

## COMPATIBILITY OF SPORTSWOMEN AT A SELECTION IN COMMANDS ON GROUP EXERCISES OF CALISTHENICS TAKING INTO ACCOUNT THEIR TECHNICAL AND SPECIAL PHYSICAL PREPAREDNESS

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**Annotation.** Efficiency of selection is grounded in commands on group exercises of calisthenics taking into account motive compatibility of sportswomen. It is assumed that motive compatibility of gymnasts will be the leading factor of increase of effectiveness of competition activity of command. 40 students took part in research. 56 trainers took part in the questionnaire questioning. It is suggested to carry out completing of commands on the basis of complex estimation of similarity of level of technical and physical preparedness of sportswomen. It is set that from 40 highly skilled gymnasts 68 % had a level of physical and technical preparedness above average. In preferable composition of command 13 sportswomen entered with the greatest indexes on the criterion of motive compatibility. It is set that motive compatibility is a meaningful criterion at a selection in commands on group exercises of calisthenics.

**Keywords:** group, exercises, artistic, gymnastics, technical, physical preparedness.

### Introduction

Training in group callisthenics exercises begins with the organization of team. Effective selection of gymnasts in the team is one of the key factors of successful performance of athletes in the group exercise [1, 3, 4, 8, 10]. Based on research V.M. Bolobana [2], the acquisition team must consider the following types of compatibility athletes as motor, functional, psychological and its morphological features. Specific requirements for the group exercises are different from the individual. In personal exercise competitive result, as a rule, is usually dependent on the level of individual technical skills of gymnasts. In group exercises each motor action solved the whole team collectively. To achieve high competitive gymnasts result, along with the individual one, it is necessary to demonstrate impeccable technique of motor interactions involving the transfer, transfer of objects to each other, support, coordinated synchronous or asynchronous operation, the ability to perform the exercises smoothly and consistently, with a single amplitude, one pace and rhythm [6, 7, 9]. In this regard, there is the task of achieving athletes similarity criterion of motor compatibility and related indicators of physical and technical preparedness. This is achieved by unifying the individual characteristics of athletes, proof of physical and technical condition, style, performance skills to a common standard [1, 8, 11].

Analysis of the question showed that the problem of effective joint activity of athletes in teams of group exercises poorly studied at this time. Due to this fact relevant become justification of motor compatibility of athletes as a key factor in the composition of the teams of group callisthenics exercises that would help to solve the problem of increasing the effectiveness of competitive activity.

The work performed in accordance with the consolidated research plan in the field of physical education and sport for years 2006-2010 of the Ministry of Ukraine for Family, Youth and Sports, theme 2.1.6 "Rational construction of the training process in sports gymnastics types for multi-stage training" and the consolidated research plan in the field of physical culture and sports for years 2011-2015 of the Ministry of Ukraine for Family, Youth and Sports theme 2.12 "Formation of multi-selection and orientation of athletes".

### Purpose, tasks of the paper, material and methods

*Purpose of research* – to study motor compatibility as a leading factor in the selection of athletes to the team of rhythmic exercises of gymnastics group.

*Methods.* Analysis of the scientific and technical literature, questionnaire, teacher testing, methods of mathematical and statistical treatment of the data.

*Organization of study.* The study involved 40 students of NUPESU. Among them, 4 Master of Sports of Ukraine of international class, 28 Masters of Sports of Ukraine and 8 candidates for Master of Sports of Ukraine. Also, the questionnaire involved 56 coaches, who have different levels of qualification (from the second to highest), teaching experience (3-39 years) and length of exercise training group (1- 25 years).

### Results.

Problem analysis showed that motor compatibility of gymnasts in the team is the basic condition that directs and regulates the whole process of learning compatible motor actions. It serves a significant factor contributing of athletes' harmony in work and expressed in the speed and efficiency of learning new exercises and dynamics to increase athletic achievements under intense of competitive struggle. This is achieved by a similar level of technical skill evident in gymnasts and uniformity, consistency, clarity, fusion of both synchronous and asynchronous movements, motor sportsmen interactions [1, 2]. The problem of compatibility is the main motive in the technical preparation of gymnasts and involves the formation of common to all team members of a high level of technical skill. Technical training of gymnasts in the group exercises aimed at solving a wide range of tasks. These include: improving of reliability of performance a competitive arrangements, ownership of technology subjects, mastering the technique of motor

interactions in high-level technical and choreographic training of gymnasts in combination with a high level of operational preparedness in competitive exercises [2, 6, 7, 8].

According to the questionnaire it was found that the coaches in leading selection criteria among the team in group exercises carried: the level of technical skill and physical properties, morphological characteristics, physiological characteristics. In their view, the greatest contribution to the result of competitive activity in group exercises have technical and physical training of gymnasts. According to coaches' view, motor compatibility in selection of group exercise is paramount. Second place, based on their experience, take morphological and functional compatibility, and the last – psychological (Table 1).

