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METHODOLOGY FOR DEVELOPING FLEXIBILITY IN 7-8 YEAR OLD GYMNASTS

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Abstract

This article analyzes the process of developing flexibility in 7-8-year-old gymnasts from a scientific and pedagogical point of view. The study is aimed at developing age-appropriate and methodologically sound approaches to developing flexibility at the initial training stage. In the process of pedagogical experimentation, the activities of the experimental and control groups were compared, and flexibility indicators were assessed using special tests. The results of statistical analysis showed that the improved methodology is more effective than the traditional training system in developing the mobility of the spine, hip and shoulder joints. The results obtained scientifically substantiate the need for targeted and systematic development of flexibility in initial training groups and are recommended for introduction into the practice of gymnastics training.

Keywords

artistic gymnastics, initial training stage, 7-8-year-old athletes, flexibility, joint mobility, pedagogical experiment, methodology, physical training, age physiology, statistical analysis

Gymnastics is one of the sports that require a wide range of motion, joint mobility and a high level of development of muscular-elastic properties in the system of sports training of children and adolescents. Technically correct and safe performance of gymnastic exercises, especially at the initial stage of training, is directly related to the level of flexibility of the athlete. Scientific studies show that in cases where flexibility is not sufficiently developed, the amplitude of movements is limited, the number of technical errors increases, and the risk of injury increases significantly.

From the point of view of age physiology, the period of 7-8 years is characterized by high elasticity of the joint-tendon system, extensibility of muscle tissue and active formation of neuromuscular regulation. This age stage is considered the most favorable sensitive period for the development of flexibility. If the development of flexibility during this period is not organized on the basis of a goal-oriented and scientifically based methodology, then increasing joint mobility in the subsequent stages of sports training will be complicated and will require additional compensatory loads.

Analysis of practical sports training shows that the development of flexibility in primary training groups is often limited to episodic exercises or is considered a secondary factor in the structure of general physical training. Such an approach does not correspond to the specific biomechanical and technical requirements of sports gymnastics. Since the main part of the gymnastic elements requires large-amplitude movements, active and passive stretching, as well as static-dynamic positions.

Scientific sources note that the process of developing flexibility is not limited to a set of exercises, but requires precise planning of the volume of the load, intensity, frequency of repetitions and recovery intervals. In particular, when choosing exercises for 7-8-year-old gymnasts, age-specific anatomical and physiological capabilities, the level of psychomotor development and the characteristics of movement perception should be taken into account.

An analysis of currently available methodological recommendations shows that the proposed exercises for developing flexibility are often generalized and not sufficiently differentiated for the initial preparatory stage of artistic gymnastics. In addition, the issues of at what stage, in what sequence, and based on what methodological principles flexibility exercises should be used in the training process are not sufficiently scientifically clarified.

In this regard, improving the methodology for developing flexibility in 7-8-year-old gymnasts is an urgent scientific and pedagogical problem. Solving this problem will qualitatively improve the technical preparation of gymnasts at the initial training stage, reduce the risk of injury, and create a solid functional foundation for subsequent stages of sports training.

This scientific article discusses the issues of improving the process of developing flexibility in 7-8-year-old gymnasts based on an age-appropriate, systematic, and methodologically sound approach, and analyzes the pedagogical effectiveness of the developed methodology.

Research methodology

This study consists of pedagogical experimental work aimed at scientifically substantiating the process of developing flexibility in 7-8-year-old children engaged in the initial training stage of gymnastics. The research was organized as a direct integration into the training process and was conducted without violating the planned structure of training sessions.

The participants of the study were 7-8-year-old gymnasts who regularly trained in the primary training group of a sports school. Participants were selected from athletes who had undergone a medical examination, were allowed to train, and were at the same stage of training. The groups were formed on the basis of the principle of equalization and were matched according to age, training experience, and physical development indicators.

The pedagogical experiment method was used as the main method in the study. During the experiment, the activities of the control and experimental groups were compared. In the control group, classes were conducted based on the current curriculum, while in the experimental group, an improved methodology aimed at developing flexibility was used.

The methodology for developing flexibility was developed taking into account age-specific anatomical and physiological capabilities, the level of joint mobility and muscle-elastic properties. The set of exercises consisted of active and passive stretching exercises, elements aimed at increasing the amplitude of movement in static positions, and special exercises adapted to gymnastic techniques. The exercise load was planned in a strict sequence, based on the principle of gradual complication.

