

Exogenous factors of rhythmic gymnastics development in modern conditions

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Abstract

Objective of the study is the methodological substantiation of external factors of influence that determine the direction of the pedagogical algorithms of the training process in rhythmic gymnastics at the present stage of sports development.

Methods and structure of the study. A meta-analysis of a vast amount of information obtained by researchers and specialists in the field of rhythmic gymnastics was carried out by combining data into a single set of information array with subsequent correlation, regression analysis and approximation of the data obtained. *r*-indices were chosen as indicators for evaluating the results. The interpretation of the obtained effect was carried out in the context of a separate study in comparison with previous studies.

Results and conclusions. Identification of factors of external influence proves the prospects of pedagogical corrections of the training process of female athletes at the present stage of development of this sport. Taking into account the influence of external factors on the training process in rhythmic gymnastics is manifested in a decrease in the volatility of sports training through the systematic solution of multifactorial problems of technical training of gymnasts.

Keywords: *rhythmic gymnastics, technical training of female gymnasts, factors of external influence.*

Introduction. The generalized data of meta-studies aimed at studying the drivers of the development of Russian sports in conditions of macrosocial instability prove the need for operational training corrections of strategic technologies and methodological infrastructure for training athletes [1, 4, 6]. Training corrections involve a purposeful change in methodological approaches and resource functionality of the training process under the influence of external and internal factors that determine the direction, nature and depth of the impact of training technologies [3, 5].

Recently, changes in rhythmic gymnastics are associated with the influence of exogenous factors that fix the rethinking of the resource functionality of the training process and gymnast competitions [2]. The structure of the world rhythmic gymnastics is characterized by the emerging trend of autonomization

of two directions: cultivated by the FIG and the All-Russian Federation of Rhythmic Gymnastics [7].

Identification of external influence factors influencing the forecasting and alignment of training process technologies is one of the main priorities in developing a strategy for the preparation and competitiveness of female athletes. Taking into account the technological, structural and institutional factors that determine the trends and direction of the development of rhythmic gymnastics is an original platform for the management approach, as well as a multidimensional method that allows you to radically improve the technical preparedness of athletes through corrections in the methods of the training process. Training corrections are considered as a purposeful change in methodological approaches, with the goal of achieving a different quality of the



functioning of rhythmic gymnastics from the point of view of the prospects for its development as a sport.

Objective of the study is the methodological substantiation of external factors of influence that determine the direction of the pedagogical algorithms of the training process in rhythmic gymnastics at the present stage of sports development.

Methods and structure of the study. The research methodology is based on the approach of systemically interacting factors. A meta-analysis of a vast amount of information obtained by researchers and specialists in the field of rhythmic gymnastics was carried out by combining the data into a single set of information array with subsequent correlation, regression analysis and approximation of the data obtained. r -indices were chosen as indicators for evaluating the results. The interpretation of the obtained effect was carried out in the context of a separate study in comparison with previous studies.

The objectives of the study were:

1. Structured review of the conducted studies.
2. Generalization and interpretation of adaptive impact factors.
3. Approbation of technological algorithms of pedagogical corrections in response to the influence of external factors in modern rhythmic gymnastics.

The experimental part of the study was carried out with the participation of gymnasts 15.5 ± 0.5 years old, working according to the program of masters of sports.

Appeal to meta-analysis is justified by the need to study the established axioms in the training of athletes, as well as the growing amount of information on the problem under study.

Results of the study and their discussion. Monitoring of scientific literature data on the expert platform of the All-Russian Rhythmic Gymnastics

Federation showed that corrections of methodological approaches are applied when the effective functioning of the training system is disrupted or in order to intensively increase the competitiveness of Russian gymnasts in the international arena. This requires the governing bodies of the female athletes training system to diagnose the current problem situation in at least two aspects:

- evaluation of the functioning of the current training model within the framework of the existing or introduced set of relevant criteria, in particular in the format of the binary relation "efficiency - inefficiency";
- identifying methods of training corrections depending on the function of sports achievements, reduced to minimizing destruction and maximizing the effectiveness of functioning.

Based on the results of the correlation and regression analysis, the rank structure of factors influencing the methodological and technological component of the training process in rhythmic gymnastics at the present stage was identified (see table).

The stimulating effect of the development factors of modern rhythmic gymnastics is manifested in the response technological decisions of the coaching staff to improve the training process and create innovative algorithms for the training of gymnasts. Pedagogical corrections introduced into the modern training process have touched on the concentration of target settings, integration and synchronization of training types with the detailing of the structural elements of competitive compositions. Actual training corrections are focused on achieving organic technical complexity, dynamism of compositional elements, a high degree of confidence and variability in manipulating work with objects, creating extraordinary artistic images by constructing new complex elements and connections with musical support.

