

**RELATIONSHIP BETWEEN SPECIAL PHYSICAL PREPAREDNESS
INDICATORS OF ATHLETES AND STRUCTURAL COMPONENTS OF
THE COMPETITION PROGRAM IN ACROBATIC ROCK AND ROLL**

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Purpose: to establish the relationship between the structural components of the competition program with the indicators of special physical fitness in athletes "main class contact style" in acrobatic rock and roll.

Materials and methods: the study involved 16 qualified athletes aged 14-17 years, 8 men and 8 women (8 sports couples). Research methods: analysis and generalization of data of scientific and methodical literature, pedagogical observation, pedagogical testing and methods of mathematical statistics.

Results: competitive programs and indicators of the level of special physical fitness of qualified athletes are studied. Reliable connections between the components of the competition program and indicators of special physical fitness have been identified and established. It is experimentally proved and mathematically confirmed that the developed and tested tests are the most informative for determining the readiness for competitive activities of qualified athletes and are objective criteria for

selection and orientation of athletes in the system of training and competitive activities in acrobatic rock and roll.

Conclusions: the obtained data systematize the means of special physical training of athletes and give the opportunity to plan the algorithm of correction and improvement of competitive programs of qualified athletes "main class contact style". Used by coaches of sports clubs to assess the state of fitness of athletes and improve the competitive programs of sports couples of the category "main class contact style" in acrobatic rock and roll.

Keywords: acrobatic rock and roll, "main class contact style", qualified athletes, structural components of the competitive program, special physical training, correlation analysis.

Introduction

The competition program of qualified athletes "Main Class Contact Style" in acrobatic rock and roll is based on the objectively existing laws of modern competition rules of the World Confederation of Acrobatic Rock and Roll [11], which have specific differences in certain categories. These patterns are due to factors that determine the effectiveness of competitive activities and the optimal structure of the competitive program, features of adaptation in this sport, means and methods of influence, individual characteristics of athletes, calendar of major competitions and their age to achieve the highest results at long-term sports improvement [1, 6, 9, 13].

In the works of leading experts, enough attention is paid to the problems of training athletes in acrobatic rock and roll [1, 3, 6]. At the same time it is necessary to find modern approaches to the organization not only of long-term training process [8, 9, 13], but also to assess the effectiveness of compiling, improving and correcting competitive programs in qualified athletes "Main Class Contact Style" in acrobatic rock and roll [5, 7]. The modern competitive program of acrobatic rock and roll is a high-intensity complex of continuous exercises, which includes the combination of acyclic movements with complex coordination, combines the sequence of the

obligatory "basic step" of rock and roll and its modification with acrobatic elements. made in contact and decorated with expressive movements.

One of the main tasks to be solved in the process of sports training of qualified athletes "Main Class Contact Style" is to achieve the required level of development of motor skills that carry the main load in this sport. [1, 6, 11, 17]. The solution of this problem is carried out within the framework of physical training, which ensures the formation of general and special training and their manifestation in the conditions of competitions. It is known that each of these, as well as other aspects of training, is combined into a complex complex aimed at achieving the highest sports results [2, 10, 19]. The degree of inclusion of various elements in such a complex, their relationship and interaction are determined by the laws of formation of functional systems aimed at the final, sport-specific effect of training and competitive activities [1, 7, 11, 16]. There is no doubt that acrobatic rock and roll forms its own special range of relationships and interrelationships of the structural components of the competition program and indicators of special physical training, accounting for which at all stages of long-term training can create favorable conditions for optimizing the training process and achieving high sports performance. Therefore, work in this area of research is relevant.

Purpose of the study - to establish the relationship between the structural components of the competitive program with indicators of special physical fitness of qualified athletes "Main Class Contact Style" in acrobatic rock and roll.

Material and Methods of research

Study participants. 16 qualified athletes aged 14-17 years (sports category CMS) voluntarily took part in the study and agreed to be examined: 8 men and 8 women (8 sports couples). Participants gave informed consent to participate and process the data.

The study was conducted from 2016 to 2019 on the basis of acrobatic rock and roll sports clubs in Ukraine.

Organization of the study. To solve these goals, research methods were used: analysis and generalization of data from scientific and methodological literature,

pedagogical observation, pedagogical testing, pedagogical experiment and methods of mathematical statistics.

Selection of tests to obtain information about the level of development of physical qualities was carried out on the basis of the analysis of the dominating motor mode of competitive exercises and specificity of acrobatic rock and roll, age of sportsmen and requirements of modern competition rules, and also on data of previously conducted research in complex coordination sports (gymnastics, sports acrobatics, sports aerobics, figure skating, etc.) [2, 5, 12]. Given this, to assess the special physical preparedness of qualified athletes "Main Class Contact Style", a set of control exercises (15 tests) was developed and used. They are presented in the works of the authors [12] and are all justified and meet the requirements of test standardization theory and sports metrology.

