

## METHODOLOGICAL APPROACHES IN THE TECHNICAL TRAINING OF JUNIORS III IN AEROBIC GYMNASTICS

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**Abstract:** Increasing the intensity in the execution of the elements of aerobic gymnastics requires a more difficult general and specific physical training to be able to cope with the requirements imposed by the scoring code. Over time, aerobic gymnastics has evolved and, at the same time, the elements of difficulty are more difficult to perform. The main purpose of this paper is to intervene in the initiation methodology and to improve the technical preparation of the elements imposed on juniors III in aerobic gymnastics with the help of specific physical training exercises. The research subjects were divided into two groups of 8 athletes, with the main inclusion criterion being at least 3 years of performance sports experience.

We conclude that the motor training of junior athletes influences the performance of mandatory elements in competition exercises, but the execution of required elements, in combinations or individually, can be influenced by external factors. The article highlights the need for more research at this level of performance in aerobic gymnastics, which points the possibilities of correct execution of the elements imposed by the scoring code related to the sport category.

**Keywords:** aerobic gymnastics, physical training, technical preparation

### Introduction

Performance aerobic gymnastics was born and developed as a result of the union, but also of the confrontation of the strongest international federations established on all the continents of the world for this sports branch. The dynamics of its extraordinarily accelerated evolution, the level of performances achieved worldwide, the popularity it enjoys all over the world, the World Championships, the European Championships, for juniors and seniors, the World Cup Competitions, the attention given to it at the level of the International Gymnastics Federation and the desire to promote among Olympic sports, require special efforts on the part of specialists to search, adapt, prospect and even intuit, objectively, the future.

Sports training in aerobic gymnastics has a staged character and takes place over a relatively long period that begins with childhood and ends with adolescence or even later.

The motor activity in childhood receives more and more attention from a scientific and pedagogical point of view these days (Haga, 2008).

The previous researches (Gaetano, Giugno, Scassillo & Di Tore, 2013) were oriented towards two completely opposite directions, namely towards an excessive technical training and on the other hand towards a maximum protection of the child, which did not present any guarantee regarding his motor development (Bressel, Yonker, Kras & Heath, 2007).

Increasing the intensity in the execution of the elements of aerobic gymnastics requires a more difficult general and specific physical training to be able to cope with the requirements imposed by the scoring code (Aerobic Gymnastics Code of Points 2013-2018). Aerobic gymnastics has evolved recently, the mandatory elements have a greater degree of difficulty, automatically becoming even more difficult to perform. However, a correct physical training can develop the athlete's ability to perform the required exercises correctly and more easily (Behm & Kibele, 2007; Straton, Ene-Voiculescu, Straton, Gidu, 2012). Not infrequently, in official competitions, the ties were made according to the criterion of difficulty, with athletes and coaches giving the necessary time to all aspects of training

(Jemni, Sands, Friemel, Stone & Cooke, 2006). That's why new methods and more effective means of physical training are urgently needed.

The specialized literature is poor in research and scientific studies related to the physical and technical training of juniors in aerobic gymnastics. A more detailed knowledge of the mechanisms underlying the interference between sports training components and athletes' results in official competitions is needed.

The main purpose of this paper is to intervene in the initiation methodology and to improve the technical preparation of the elements imposed on juniors III in aerobic gymnastics with the help of specific physical training exercises.

In this research, we started from the hypothesis that the controlled intervention in the physical training of juniors III in aerobic

gymnastics will influence the achievement of the technical elements imposed specific to the rigors of the scoring code.

**Material and Methods**

The research subjects were divided into two groups of 8 athletes, with the main inclusion criterion being at least 3 years of performance sports experience. The experimental group has an average age of 10.2 years, practicing aerobic gymnastics for 3.5 years. The control group has an average age of 10.5 years, practicing aerobic gymnastics for 3.8 years.

The athletes included in our research had the same training and testing conditions. The applied program consisted of exercises for specific physical development but in easy conditions, with weights, with elastic bands, on trellises, on the gymnastic bench (Fig.1). The program was applied 5 times a week for 30 min for 1 year.

