



Study of physical fitness indicators in female athletes in artistic and aesthetic gymnastics: a comparative analysis

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Abstract

Objective of the study is to conduct a comparative assessment of the physical fitness indicators of female athletes in sports improvement groups in artistic and aesthetic gymnastics.

Methods and structure of the study. The research was conducted at the Gracia Sports School in Ekaterinburg, with the participation of 14 gymnasts aged 14-15 who were competing at the sports improvement stage (7 of them were involved in artistic gymnastics and 7 in aesthetic gymnastics).

To assess the level of preparedness, standards for general and special physical training approved by the Federal Standards of Sports Training for the sports of 'artistic gymnastics' and 'aesthetic gymnastics' were used.

Results and conclusions. Based on the results obtained, it was found that aesthetic gymnasts have higher physical fitness indicators compared to artistic gymnasts. The most significant differences are observed in strength and endurance indicators. It is assumed that the results will be useful for identifying dominant physical qualities, managing the training process, selecting athletes when transitioning from artistic to aesthetic gymnastics, and making changes to the training process planning in national teams for these types of gymnastics.

Keywords: *gymnastics, physical fitness indicators, sports selection, training process.*

Introduction. Modern artistic gymnastics, as an Olympic sport, is developing in line with the patterns inherent in high-performance sports. The main trends in its development are a focus on high athletic performance, an increase in the volume and intensity of training, an increase in the complexity of competition programmes with compositions saturated with acrobatic elements, and early specialisation with a focus on achieving high results at a young age for particularly gifted athletes [1]. Increasingly stringent requirements are also being imposed on the morpho-functional indicators of gymnasts [2]. According to T.S. Lisitskaya, only 'rare athletes, possessing natural grace and harmony in their movements, are able to demonstrate in competitions the expressiveness and emotionality inherent in this sport.'

In view of the above, artistic gymnastics is losing its mass appeal and becoming a sport aimed at achiev-

ing high sporting results that bring athletes fame and financial prosperity.

It is evident that in recent years, aesthetic gymnastics, which combines elements of dance, acrobatics and artistic gymnastics, has been gaining popularity. There are no age restrictions in this sport, and elements of excessive flexibility and risk are not encouraged. In this sport, not all girls have ideal figures [4].

The relevance of the study is due to the fact that in recent years new types of gymnastics have appeared, and some of them (in particular, aesthetic gymnastics) attract athletes from other types (for example, artistic gymnastics). In addition, due to the increasingly complex rules, artistic gymnastics is becoming an inaccessible sport, including for those seeking to obtain the title of Master of Sports of Russia. As a result, many athletes are switching to aesthetic gymnastics in

order to improve their skills and prolong their sporting careers.

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Methods and structure of the study. The research was conducted at the Gracia Sports School in Ekaterinburg, with the participation of 14 gymnasts aged 14-15 who were competing at the sports improvement stage (7 of them were involved in artistic gymnastics and 7 in aesthetic gymnastics).

To assess the level of preparedness, standards for general and special physical training approved by the Federal Standards of Sports Training for the sports of 'artistic gymnastics' and 'aesthetic gymnastics' were used: longitudinal split with the right and left legs from a 40 cm high support with a backward lean and a grip on the shin; cross split; from a supine position, legs forward, sit at an angle in a cross split, back vertical for 15 seconds; from a prone position, arms forward, parallel to each other, legs together, 10 backward bends in 10 seconds; jumping on both legs over a skipping rope with a double forward rotation for 20 seconds; from a standing position on the balls of the feet, arms to the sides, swing the right arm back, balance on one leg, the other leg in a 'ring' grip with the opposite arm.

Repeat the exercise with the other leg; balance on your toes with one leg forward and up, arms out to the sides. Hold for 5 seconds. Repeat with both legs; bend and extend your arms in a push-up position from a gymnastic bench; perform a bridge exercise on your knees. Starting position: narrow kneeling stance, legs together, arch back and touch the floor with your hands (hold position); forward roll, then backward roll (perform with both legs); side roll 'wheel' (perform 3 times in a row in a straight line). Perform on both sides^{1, 2}.

Results of the study and discussion. The study identified key factors influencing the athletic performance of gymnasts, including physical training, biological factors (such as genetic predisposition), social and psychological factors, and nutrition. We

paid particular attention to physical training, namely the development of strength, flexibility, endurance, and coordination skills. These physical qualities enable athletes to perform complex elements and demonstrate expressiveness and grace in their performances [3].