Determination of speed qualities: 1) running on the spot for 5 seconds (number of steps); 2) 10 forward bends from the position of the main stand, hands up [12].

Determination of speed and power qualities: 5) jumping up from a deep squat for 20 s (number of times); 6) 6 rock and roll jumping "basic steps" (s) [11]; 7) special rock and roll arms movements for 20 s (number of times); 8) "kick-step" for 20 s (number of times).

Determination of coordination abilities: 9) shuttle running with a change of direction (c) [12]; 10) performing the maximum number of turns on an inverted gymnastic bench. The number of turns (N) and the time (c) of their execution are registered [12]; 11) two front rolls, jump with a rotation of 540° , roll back ** (points); 12) "basic step" with skipping rope ** (points); 13) test for musicality ("kick-ball-change") (points) [11].

***Description of the test "two rolls forward, jump with a rotation of 540° , roll back," round".* Starting position - the main rack. Consecutively, without stopping, perform two forward rolls, jump up with a rotation of 540° (1,5 turns); roll back and "tour" rotation (jump up with 360° rotation).

Result: test performance was evaluated by 5 experts from 0 to 10 points (10 - 8 points - quality coordination, rotation and rotation with error-free switching between

exercises while maintaining jumping movements; 8 - 6 points - error-free switching between exercises, but with a violation of pace (stop between exercises); 6 - 4 points - turns are performed partially and with a violation of the pace). Of the 2 attempts, the best result was recorded.

***Description of the "basic step" test with a skipping rope.* Perform the "basic step" as required by the WRRC Rules [11] on skipping ropes.

Result: test performance was evaluated by 5 experts from 0 to 10 points (10 - 8 points - quality performance of the "basic step" with the preservation of jumping movements with a skipping rope; 8 - 6 points - error-free performance of the "basic step", but with violation of the pace of jumping movements with a skipping rope; 6 - 4 points - performance of the "basic step" in violation of the requirements and jumping movements with a skipping rope with a violation of the pace, stop during the test). Of the 2 attempts, the best result was recorded.

Determination of force: 14) performing the exercise "chair" (c) and determining special endurance: 15) IGST (%).

The structural components of competition programs were studied on the basis of competition video materials of different levels, according to the requirements of modern international competition rules [15] and on the results of electronic protocols of competitions of independent experts in this sport. During the pedagogical observation the following indicators were recorded: 1) acrobatic elements and combinations (number); 3) "basic step" (number); 4) dancing figures (number); 5) choreographic programs (4 groups) (number of exercises) [12].

Statistical analysis. The obtained data were subjected to statistical processing. The obtained material was processed using SPSS and Statistica programs [4, 14]; Spearman's correlation coefficient (r) and concordance coefficient were calculated.

Results of the research

The quantitative composition of the main structural components of the competitive program "Acrobatics", qualified athletes is investigated and given (Table 1).

Quantitative composition of structural components of the competitive program of qualified athletes "Main Class Contact Style" in acrobatic rock and roll (n=16)

№	Rank place in competitions	World Cup			Championship of Ukraine			
		I	II	III	I	II	III	
i.o.	Indicators of the competitive program							
1	Elements of acrobatics (number)	6	6	6	6	6	6	
2	Acrobatic combinations (number)	2	2	2	4	1	1	
3	"Basic step" (number)	6	6	6	6	6	6	
4	Dance figures (number)	7	4	5	4	4	5	
5	Choreography	1 group (changes with the basic step) (number)	6	5	4	5	6	4
6		Group 2 (variations of the basic step) (number)	3	2	2	1	1	1
7		Group 3 (dancing figures in contact without basic step) (number)	2	2	2	1	2	3
8		Group 4 (everything else) (number)	8	5	4	4	4	2

To identify the most informative indicators of the competitive program and to establish reliable links between indicators of special physical fitness, a correlation analysis was conducted. Figure 1 shows the correlation field of the structural components of the competition program, which revealed 11 of 28 cases of strong and 8 medium connections (statistically significant, $p < 0,05$).