Examples of exercises included in the applied program

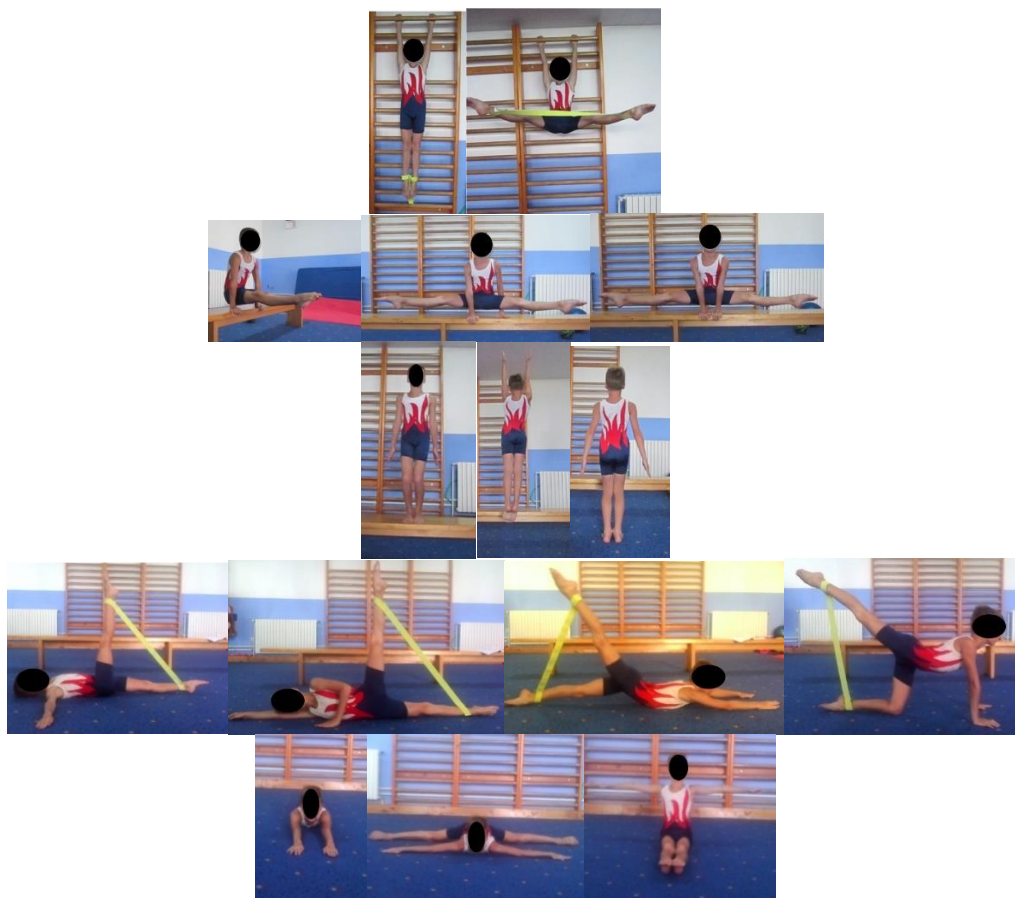


Fig. 1 Sequence from the training program

In order to check the level of motor qualities specific to the main mandatory groups in the compositions in the official competitions, we considered the following tests appropriate:

1. Motor tests: Push-ups (number of repetitions in 30 sec); Straddle (the time to maintain the correct position); Vertical rebound (Measure the distance in cm from the initial point to the highest point reached during the jump); Mobility test – the athlete sits down in the lateral split position on two parallel benches. The distance between the athlete's pelvis and the ground is measured in centimeters.

In order to verify the level of technical execution of the mandatory elements for this age category, each athlete executed four required elements, both individually (test 1) and in combination – steps taken on an eighth-transition-element (test 2) – for which three judges awarded marks between 1 and 10, following the calculation of their average.

2. Tests to verify the technical execution

A. "Push-up" the following were refereed:

- palms flat on the floor.
- during the push-up the trunk should be straight.
- legs extended and close.

• correct posture.

B. "Straddle – support" the following were refereed:

- position maintained for 4 seconds.
- legs extended, far apart and parallel to the floor.
- palms spread on the floor.
- correct posture.

C. "Air Turn" the following were refereed:

- the height of the jump and its amplitude.
- landing on both feet simultaneously.
- correct posture.

D. "Split through" the following were refereed:

- lateral split while sitting on the floor.
- its amplitude.
- correct posture.

The population of values was characterized by estimating the development trend of the combined quality discussed in this paper, using the formulas for calculating the mean, standard deviation and coefficient of variability. To emphasize the differences between means we used the "T" test. For these calculations we used the Office 2019/Excel package.