Rank structure of external factors of influence in rhythmic gymnastics ($n = 56$; $W > 0.77$)

Rank place (significance)	Факторы	Ranked index (%)
1	The organicity of technical complexity, the integration of the most complex elements into the plot fabric of the composition	27,9
2	Extreme diversity and high degree of dynamism of compositional elements	22,1
3	Achieving the highest level of virtuosity, expressiveness and integrity of the competitive composition	16,7
4	Creation of extraordinary artistic images by constructing new complex elements and connections with musical support	13,3
5	Achieving a high degree of confidence and variability in the manipulation of objects	11,2
6	Activation of perception and mental activity in the process of synchronizing the elements of the body and juggling with the object	8,8



The rapid increase in the number of technically complex elements is not an end in itself. The focus of compositional solutions on problems of a synthetic type determines the achievement of organic technical complexity, the integration of the most complex elements into the plot-musical fabric of the composition. Polarized training for the development of combined body difficulties ensures the growth of performance skills in performing elements from different structural groups - for balance (0.424), rotations (0.543), jumps (0.598). Accented work on combined difficulties of the body without changing the supporting leg induces an improvement in the coordination structure of movements with a demonstration of high amplitudes (0.612) and power abilities of the legs (0.556).

The extreme diversity and high degree of dynamism of the compositional elements represent a dynamic component of the training resource base. It focuses on the development of case technologies for the development and maintenance of body balance, dynamic performance of non-standard rotational and rolling movements, new variations of throwing movements and catching an object. Achieving the expected shifts in the dynamic segment of composite elements is accompanied by an increase in the technical performance of turns in attitude by 720 with an unstable balance from 15.28 to 18.65 points (0.645) among gymnasts; lifts from fingers with a throw of two clubs with a twist in the horizontal plane from 16.34 to 19.64 points (0.678).

The need to demonstrate the highest level of virtuosity, expressiveness and integrity of the competitive composition actualizes the intensification of mastering figure movements and the formation of plastic expressiveness. The overall synergy of the development of technical functionality is formed through the variable development of various ways of moving gymnasts: dance tracks, jump series, acrobatic elements in the stalls. The increase in the qualitative state of the gymnasts' technique with the saturation of the compositions with expressive elements connected in a single storyline is estimated much higher on the scale of the newly introduced competition rules. Accordingly, the amplitude-frequency modulation of movements (flexion-extension, turns, rotations) tends to the maximum value of the indicators.

The design of extraordinary artistic images through the construction of new complex elements and connections with musical support is focused on creating

an emotionally moving image based on personal perception of music, expression and expressiveness. Harmonization of individual movements and musical accompaniment provides parametric adjustment of the artistic contour of the performance of the composition and the manifestation of the gymnasts' motor talent, which is confirmed by positive changes in musical accent (0.487), motor expressiveness (0.548) and improvisational component (0.456).

The operational focus of the factor of high confidence and variability of manipulations with objects is affiliated with three directions for improving the functionality of object technology. The basic configuration of the factor launches several adaptation trajectories: training exercises with objects with the addition of static elements; mastery and improvement of directions (trajectories) of body movements with catching an object; combination of object work and precision of dance steps.

Consistency in improving the indicators of maintaining a stable balance when performing basic movements with objects is manifested in the supercompensation of high balance, right to the side by 135° with a windmill in a horizontal plane (0.612); balance "pass" on the half-finger with the rotation of the rope "eight" on both sides (0.702).

Parametric regulation of the "sliding" effects of catching an object by various parts of the body is characterized by the adaptation of spatial-vestibular and coordination mechanisms. In particular, improving the accuracy of throwing and catching a hoop in a jump (0.453); split-somersault forward and catching the hoop with legs (0.411); throwing-rolling the ball over the chest and catching with the legs (0.567) allow us to judge the activation of the regulation systems and the growth of the adaptation reserves of the gymnasts.

An investigative sign of the effectiveness of pedagogical corrections is an increase in the quality of the coordination structure of enhanced body movements accompanying the movement of the object; catching an object with a complicated position of the hands behind the back, under the foot; jumping over a moving object; curly movements with an object (spirals, snakes, mills).

Synchronization of the movements of different parts of the body of athletes with the work of the apparatus increases the technical readiness on the basis of the intellectualization of the mental operations of the gymnasts. This is confirmed by the improvement in the performance of the "Cossack" jump with a 180 turn with a mill with maces in a horizontal plane by 6.7



± 0.3 points; throwing two clubs with chain-catching in the wheel by 5.4 ± 0.2 points.

The development and improvement of basic elements with apparatus synchronously with elements of an acrobatic nature increases the efficiency of selective study of problematic segments of the gymnasts' technical readiness.

Conclusions. The identification of external influence factors makes it possible to stimulate the deployment of additional reserves for improving technical readiness in rhythmic gymnastics. The results obtained prove the prospects of pedagogical corrections of the training process of female athletes at the present stage of development of this sport.

Taking into account the influence of external factors on the training process in rhythmic gymnastics is manifested in a decrease in the volatility of sports training through the systematic solution of multifactorial problems of technical training of gymnasts.

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