Improving jump training based on body difficulty requirements in gymnastics

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Abstract

Objective of this study is to improve physical fitness indicators related to complex body elements in rhythmic gymnastics by applying a specialized set of exercises to develop jumping skills in gymnasts.

Methods and structure of the study. As part of the research methodology, an assessment of the current level of jumping training of the participants was carried out at the initial stage. At the second stage, a set of tools aimed at developing jumping abilities was integrated into the training program, including exercises with a rope with and without additional weight, as well as performing jumps that meet the requirements of the International Gymnastics Federation (FIG).

Results and conclusions. The results of the study showed that the use of the proposed set of exercises for the development of jumping training contributes to the formation of an improved functional state in gymnasts. This, in turn, leads to significant progress in terms of special endurance, speed, strength, and speed-strength characteristics necessary for successful rope jumping in accordance with the regulations of rhythmic gymnastics competitions.

Keywords: *physical fitness, rhythmic gymnastics, jumping skills, set of exercises, training program, development of jumping abilities, functional state, special endurance, progress.*

Introduction. Non-objective training in rhythmic gymnastics is a process of improving the "Body Difficulties" included in the technical regulations of the International Gymnastics Federation FIG [5]. Body Difficulties are assessed by the D panel of judges based on the current score minus possible deductions [3]. One of the components of non-objective training is jumping training. A jump is the body's overcoming of space as a result of pushing off from the support. Structurally, jumps include the phases of preparation for the jump (run-up), push-off, flight (taking shape) and landing.

The basic characteristics for evaluating jumping elements are a certain and fixed flight shape, as well as a sufficient flight height.

Jumping elements can be performed with a push-off with one or two legs, with or without rotation, in a series or separately [4].

The determining physical qualities in the performance of jumping elements are the strength and speed of muscle contractions [1]. At the moment of push-off, the direction of efforts is of an overcoming nature. The precise coordination of strength, speed and rhythm of movements is of decisive importance.

Analysis of scientific literature and training activities of gymnasts shows that jump training of gymnasts is not systematic [2]. With a shortage of training time, specialists give preference to compositional training aimed at improving the competitive composition, without paying due attention to individual aspects of sports training. As a result, the limited technical training does not allow gymnasts to fully compete in competitions.

Objective of the study is to increase the level of non-objective training according to the regulations of Body Difficulties in rhythmic gymnastics by introducing a set of means of jump training of gymnasts.

Methods and structure of the study. The experiment, which lasted 4 months, involved 24 gymnasts performing in group exercises according to the program of candidates for master and master of sports.

At the first stage, pedagogical testing of the level of jump training of gymnasts was carried out. Test tasks included 4 exercises for the development of strength, speed-strength, speed qualities and special endur-

ance. At the second stage, a set of jumping training tools was introduced into the gymnasts' training process, including two exercise blocks.

Block 1 – jumping training tools with a rope using weights and without them:

- 5-10-minute running with a rope from one foot to the other or on both feet; no stops are allowed during the run; a catch is considered a mistake; when a catch is performed, 50 double jumps over the rope are added;

- combinations of jumping over the rope with acceleration for 20 seconds: jumping on two feet, jumping from one foot to the other, jumping with double rotation;

- double jumps with forward, backward, cross rotation of the rope; when performing double jumps with forward rotation of the rope, a minimum of 50 jumps are counted; the total number of other types of jumps with double rotation depends on the level of fitness of the gymnasts;

- jumping with a rope folded in half, with forward and backward rotation.

Block 2 - means of non-objective training, including "Body Difficulties" - jumps in accordance with the FIG technical regulations:

- combinations of small jumps used to prepare for the performance of "Body Difficulties" - jumps;

- jumping elements without bending the torso backward and turning in a step, touching, pushing off with one or two legs, different legs;

- jumping elements with bending the torso backward without turning: in a step, arching, touching, arching, pushing off with one or two legs, different legs;

- jumping elements with turning without bending the torso backward: jete en turnan, jete en turnan touching;

- jumping elements with turning and bending the torso backward: jete en turnan arching, jete en turnan touching;

- combinations of jumps in a circle in a row without stopping along the perimeter of the competition area.

The complex was used in the preparatory period of the annual cycle in the preparatory part of the training session with the tasks of increasing jump readiness, the level of development of special physical qualities and technical skill of gymnasts.

Results and conclusions. Upon completion of the study, a repeated test of the level of jump readiness of gymnasts was conducted. Significant differences were established at the significance level of $p<0.05$ (see table).

During the experiment it was revealed that under the influence of the complex of jump training means a new functional state of the gymnasts was achieved, which is expressed in the greatest increase in the indicators of special endurance in performing jumps with a step jeté en tournant in a circle from 10.7±0.22 to 15.9±0.20 times.

The increase in the energy cost of jumping loads stimulates the reserve capabilities of the speed-strength qualities of the gymnasts in performing jumps over a rope with double rotation from 26.1±0.57 to 31.4±0.28 times at $p<0.05$.

The transition to a new speed mode is due to the increase in speed qualities when performing jumps over a rope from foot to foot with acceleration from 18.1±0.33 to 21.3±0.19 times at $p<0.05$.

Synchronization of a certain and fixed flight form with a sufficient flight altitude ensured an improvement in the strength indicators in raising legs while hanging on a gymnastics wall from 7.1±0.48 to 11.3±0.29 times. The reliability of differences was determined at the significance level of $p<0.05$.

The developed set of jump training tools helped coaches choose their own concept of the training process and ensured a sustainable level of development of special physical qualities and technical skills of gymnasts.

Conclusions. The use of a set of jump training tools fills the competition composition with more complex jumping elements and ensures a sustainable increase in the level of athletic skill of gymnasts. The developed set of exercises allows you to effectively

Dynamics of indicators of physical readiness of gymnasts

Indicator	To	After	P-value	
Hanging leg raises on a gymnastic wall, number of times	7,1±0,48	11,3±0,29	3,03	< 0,05
Jumping rope with double rotation, number of times	26,1±0,57	31,4±0,28	6,00	< 0,05
Jumping rope from foot to foot with acceleration, number of times	18,1±0,33	21,3±0,19	5,16	< 0,05
Jumps with a step jeté en tournant in a circle, number of times	10,7±0,22	15,9±0,20	6,10	< 0,05

solve the problems of athletic training of gymnasts and make timely adjustments to the training process.

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