,1, a variation coefficient – 4%, time of reaction to a sound – 332, a standard deviation – 15,2, a variation coefficient – 4,5%, time of reaction to a moving object – 65,2 ms, a standard deviation – 5,3, a variation coefficient – 8,1%, time of reaction of a choice – 275,5 ms, a standard deviation – 10,3, a variation coefficient – 3,7%, an assessment of speed of movement of an object – 8,5%, a standard deviation – 0,7%, a variation coefficient – 8,2%, an assessment of size of the offered pieces – 6,3%, a standard deviation – 0,5%, a variation coefficient – 7,9%, measuring of pieces – 7,2%, a standard deviation – 0,6%, a variation coefficient – 8,3%, recognition of the offered angles – 1%, a standard deviation of 0,05%, a coefficient of a variation of 5%. The coefficient of a variation fluctuates from 3,7% to 8,3% among all indicators. The considerable changes of indicators of coordination abilities of sportsmen are observed. CV is much lower in this group, than in the control group.

As it is noted above, the investigated considerable changes of indicators of the development of coordination abilities are observed in the experimental group in comparison with the control group. It gives the chance to allow about action of the pedagogical experiment. These comparisons of the control and experimental groups are presented in tab. 6.

Conclusions. The importance of the level of development of coordination abilities in the improvement of special physical fitness at a stage of the previous basic preparation in sports dances was found as a result of the conducted research. The considerable changes of indicators of coordination abilities of sportsmen are observed. It gives the chance to allow about action of the pedagogical experiment.

The results of the testing of sportsmen of the experimental group showed the reliable changes under the influence of the program of special trainings. The positive dynamics of indicators which display the level of the development of coordination abilities of sportsmen was found.

The positive dynamics of sports results of sportsmen that testifies to the prospect of the growth of their skill was noted during the research. Introduction of the program of improvement of special physical fitness in practice of training of sportsmen of sports dances proved its efficiency experimentally. It is revealed on the basis of the conducted research: special physical fitness is the most significant at a stage of the previous basic training of sportsmen in sports dances; special physical exercises need to be applied constantly during trainings; improvement of special physical fitness of sportsmen at a stage of the previous basic preparation needs to be carried out due to the development of coordination abilities – special exercises are applied for this purpose.

Table 6

Indicators of coordination abilities in the control and experimental groups after the experiment

№	The name of the test	\bar{X}		σ		cv (%)		Reliable distinctions		
		C	E	C	E	C	E	t crit.	t gran.	P
1	Time of reaction to a light (hand), ms	285	252	13,2	10,1	5,2	4	17,7	2,23	>0,001
2	Time of reaction to a sound (hand), ms	365,2	332	22,1	15,2	6	4,5	3,5	2,23	>0,05
3	Time of reaction to a moving object, ms	85,3	65,2	10,5	5,3	12,3	8,1	36,4	2,23	>0,001
4	Time of reaction of a choice, ms	322,5	275,5	15,3	10,3	4,7	3,7	15,2	2,23	>0,001
5	An assessment of speed of movement of an object (error, %)	12,4	8,5	1,3	0,7	10,5	8,2	25,2	2,23	>0,001
6	An assessment of size of the offered pieces (error, %)	9,2	6,3	1	0,5	10,8	7,9	33,1	2,23	>0,001
7	Measuring of pieces (error, %)	11,5	7,2	1,2	0,6	10,4	8,3	14,2	2,23	>0,05
8	Recognition of the offered angles (error, %)	2,3	1	0,2	0,05	8,7	5	13	2,23	>0,05

This complex of physical exercises and tests is represented effective, and can be used for the correction of the training process, as the current control of a condition of physical fitness, for the selection in a national team, for the transition from one stage of a study to another. Exercises are carried out twice.

The systematization of the content of special physical preparation in sports dances at all stages of preparation is provided in the long term the **subsequent researches**.

Addition A**A SET OF EXERCISES WHICH WERE USED**

Exercise 1. Standing on one foot, having bent another and having raised it higher, to keep balance within one minute. To repeat the same on other foot.

Exercise 2. To execute the same exercise blindly within 30 seconds.

Exercise 3. Standing in a rank. A pass of a ball from hand to hand (to the right, to the left) in front of a breast, behind a back.

Exercise 4. S.P. – Stand in attack on the right foot, the left hand for the head, the right hand behind a back.

1–2 – A jump, to bend the left foot forward, hands up.

3–4 – Steps forward, hands on a belt.

5–6 – A jump, foot separately – feet together, hands in the parties, hands up.

7–8 – Turn on 180°.

Exercise 5. S.P. – The main stand.

1 – The right foot forward, to bend hands forward.

2 – Change of feet, hands down.

3–4 – Steps on a place.

Exercise 6. S.P. – The main stand.

1 – Turn on 360° on the right foot to the right, the left hand on a knee of the left foot.

2 – To straighten out the left foot to the left, the toe on itself.

3 – Left back cross, hands in front.

4 – A swing by the right foot to the right, hands down in the lock.

5–6 – Skip jumps of feet separately – together, hands in the parties, up, down.

7–8 – 2 Step backwards.

Exercise 7. Rotary movements in shoulder joints by the direct or bent hands.

Exercise 8. Jumps on a place on right foot, left foot, on two feet with advance forward, back.

Exercise 9. Jumps on a place on right foot, left foot, on two feet with turns on 90°, 180° and 360°.

Exercise 10. Shuttle run with jumps and turns.

Exercise 11. Balance on the right and left feet.

Exercise 12. Run by a "Snake"

Exercise 13. To put feet together, to extend hands in the parties. To rise on tiptoe and to stand in this provision during 10-15 seconds. To close eyes. To stand in this provision of 10-15 more seconds. Then to lower hands along a body and to

stand in this provision of 5-10 more seconds.

Exercise 14. To put feet together, hands on a belt. To rise on tiptoe and to make 4–6 fast inclinations forward, to horizontal position of a body. To repeat exercise blindly.

Exercise 15. To raise a knee of the left foot on belt level, having remained to stand on the right foot. To extend hands in the parties. To stand in this provision of 10-15 seconds. To close eyes. To stand in this provision of 10-15 more seconds. Then to repeat the same exercise by other foot.

Exercise 16. To put feet on one line. The right foot in front of the left foot so that a heel of the right foot touched fingers of the left foot. To put hands on a belt. To make on 6–8 inclinations to the left and to the right, keeping balance. To repeat exercise blindly.

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Received: 10.11.2015.

Published: 30.12.2015.

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