

Improving the culture of performing competitive compositions by young gymnasts through the use of non-traditional means of training

Vasyl Sutula
Alfiya Deyneko
Olha Riabchenko

Kharkiv State Academy of Physical Culture, Kharkiv, Ukraine

Purpose: to develop and evaluate the effectiveness of methods for improving the culture of young gymnasts performing competitive compositions through the use of non-traditional means of training in the training process.

Material & Methods: the study involved 12 athletes 8–10 years old engaged in artistic gymnastics. To solve the set tasks, methods characteristic of theoretical and applied research in the field of physical education and sport were used. The analysis of literary sources is carried out to identify the features of the use of auxiliary (non-traditional) means in the process of forming the culture of movements of young gymnasts. Pedagogical methods (testing, experiment) were used to assess the level of formation of a culture of movements in young athletes based on an assessment of the manifestation of their coordination abilities. The methods of mathematical statistics were used to process the experimental material and assess the reliability of the data obtained.

Results: according to the results of the study, it was revealed that the use of auxiliary (non-traditional) means in the training process of young gymnasts contributed not only to the active development of coordination of their movements (orientation in space and time, stability to balance, etc.), but also allowed the level of culture of the performance of the basic elements of competitive compositions by them, had a positive impact on the results of their competitive activity.

Conclusions: the results of the whole complex of the conducted studies testify the effectiveness of the technique of increasing the culture of movements in young gymnasts by using nontraditional means in the training process.

Keywords: rhythmic gymnastics, young gymnasts, testing, non-traditional means, culture of movements.

Introduction

The modern stage in the development of rhythmic gymnastics is characterized by an increase in the level of performing arts athletes, the increasing complexity and entertainment of competitive compositions. This trend is conditioned by the rules of the International Gymnastics Federation (FIG), adopted for the period 2017–2020 [11]. The aggravation of the sports competition of the national teams leads to the attention of the trainers and scientists to increase the efficiency of the long-term training of athletes, the search for non-traditional means of their training, which contribute to more effective mastery of young athletes of various competitive exercises, their combinations and their performance of competing compositions in general. It should be noted that the performance of competing compositions and their elements is a reflection of the complex and fine coordination of the athlete's movements, their ability to convey emotions by performing compositions without objects and objects (rope, hoop, ball, club, ribbon), which is an important element of the gymnastic culture [6; 7; 9].

The provisions are formulated to highlight the need for research aimed at finding new, non-traditional means of training young gymnasts, because, since 1999, the rules of competition have changed five times (competition rules 1997–2000, 2001–2004, 2005–2008, 2009–2012, 2013–2016, 2017–2020). Changes in the rules of the competition and new requirements for competitive compositions of gymnasts have not been duly reflected in the regulatory documents govern-

ing the process of many years of training Ukrainian athletes involved in rhythmic gymnastics. This is due to the fact that the process of their preparation is carried out in accordance with the curriculum for rhythmic gymnastics for children's and junior sports schools, specialized schools of the Olympic reserve, schools of high sporting skills, which was adopted in 1999 [1]. The latest changes in the rules of competitions in rhythmic gymnastics [11] reduced the number of mandatory elements, included the performance of compositions of dance steps, increased the significance of the artistic component of the performance of competing compositions. According to experts [6; 8; 10 and others]. These changes include the increase of the entertainment of competing compositions, imposes special requirements on the artistic craftsmanship of athletes. In general, the competition composition should be a synthesis of the strength, beauty and elegance of movements, which is achieved through various forms of exposure to the natural attributes of athletes, that is, the forms of "culturing" (processing, facial, improvement) of the characteristics of their data by nature, including their coordination abilities that are the basis of the formation of a culture of performing exercises in rhythmic gymnastics [12].

It should be noted that in the annual cycle of training of athletes engaged in rhythmic gymnastics [1], only in the initial stage and the stage of preliminary basic training the emphasis is on the complex development of motor activity of gymnasts and the formation of an individual gymnastic style of exercising and general motor competence, that is, the formation of a definite level of gymnastics culture. Analysis of the curriculum

for rhythmic gymnastics [1] also indicates that the concept of "gymnastic culture" and its essence remains undiscovered. It is this theoretical and practical conflict caused by the relevance of this study.