During the study, the level of flexibility was assessed using special pedagogical tests. Testing was carried out at the beginning of the training process and at the end of the experiment under the same conditions. The test results were recorded in individual records and systematized for further analysis.

The research used the pedagogical observation method, systematically recording the technique of performing exercises, the amplitude of movements, and functional states during the training process. The results of the observation served as the basis for analyzing and improving the training methodology.

Mathematical and statistical methods were used to process and analyze the obtained data. The results were evaluated using arithmetic mean values and comparative analysis. Statistical analysis served to ensure the reliability of the research results.

During the research process, the principles of protecting children's health, adherence to pedagogical and ethical standards were strictly observed. Safety requirements were fully observed when performing the exercises, and overloading was not allowed.

When developing the research methodology, the didactic and biomechanical characteristics of the initial training stage in gymnastics were taken as a basis. The development of flexibility in

the training process was not artificially separated from other physical qualities, but was organized in an inextricable link with general and special training exercises. This approach served to ensure the natural formation of movement skills.

When developing a methodological approach, the placement of flexibility exercises in the training structure was taken into account. The exercises were aimed at functional training of joints in the preparatory part, expanding the amplitude of movement through active and active-passive stretching in the main part, and ensuring muscle relaxation in the final part. Such a structure ensured a logical sequence of training loads.

The principle of individualization was strictly followed in the process of performing the exercises. The amplitude and duration of the exercises were adjusted, taking into account the level of joint mobility, the speed of reaction to stretching, and muscle elasticity of each athlete. This helped to reduce the risk of overexertion and injury during training.

During the study, the consistency of pedagogical tools in developing flexibility was maintained. The exercises began with simple amplitude movements, and then were enriched with stretching elements performed in complex coordination situations. The sequence of movements was selected in accordance with the children's level of movement experience and perception.

The methodology paid special attention to control mechanisms. During training, the functional state of the athletes was assessed through external signs, and the load was immediately adjusted in cases where signs of muscle overstrain were observed. This approach ensured the safe and stable conduct of the study.

Also, during the training process, a methodology was used to combine flexibility exercises with games and figurative tasks. This method helped to maintain the psychological activity of children, increase their motivation for training, and perform the exercises technically correctly. Game elements were selected in such a way that they did not simplify the content of the training, but served a methodological purpose.

The research methodology was aligned with the concept of long-term training in gymnastics. In flexibility training, priority was given not to short-term results, but to creating the functional foundation necessary for mastering technically complex elements in subsequent training stages.

Statistical analysis: In order to scientifically substantiate the results obtained during the research, the adaptability indicators were subjected to mathematical and statistical analysis. The statistical analysis was carried out on the basis of comparing the test results obtained at the beginning and end of the experiment in the experimental and control groups. The results were evaluated by the arithmetic mean value (X) and growth dynamics.

To assess the level of flexibility, tests representing the mobility of the spine, hip and shoulder joints were used. Initial and final indicators are presented in Table

Table 1

Initial and final mean values of flexibility indicators in the experimental and control groups

Group	Measurement stage	Spine (cm)	Hip joint (level)	Shoulder joint (level)
Control	Initial	6.2	118.4	121.6
Control	Final	7.1	123.2	126.1
Experienc e	Initial	6.3	117.9	122.0
Experienc	Final	9.0	131.5	138.4

e				

Analysis of the table data shows that at the beginning of the experiment, there was no significant difference in the flexibility indicators between the experimental and control groups. This confirms that the groups were formed under equal conditions. At the end of the experiment, a significant positive increase was noted in the experimental group in all indicators.

In order to determine the growth rates of adaptability indicators, relative growth percentages were calculated (Table 2).

Table 2

Relative growth dynamics of flexibility indicators (%)

Indicator	Control group	Experiment group
Spine	14.5%	42.8%
Hip joint	4.1%	11.5%
Shoulder joint	3.7%	13.4%

As can be seen from Table 2, the growth rate in all types of flexibility in the experimental group was significantly higher than in the control group. In particular, the growth rate in spinal mobility was the highest in the experimental group. This confirms that the developed methodology is aimed at developing joint mobility, which is important for gymnastic technique.