Table 1

*Relevance of compatibility due to selection of sportswomen in teams of rhythmic gymnastics group exercises (n = 56)*

Types of compatibility of group activity	Teaching experience			
	3 - 9 years (n = 20), W = 0,29		10 –39 years (n = 36) W = 0,14	
	rank	$\Sigma i$	rank	$\Sigma i$
Motor	1	34	1	65
Morphofunctional	3	60	2	93
Psychological	4	63	4	105
Functional	2	43	3	98

Practitioners' opinion confirm the results of conducted factor analysis. Analyzing 77 indicators used as criteria for selection of athletes in team of rhythmic gymnastics group exercises. These data were part of different kinds of compatibility: motor (21 indexes), morphological (30 indexes), functional (6 indexes), psychophysiological (10 indexes) and psychological (10 indexes).

As a result of factor analysis of the above parameters it was found five generalized factors that characterize the structure of the team selection (Table 2) and identify 72% of the variance of the analyzed indicators of different types of compatibility. The first factor that combines 22.3% of the total sample variance, describes the special physical and technical preparedness in the object. Therefore, this factor was named by the type of motor compatibility. The highest correlation coefficients were observed in terms of flexibility of the hip joints ( $r = 0,9$ ), the ability to maintain balance ( $r = 0,91$ ), hand muscle strength ( $r = 0,89$ ), leg muscle strength ( $r = 0,78$ ), back muscle strength ( $r = 0,72$ ) and abdominal muscle strength ( $r = 0,87$ ), in terms of speed and power abilities ( $r = 0,87$ ). Therefore, it was concluded that one of the most important criteria for the selection of athletes to participate in group callisthenics exercises is the level of their special physical and technical training with subjects.

Table 2

*Leading factors in selecting compatibility of athletes in team rhythmic gymnastics group exercises*

Criteria of selection	Factors				
	1	2	3	4	5
The flexibility of the hip joints	0,9	-	-	-	-
The ability to maintain balance	0,91	-	-	-	-
Power performance of different muscle groups	0,72 – 0,87	-	-	-	-
Technical training with subjects	0,7	-	-	-	-
The relative composition of fat and lean body mass	-	0,94; 0,7	-	-	-
Embracing size of different body parts	-	0,7 – 0,8	-	-	-
Somatotype	-	0,87	-	-	-
The level of kinesthetic sensitivity	-	-	0,97	-	-
Psychological characteristics of individuality of athletes	-	-	-	0,86	-
Indicators of bioelectric potentials of cardiac muscle	-	-	-	-	0,75
Contribution to the overall variance, %	22,3	21,2	11,3	9,1	8,2

In order to more accurately and objectively identify prospective gymnasts for training in teams in the group callisthenics exercises for signs of motor compatibility was conducted comprehensive testing of level of their special physical and technical preparedness. To determine the similarity of athletes were offered 21 motor tasks that were designed to determine the level of flexibility, coordination and speed-strength abilities, strength, the ability to maintain balance, and level of technical skill in the possession of objects. For comparison of different physical properties and the definition of the integral index of physical and technical training in the possession of objects results of all motor tasks were converted into scores (from 1 to 10).

As a result of this study it was found that the most skilled gymnasts developed special physical qualities such as strength (7,7; 1,53 points), passive flexibility of the spine (8,13; 1,63 points) and speed (7,5; 1,57 points). Less

developed were flexibility in the hip joints (7,0; 1,49 points), the ability to maintain balance (7,15; 1,82 points), power-speed (7,1; 1,9 points) and a knack for work with objects (6,84; 1,3 points). The value of the integral index of the special physical and technical training in the subjects was in possession within 7 points and correspond to the level of "above the average" according to the qualification standards. However, only three criteria indexes, according to the coefficients of variation ( $V=10 - 14\%$ ), were similar.

The rest 18 parameters - were characterized by high variability ( $V = 17 - 39\%$ ). This is due to various reasons. First, the athletes had different athletic skills, which imply different levels of technical readiness, and secondly, a territorial affiliation they were students of different gymnastic schools in the country, all of which, as the experience of observation, characterized by specific school movement, style and level of performance.

For the purpose of distribution of athletes using similarity measure results of pedagogical test was used tree clustering. By the method of join in a hierarchical tree it was identified 3 groups of gymnasts, results of educational testing of each who had a low degree of divergence. Thus, the first group included 13 athletes who have received the results of 21 motor tasks an average of 5,9; 1,09 points, indicating a low level of special physical and technical preparedness gymnasts ( $V = 15\%$ ). The second group included 14 athletes, the results of which showed the average special physical and technical preparedness gymnasts (7,1; 1,22 points;  $V = 14\%$ ). The third group is characterized by a high level of special physical and technical training (8,4; 0,9 points;  $V = 11\%$ ). It includes 13 athletes. It was gymnasts from the last group consist of a team of group exercise on the criterion of motor compatibility.

### Conclusions.

Found that motor compatibility is a leading factor in the selection of athletes to the commands of group callisthenics exercises. Studies have shown that high levels of flexibility in the hip joints, muscle strength of upper and lower extremities, the trunk, the ability to maintain balance, speed-strength abilities should be considered as criteria of motor compatibility of gymnasts in the selection of the team of rhythmic gymnastics group exercises.

*Prospects for research in this area.* Supposed to justify the effectiveness of selection in the team group callisthenics exercises based motor, psychological, interoperability and compatibility of its morphological features athletes.

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