Purpose of the study: to develop and evaluate the effectiveness of methods for improving the culture of young gymnasts performing competitive compositions through the use of non-traditional means of training in the training process.

Material and Methods of the research

The study involved 12 gymnasts who are engaged at the stage of preliminary basic training. The study used the following methods: theoretical analysis and synthesis of literary sources; pedagogical methods (testing, experiment) and methods of mathematical statistics.

An additional experiment lasted for the summer training cycle (from September 2017 to May 2018). Comprehensive changes in the culture of performing competitive compositions by young gymnasts were evaluated on the basis of a comparison of the results they showed at competitions held at the beginning of the experiment (October 2017) and at the end (May 2018).

At the beginning of the study, based on the assessment of the manifestation of the coordination abilities of young gymnasts, the level of their movement culture was determined. The use of a comprehensive test program and a scale of differentiated assessment of spatio-temporal parameters, resistance to posture (balance) preservation, orientation in space and a sense of rhythm made it possible to determine the level of development of coordination abilities of young athletes involved

in rhythmic gymnastics.

Based on the analysis of scientific and methodological literature [3; 4; 5; 13], coaching experience and the results of initial testing of the level of development of coordination abilities of young athletes, an experimental technique was developed aimed at improving their culture of movements through the use of non-traditional means in the training process. Experimental methods of sports training included the systematic and purposeful use of various sets of exercises in the training process on the Bosu Balance Trainer (BOSU) universal balancing platform, with tennis balls and on a gymnastic bench. The proposed method envisaged the following complications in mastering basic exercises in the BOSU simulator, with tennis balls and on a gymnastic bench: various changes in the position of the arms and head; use of asymmetric hand positions; exceptions to the floor support when performing exercises and the BOSU simulator and gymnastic bench; performing exercises without visual control and on the toes; the use of a variety of jumps, an increase in the number of repetitions, the time of holding the static position of the body and the amplitude of movements. It should be noted that in rhythmic gymnastics technical training is characterized by the complicated coordination actions of sportswomen, performed simultaneously with the manipulation of objects against the background of musical accompaniment. Therefore, an important element of the experimental technique was the use of musical accompaniment when performing the developed sets of exercises, which helped the gymnasts to develop artistic taste, cultivate a sense of beauty of movement, culture of behavior and was important in teaching movements, especially in developing expressiveness and artistry. In addition, the music created a positive emotional background to improve the performance and discipline of athletes.

Table 1
Changes in the level of coordination abilities of young gymnasts throughout the study ($t_{th}=2,07$ where $p<0,05$), (n=12)

Classification of coordination abilities	Test exercise	$\bar{X} \pm m$		results increase, %	t_p	p
		At the beginning of the experiment	At the end of the experiment			
Orientation in space and time	Juggling tennis balls with right hand, number of times	8,0±0,26	9,2±0,20	15%	3,49	<0,05
	Juggling tennis balls with left hand, number of times	2,9±0,20	4,2±0,35	44%	3,10	<0,05
Evaluation and regulation of space-time and dynamic parameters of movements	Shuttle run 3x10 m, s	10,8±0,11	10,6±0,07	2%	2,04	>0,05
	Pace with eyes closed on the right leg, s	41,4±0,71	46,3±1,06	12%	3,80	<0,05
	Pace with eyes closed on the left leg, s	28,2±1,43	34,7 ±1,40	23%	3,67	<0,05
Keeping posture (balance)	Test "Top", s	4,90 ±0,19	5,8 ±0,20	18%	3,18	<0,05
	Three rolls – pace on the right leg, points	7,5 ± 0,10	8,1 ±0,11	8%	3,91	<0,05
	Three rolls – pace on the left leg, points	5,3±0,20	5,9±0,24	11%	1,88	>0,05
Coordination of movements	Test exercise to determine motor memory, the number of attempts	2,6±0,24	3,8±0,18	46%	3,74	<0,05
Sense of rhythm	Clapping palms in a given rhythm, the number of tasks performed	2,2±0,14	2,5±0,13	14%	1,71	>0,05

Results of the research

To assess the level of formation of the culture of movements in athletes on the basis of an assessment of the manifestation of their coordination abilities, the gymnasts of the study group were tested at the beginning and at the end of the experiment. A comparative analysis of changes in the level of coordination abilities of young gymnasts during the study is presented in Table 1.