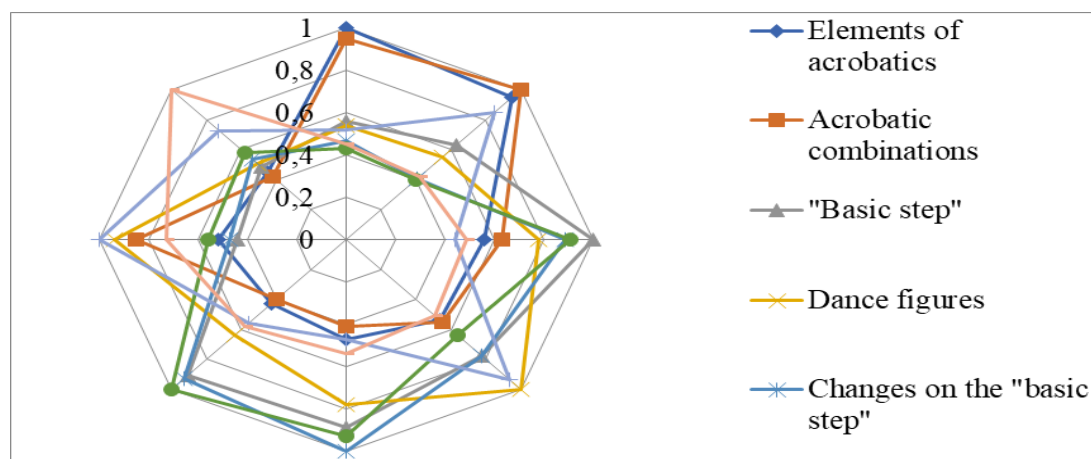


Fig. 1. Correlation field of structural components of the competitive program of qualified athletes "Main Class Contact Style" in acrobatic rock and roll

The graphic material is shown in Fig. 1 shows that the most informative and effective structural components of the competitive program of qualified athletes "Main Class Contact Style" in acrobatic rock and roll are: elements of acrobatics

($r=0,95$) and acrobatic combinations ($r=0,95$), "basic step" ($r=0,94$) and dance figures ($r=0,91$), changes with the "basic step" ($r=0,93$) and variations of the "basic step" ($r=0,94$), dancing figure in contact without the "basic step" ($r=0,93$), elements of choreography ($r=0,73$), which have the main load when performing competitive programs. These indicators are objective criteria for building, correcting and improving competitive programs "Main Class Contact Style" in acrobatic rock and roll, they are a guide for athletes and coaches in the system of training and competitive activities in acrobatic rock and roll.

Table 2 presents the correlation matrix of the relationship between the identified main structural components of the competition program and indicators of special physical preparedness of qualified athletes "Main Class Contact Style". As a result of correlation analysis in 57 cases strong and average correlation loadings are revealed. This is due to the fact that the special physical fitness of athletes and quality performance of the structural components of the competition program are interrelated and with the optimal distribution of special physical training in the training process effectively affect the effectiveness of competitive activities of sports couples. The results of the study are typical for high-quality, error-free execution of the structural components of the competition program in compliance with all the requirements of the judge's protocol.

Strong and statistically significant values of correlation coefficients (from 0.70 to 0,87) were established in 20 cases, which indicates a high degree of correlation between the studied parameters. In particular, this applies to the following correlations: "basic step" - "basic step with a skipping rope" ($r=0,87$); "Acrobatic combination" - "two rolls forward, jump with a rotation of 540° , roll back "tour" ($r=0,86$); "Elements of acrobatics" - "10 forward bends from the position of the main stand, hands up" ($r=0,84$); "Dancing figures" - "test for musicality ("kick-ball-change")" ($r=0,82$); "Changes with the basic step" - "maintaining balance after 3 turns" ($r=0,78$); "Variations of the basic step" - "jumping up from a deep squat for 20s" ($r=0,77$); "Dancing figures without the basic step" - "two rolls forward, jump with a rotation of 540° , roll back "tour" ($r=0,71$).

Table 2

Matrix of correlation dependence of indicators of competitive program and indicators of special physical fitness of qualified athletes "Main Class Contact Style" in acrobatic rock and roll(n = 16; p <0,05)