## Results

Table 1. Results of motor tests

Motor tests		Initial testing	Final testing
		X±Ds	X±Ds
Push up (repetitions no)	experiment	26.62±3.24	28.75±3.15
	control	27.5±1.92	28.37±2.26
Straddle (s)	experiment	20.62±4.24	23±4.47
	control	17.63±3.5	18.88±3.27
Vertical jump (cm)	experiment	20.75±4.13	22.62±3.88
	control	20±3.25	22.37±3.85
Mobility (cm)	experiment	16.75±5	9.75±3.57
	control	20.25±7.59	12.5±6.54

Table 2. Results of technical tests

Technical tests		Initial testing		Final testing	
		X±Ds		X±Ds	
		experiment	control	experiment	control
„push-up”	T 1	8.67±0.27	8.78±0.19	8.84±0.14	8.78±0.25
	T 2	8.48±0.2	8.33±0.3	8.62±0.14	8.38±0.29
„straddle – support”	T 1	9.36±0.33	9.19±0.28	9.45±0.32	9.26±0.28
	T 2	9.14±0.35	8.92±0.26	9.23±0.34	9±0.24
„air turn”	T 1	8.43±0.25	8.3±0.31	8.5±0.22	8.32±0.29

„split through”	T 2	8.09±0.15	8.05±0.2	8.17±0.17	8.13±0.19
	T 1	9.63±0.35	9.38±0.24	9.69±0.27	9.49±0.15
	T 2	9.43±0.34	9.24±0.32	9.55±0.3	9.31±0.26

Table 3. Results of independent T test – final testing

Independent T test	Push up (repetitions no)	Straddle (s.)	Vertical jump (cm)	Mobility (cm)	„push-up”		„straddle support”		„air turn”		„split through”	
					T1	T2	T1	T2	T1	T2	T1	T2
					0.27	2.1	0.12	1.04	0.52	2.11	1.19	1.57
>0.05	<0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05	

**Discussions**

The experimental group records at the initial testing, in all motor tests (tabel 1), individual and group values that demonstrate a good motor level of the subjects for this age.

The difference in means between the two tests is statistically significant, which shows us the progress of the experimental group from one test to the other.

The control group shows increases from the initial testing to the final testing, but the statistical significance is less in the push-up test and the maintained straddle (tabel 1).

Being tests aimed at the physical training of the subjects, physical training that is reflected in the achievement of the elements imposed for this category, the athletes of the experimental group as well as those of the control group were able to perform correctly and at a very good level the motor tests applied in this research.

The difference between the averages between the two groups, at the final test, shows statistical insignificance, which proves the very close values calculated for the 4 motor tests (tabel 3).

Checking the 4 mandatory elements in conditions very close to the competition, we noticed that the experimental group encountered difficulties in performing a simple "push-up" and a "split through" in combination, the difference in averages between the two tests highlighting this aspect (tabel 2). Compared to the control group, at the final test, the same two elements are this time present with statistical significance,

which proves to us that the level of the control group is very low in achieving these two elements, the athletes encountering difficulties in achieving them.

Even if the mobility of the athletes at the coxo-femoral level is good, as demonstrated by the motor tests, the achievement of the "split-through" element in combination with other elements and in competition conditions led to obtaining low grades. For the "push-up" element, the situation is similar, because for an execution to be properly scored, the athlete must be balanced, lower the body in a controlled manner up to a maximum of 10cm from the ground. These requirements are often not met in competition conditions, with the athlete trying to be on the musical phrase or failing to balance in order to lower the body in a controlled manner and receive the appropriate score.

Thus, the training of these athletes must be carried out in competition conditions most of the time, because at this age the competitive experience is very little, and the simplest elements can be missed.

These values are in agreement with the conclusions of the study by Mertashl, Rohani, Farzaneh, Nasiri (2015) according to which "specific training in aerobic gymnastics, (independent of growth and maturation) causes positive changes in motor abilities in 10 - 12 year old boys".

**Conclusions**

The current methodology proposes for the childhood period a training approach based on

two fundamental principles: polyvalence and multilateralism.

The basic training in terms of physical preparation is a clear benchmark in the correct development of the athletes and in the performance of the competition exercises according to the category in which they compete (Popescu, 2005; Stone & Kilding, 2009).

In this context, through our research, we were able to observe that competition situations change the execution of the elements at the age of juniors most of the time. The motor training of junior athletes influences the performance of the mandatory elements in the competition exercises, but the execution of the required elements, in combinations or individually, can be influenced by external factors. We believe that more research is needed at this level of performance in aerobic gymnastics, which highlights the possibilities of correct execution of the elements imposed by the scoring code related to the sports category.

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