As can be seen from the presented materials (Table 1), in the test "Juggling tennis balls with right hand", the improvement in the result at the end of the study was 15%. The athletes showed the average result in this test – $8,0 \pm 0,26$ times at the beginning of the study and $9,2 \pm 0,20$ times at the end. The difference between these indicators in accordance with Student's criterion is statistically significant, since $t_p > t_{th}$ (Table 1).

When performing the test "Juggling tennis balls with left hand", the following dynamics of changes are observed: an improvement in the result was 44%; the average result was $2,9 \pm 0,20$ times at the beginning of the study and $4,2 \pm 0,35$ times at the end. Comparison of these results by the Student's criterion shows that the difference between the mean group values is statistically significant ($p < 0,05$).

The results of the study indicate that when performing the test "Shuttle run of 3×10 m, s", athletes showed a result of $10,8 \pm 0,11$ s at the beginning of the study and $10,6 \pm 0,07$ s at the end. The difference between these indicators is not statistically significant, because $t_p = 2,04 < t_{th} = 2,07$.

The following indicators of the development of the ability to maintain posture (balance) also underwent shifts over the study period. If at the beginning of the study gymnasts could perform the "Pace with closed eyes on the right leg" on average for $41,4 \pm 0,71$ s, then at the end this result increased to $46,3 \pm 1,06$ s. The result of the comparison of these indicators indicate a statistically significant difference, since ($p < 0,05$). The increase in the results shown by the gymnasts in this test during the study is 12%. Even better changes in the test results were observed when performing this test task for the left leg: at the beginning – $28,2 \pm 1,43$ s, at the end – $34,7 \pm 1,40$ s. In accordance with the student's criterion, the difference between averages is statistically significant ($p < 0,05$). Improving the result is 23% (Table 1).

Improvement of results by 18% occurred in the test "Top". The athletes show the results of this test (initial testing – $4,90 \pm 0,19$ s, retesting – $5,8 \pm 0,20$ s) indicates that the difference between the average results shown during the exercise on the ability to maintain posture (equilibrium) is statistically significant since $p < 0,05$ (Table 1).

To assess the development of the ability to maintain posture (balance) gymnasts who are engaged at the stage of preliminary basic training, performed the test "Three rolls – pace on the right leg". The average group results shown by the gymnasts were as follows: at the beginning of the study – $7,5 \pm 0,10$ points, at the end – $8,1 \pm 0,11$ points. The difference in the results is statistically significant ($t_p = 3,91 > t_{th} = 2,07$). When performing this test on the left leg at the beginning of the study, the gymnasts received a group average result of $5,3 \pm 0,20$ points, at the end – $5,9 \pm 0,24$ points. The difference in the results of the test exercise "Three rolls – pace on the left leg" is

not statistically significant ($t_p = 1,88 < t_{th} = 2,07$).

To assess the development of the coordination of movements in athletes 8–10 years old was used "Test-exercise to determine motor memory". Gymnasts showed the average result – $2,6 \pm 0,24$ attempts (initial testing) and $3,8 \pm 0,18$ attempts (re-testing). According to Student's criterion, the difference between these results is statistically significant, since $p < 0,05$. The increase in the results shown by the gymnasts during the study is 46%.

As the materials of the research show, in the test "clapping with the palms at a given rhythm" athletes showed an average result of $2,2 \pm 0,14$ tasks at the beginning of the study and $2,5 \pm 0,13$ tasks at the end. Comparison of these results by the Student's criterion shows that the difference between the mean group values is statistically insignificant ($t_p = 1,71 < t_{th} = 2,07$) (Table 1).

To assess the complex changes in the culture of performing competitive compositions by young gymnasts, a comparative analysis was conducted of the results shown by the gymnasts of the study group at competitions held in October 2017 and May 2018. The results are presented in Figure 1.