Figure 1 shows the average physical fitness results of gymnasts in sports improvement groups in aesthetic and artistic gymnastics. It can be noted that artistic and aesthetic gymnasts showed the same level in the following tests: longitudinal split with the right and left legs (5 points); cross split (5 points); 'from a standing position on the balls of the feet, arms out to the sides, swing the right arm back, balance on one leg, the other leg in a 'ring' position with the opposite arm' (5 points).

In three tests, aesthetic gymnasts have higher scores, namely in the following exercises: 'lying on your back, legs forward, sitting at an angle in a cross split' – 5.0 points for aesthetic gymnasts, 3.1 points for artistic gymnasts; in the exercise – narrow stance on knees, legs together, leaning back with hands touching the floor, aesthetic gymnasts scored 4.8 points, while artistic gymnasts scored 4.5 points.

Artistic gymnasts have a higher score in only one test – balance in a half-toe stand with one leg forward and up, arms out to the sides – 4.55 points, while aesthetic gymnasts score 4.15 points.

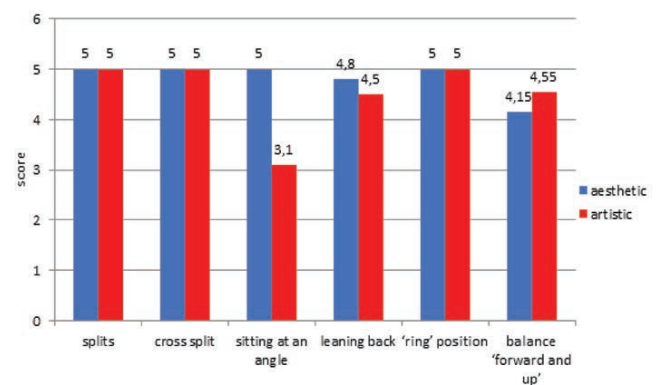


Figure 1. Results of physical fitness tests for gymnasts: splits, sitting, leaning and balance tests

Figure 2 shows the results obtained in the tests 'double forward jump rope with two feet' and 'arm flexion-extension in a push-up position from a gymnastic bench.' Athletes engaged in aesthetic gymnastics scored higher on both tests, by 27% and 19%, respectively.

¹ Order of the Ministry of Sport of the Russian Federation dated 15 November 2022 No. 984 'On the Approval of the Federal Standard for Sports Training in the Sport of Artistic Gymnastics' (Registered on 20 December 2022 No. 71709).

² Order of the Ministry of Sport of the Russian Federation dated 21 November 2022 No. 1037 'On the Approval of the Federal Standard for Sports Training in the Sport of 'Aesthetic Gymnastics' (Registered on 14 December 2022 No. 71502).

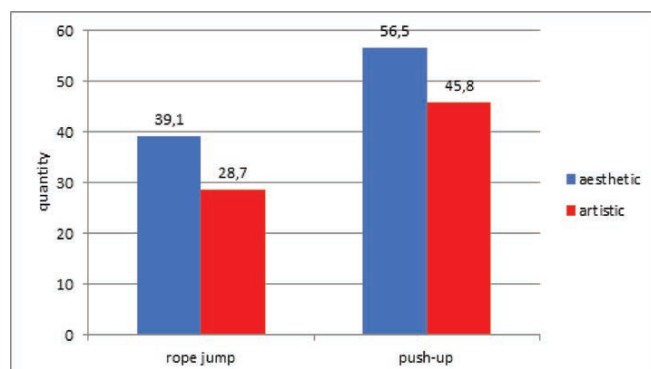


Figure 2. Results of physical fitness tests for gymnasts: jumps and push-ups

We believe that the higher results shown by aesthetic gymnasts in most tests can be explained by the fact that the competitive programme for this sport is more intense in terms of strength elements. It includes supports, pyramids, interactions, balance, jumps, turns and swings. Also, in aesthetic gymnastics, performances are longer than in artistic gymnastics.

Conclusions. Based on the analysis of the research results, we can note that aesthetic gymnasts have higher physical fitness indicators compared to artistic gymnasts.

The most significant differences are observed in the indicators of strength and endurance development in exercises such as: angle sit, back bends, jumping rope, and push-ups.

It was found that artistic gymnasts outperform aesthetic gymnasts only in the results of the test 'balance in a handstand with one hand forward and up, arms to the sides.' The rest of the test results are approximately the same for athletes in both groups.

The results obtained can be used to manage the training process of artistic and aesthetic gymnasts, as well as for sports selection and transition from artistic to aesthetic gymnastics.

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