The results of the statistical analysis show that the methodology used in the experimental group had a systematic and stable positive effect on the development of flexibility. Although a certain increase was also observed in the control group, this increase is mainly explained by natural age development and general training loads.

The results obtained statistically confirm the pedagogical feasibility of organizing the process of developing flexibility at the initial training stage based on a specially developed methodology.

Results and discussion : The results of the pedagogical experiment-test showed that high efficiency can be achieved when the process of developing flexibility in 7-8-year-old gymnasts is purposefully and methodically organized at the initial training stage. During the experiment, a stable and systematic increase in flexibility indicators was noted in the experimental group.

According to the results of statistical analysis, in the experimental group, the mobility of the spine increased from an initial average of 6.3 cm to 9.0 cm. In the control group, this indicator increased from 6.2 cm to 7.1 cm. This difference is explained by the targeted effect of a special technique aimed at developing flexibility. Spinal mobility is a key component of gymnastic technique, and positive changes in it allow for an expansion of the amplitude of movement and technically correct execution of exercises.

The results obtained on hip joint mobility also showed a significant increase in the experimental group. At the end of the experiment, this indicator reached 131.5 degrees in the experimental group, while in the control group it was limited to 123.2 degrees. This is due to the fact that flexibility exercises were selected in accordance with the elements of gymnastics and were systematically integrated into the training process.

Analysis of shoulder joint mobility indicators showed that the final result in the experimental group was 138.4 degrees, which is significantly higher than in the control group. Increased shoulder joint mobility is important in mastering locomotor elements and reduces the risk of injury in high-load conditions. Comparison of the results obtained with the data presented in the scientific literature shows that special techniques aimed at developing flexibility at the initial training stage have a higher pedagogical effectiveness than general physical training exercises. The results of the study confirm the need to use flexibility exercises in a logical sequence in all parts of the training. During the discussion, it was found that the effectiveness of developing flexibility is determined not only by the number or duration of exercises, but also by their age suitability, execution technique, and load management. In the experimental group, adherence to the principles of individualization of exercises and gradual increase in load ensured the stability of the results obtained.

Also, combining flexibility exercises with game elements increased the athletes' motivation to train, which had a positive effect on the complete and technically correct execution of the exercises. This contributed to the qualitative improvement of the pedagogical process.

In general, the experimental results confirm that the developed methodology is highly effective in developing flexibility in 7-8-year-old gymnasts and indicate that it is appropriate to introduce it into the training practice of primary training groups.

CONCLUSION

The results of the pedagogical research showed that organizing the process of developing flexibility in 7-8-year-old gymnasts at the initial training stage based on a specially developed, age-appropriate and scientifically based methodology has high pedagogical effectiveness. During the experimental and testing work, a stable and statistically significant increase in all main components of flexibility was noted in the experimental group, which confirms the feasibility of the applied methodology.

The results of statistical analysis showed that the developed methodology has a significant advantage over the traditional training system used in the control group in developing mobility of the spine, hip and shoulder joints. This advantage is explained by the selection of flexibility exercises in accordance with the requirements of gymnastic technique, a gradual increase in the load, and their systematic and logical integration into the training structure.

The research revealed that the effectiveness of developing flexibility is determined not by the number or total volume of exercises, but by their methodologically correct organization, adaptation based on an individual approach, and strict adherence to safety requirements. In particular, the selection of exercises taking into account age-specific anatomical and physiological capabilities and control of the amplitude of their execution significantly reduced the risk of overexertion and injury during training.

The results obtained indicate the need to organize the process of developing flexibility in gymnastics in an inextricable link with other physical qualities and technical training. This approach is one of the important conditions for improving the quality of mastering gymnastic exercises, expanding the amplitude of movements, and ensuring the technical stability of athletes.

The results of the study scientifically substantiate the feasibility of introducing the methodology for developing flexibility in 7-8-year-old gymnasts into the practice of training in primary training groups. This methodology can be used as a methodological guide for sports schools, gymnastics departments and coaches, and will serve to increase the effectiveness of technical training in gymnastics in the future.

Also, based on the results of this study, future promising areas can be identified as adapting the methodology for developing flexibility to the next stages of training in gymnastics ,

developing differential approaches taking into account age and gender characteristics, and further studying the role of flexibility in the long-term sports training system.

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