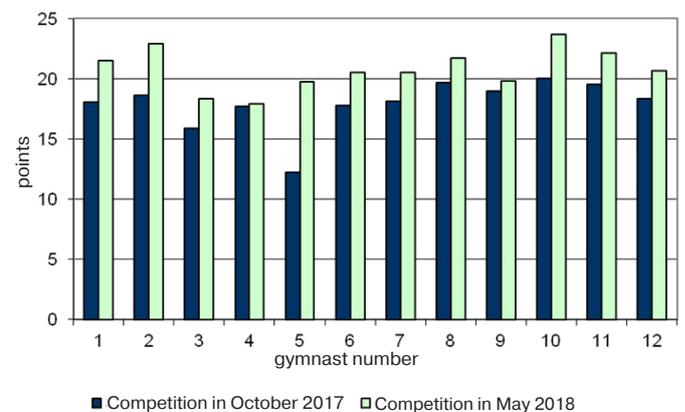


Figure 1. The results shown by young gymnasts in competitions in October 2017 (at the beginning of the experiment) and May 2018 (at the end of the experiment)

They testify that at the competitions that were held after the introduction of the technique, all athletes received the highest judicial scores for performing competitive compositions, which testifies to the effectiveness of the technique used by young gymnasts to improve competitive compositions through the use of non-traditional training tools in the training process.

Conclusions / Discussion

The results of the conducted research supplement the theoretical positions formulated in the works of I. A. Wiener [2], L. A. Karpenko, A. G. Rumba [6], A. Ya. Mullagildina [9], that rhythmic gymnastics belongs to those sports where an important role is played by the aesthetic meaning of the compositions and the manifestation of the artistic abilities of the athletes when performing competitive exercises. The results confirm the findings of experts [4; 6; 10; 13] that the modern stage of development of rhythmic gymnastics is characterized by an increase in the complexity of competitive programs, an increase in performance skills in strictly limited time parameters, which is determined by the rules of the competitions of the International Gymnastics Federation (FIG) [11].

The results of the whole complex of the research carried out confirm the conclusions of experts [2; 3; 4; 6; 10] that the aggravation of sports competition between the national teams of the world rhythmic gymnastics forces us to pay special attention to further improving the effectiveness of sports training and the search for additional funds that contribute to more effective mastery of motor skills and skills of young athletes. The effectiveness of the method of improving the performance of young gymnasts of competitive compositions through the use of non-traditional means of training in the training process is confirmed by the results of the study, namely, according to the results of individual multiathlon competitions in October 2017 and May 2018, gymnasts of the studied group improved their results by an average of 17,5%.

The results of the whole complex of the conducted research on the introduction of methods for improving the culture of move-

ments of young gymnasts through the use of non-traditional means in the training process indicate its effectiveness. The developed technique not only increases the level of development of coordination abilities in young gymnasts, but also contributes to the formation of their main components of the culture of performing competitive compositions: coordination of movements with different parts of the body, purity of performance, amplitude, plasticity, expressiveness of movements and harmonious combination of movements with music.

Prospects for further research consist in introducing into the educational and training process of the children sports schools, clubs and specialized educational institutions of the developed method of enhancing the culture of young gymnasts performing competitive compositions through the use of non-traditional means of training for its further improvement.

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Information about the Authors

Vasyl Sutula: Doctor of Science (Pedagogical), Professor; Kharkiv State Academy of Physical Culture: Klochkovskaya 99, Kharkiv, 61058, Ukraine.

ORCID.ORG/0000-0002-1108-9640

E-mail: vsutula@rambler.ru

Alfiya Deyneko: PhD (Physical Education and Sport); Kharkiv State Academy of Physical Culture: Klochkivska str. 99, Kharkiv, 61058, Ukraine.

ORCID.ORG/0000-0001-7990-7999

E-mail: snosocio@gmail.com

Olha Riabchenko: Kharkiv State Academy of Physical Culture: Str. Klochkovsky 99, Kharkov, 61058, Ukraine.

ORCID.ORG/0000-0003-2868-0637

E-mail: riabchenko.ov@gmail.com