Indicators of the competitive program		Indicators of the competitive program								
		Acrobatic elements	Acrobatic combinations	"Basic step"	Dance figures	Changes with the "basic step"	Variations of the "basic step"	Dancing figures in contact without "basic step"	Elements of choreography	
		1	2	3	4	5	6	7	8	
Tests on special physical fitness	Indicators of special physical preparedness									
	Running on the spot for 5 seconds (number)	1	0.44	0.39	0.85	0.32	0.55	0.58	0.42	0.31
	10 forward bends from the position of the main stand, hands up (s)	2	0.84	0.72	0.23	0.20	0.52	0.33	0.17	0.22
	"Kick-step" 10 s (number)	3	0.49	0.14	0.42	0.59	0.58	0.47	0.49	0.56
	Dietrich falling stick grip (cm)	4	0.56	0.67	0.41	0.31	0.53	0.09	0.15	0.13
	Performing the exercise "chair" (s)	5	0.58	0.63	0.75	0.33	0.65	0.50	0.45	0.21
	Jumping up from a deep squat for 20 s (number)	6	0.75	0.71	0.73	0.47	0.47	0.77	0.41	0.34
	6 "basic rock and roll steps" (s)	7	0.03	0.44	0.82	0.17	0.57	0.64	0.46	0.28
	Special rock 'n' roll arms movements for 20 s (number)	8	0.15	0.17	0.38	0.66	0.19	0.44	0.55	0.53
	"Kick-step" for 20 s (number)	9	0.22	0.19	0.42	0.58	0.53	0.42	0.58	0.55
	Shuttle running with a change of direction 4x9 m (s)	10	0.44	0.55	0.36	0.42	0.62	0.53	0.38	0.70
	Maintaining balance after turns (c)	11	0.63	0.58	0.44	0.53	0.78	0.42	0.44	0.61
	Two rolls forward, jump with a rotation of 540 °, rollback "tour" (points)	12	0.81	0.86	0.48	0.33	0.70	0.32	0.71	0.51
	"Basic step" with skipping rope (points)	13	0.16	0.22	0.87	0.41	0.73	0.63	0.24	0.35
	Musicality test. Kick-ball-change (points)	14	0.13	0.55	0.82	0.82	0.49	0.55	0.47	0.50
Harvard Step Test Index (%)	15	0.13	0.73	0.65	0.55	0.22	0.23	0.33	0.53	

In 37 cases, the correlation coefficients were also statistically significant, but lower in their absolute value (from 0.50 to 0.68), namely, between the following: "AAcrobatic combinations" - "grip of a falling stick Dietrich" ($r=0,67$); "Dancing figures" - "special rock and roll arm movements for 20s" ($r=0,66$); "Basic step" - "IGST" ($r=0,65$); "Elements of acrobatics" - "maintaining balance after 3 turns" ($r=0,63$); "Dancing paired figures without" basic step "-" kick-step for 20s " $(r=0,58)$ "; "Changes on the basic step" - "running in place for 5s" ($r=0,55$); "Variations of the basic step" - "shuttle running with a change in the method of movement 4x9 m" ($r=0,53$); "Elements of choreography" - "test of musicality" ($r=0,50$). In general, the results of the study confirmed that the success of competitive activities of athletes in acrobatic rock and roll depends on the rational balance of the considered informative indicators of the competitive program, which harmoniously interact in a set of training activities, effectively affect the complex structure of training. The data obtained during the study should be taken into account when organizing and planning the training process.

Conclusions / Discussion

It was assumed that the correlation between the structural components of the competitive program and indicators of special physical fitness will reveal strong relationships. The obtained data systematize the means of special physical training of athletes and make it possible to plan an algorithm for correction and improvement of competitive programs of qualified athletes "Main Class Contact Style". The results of the study [2, 16, 20] complement the effectiveness of means and methods used in training to increase the level of development of physical qualities and dosage of load in the training process in complex coordination sports.

It is confirmed [2, 15, 18] that the means of special physical training used in the training process of qualified athletes contribute to the improvement of skills for mastering complex coordination movements of acrobatic rock and roll, developing the ability to maintain balance, skills of rotational movements, improving speed, power and speed-power abilities. Performing fast and complex movements in combination with acrobatic elements and combinations is impossible without

coordination, accuracy of movements and the ability to maintain balance. In this regard, special training plays an important role in the development of coordination skills in qualified athletes: space-time characteristics; ability to orient in space and to maintain balance; coordination of movements; flexibility, power, speed and speed-power abilities. The level of development of these qualities is interrelated with the qualitative performance of the constituent parameters of the competitive program of qualified athletes "Main Class Contact Style" and are manifested not in isolation, but in complex interaction.

It is mathematically confirmed that the most informative and effective structural components of the competitive program of qualified athletes "Main Class Contact Style" in acrobatic rock and roll are: elements of acrobatics and combinations; "basic step"; dance figures and elements of choreography, which have the main load when performing competitive programs.

It is experimentally proven that qualified athletes of the "Main Class Contact Style" to perform modern complex competitive programs need to have a high level of development of coordination skills, speed-power, strength and speed abilities. In addition, to be able to perform significant training and competitive loads, it is necessary to have a high level of special endurance.

The relationship between the structural components of the competitive program and indicators of special physical fitness was established. It was found that with the optimal distribution of means of special physical training in the training process of qualified athletes, effectively improves the performance of competitive programs of "Main Class Contact Style" in acrobatic rock and roll.

These indicators are a guide for athletes and coaches in the system of training and competitive activities in acrobatic rock and roll.

In the future of further research development of theoretical and methodological bases of construction, improvement and correction of competitive programs of qualified athletes of acrobatic rock and roll is provided.

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