

Improving the skills of performing complex coordination movements in young gymnasts with the use of multimedia technologies

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Annotation. The article describes the importance of using computer technology in training in rhythmic gymnastics training groups, as well as the development and implementation of qualitatively new methods and scientific research into the training process using modern technologies in improving the skills of performing complex movements in young gymnasts used on different stages of the formation of the technical skills of athletes.

Keywords: information technology; multimedia systems, graphic modeling; animation of graphic models; video footage; analysis of biomechanical characteristics

It is difficult to imagine a modern strategy for the development of a system for training highly qualified athletes without using the achievements of scientific and technological progress. The main place in the implementation of this strategy is given to the rapid introduction of the latest technical and information solutions, including information and multimedia technologies, into the training system.

The widespread introduction of strict anti-doping control has significantly limited the possibilities of biochemical methods to stimulate the performance of athletes. Existing physiological methods for expanding the functional reserves of the body also do not allow today to count on a significant breakthrough in the field of cardinal improvement in the methods of training athletes. That is why specialists today are working hard to find new, previously unused, reserves to achieve ever higher sports results (Furaev, 1996).

Considering all aspects of the training of athletes, in all cases, when organizing their educational and training process, it is still necessary to put their technical training at the forefront. However, at the same time, in order to provide an effective methodology for this type of training, it is necessary, first of all, to consider the content of technical training in a new way from more modern theoretical positions and technical capabilities. The problem lies in the fact that in the methodological support of the training process of highly qualified athletes in most sports, the main emphasis of training is usually aimed at increasing the functional capabilities of athletes and there are practically no special developments in the field of methodology for improving their technical skills (Shestakov, 2006; Starikov, 2010). While modern information technologies allow you to significantly adjust the training process and accelerate the acquisition of sustainable skills

In this regard, there is a need to change the content and methods of teaching various techniques based on the practical use of information technologies,

multimedia systems, graphic modeling in training activities, which emphasizes the relevance of our work.

In addition, the focus on early specialization of young gymnasts raises questions for the sports pedagogical science about the effective use of teaching methods and the rational distribution of training means, as well as the study of issues of consistent and high-quality, phased mastering of the exercises of the qualification program. At the same time, multimedia tools can provide significant assistance in solving these issues (Song, 1997; Sukhachev, 2011).

Studying the technique of performing various exercises and conducting a biomechanical analysis of motor actions with the help of animated graphic models will allow avoiding physical overstrain and optimizing the physical activity of trainees, and implementing an individual approach to the physical education of athletes.

An important role in the information support of the training process is played by video materials, which allow the most visual presentation of information related to dynamic processes, for example, when teaching various motor actions, analyzing biomechanical characteristics, tactical actions, etc. Such materials can be used both independently in the form of a separate thematic video film, and as components of the corresponding software and pedagogical tools (Turaeva, & Kamardinova, 2021). With the advent of digital video cameras and special programs for processing digital video information (WindowsMovieMaker, AdobePremiere, PinnacleStudio, UleadVideoStudio, Sony Vegas, etc.) that allow capturing, editing and outputting video information to various media (CD, DVD, videotape), the work of creating didactic materials has become much easier. with the inclusion of video information.

In this regard, multimedia teaching and control programs are of particular interest. The structure of training programs is determined by their tasks, which in this case are as follows:

1. Presentation in multimedia mode of the main phases of movement.
2. Modeling the effective technique of an athlete, taking into account his biomechanical parameters.
3. Control and self-control of the technical readiness of female athletes.

Thus, educational multimedia programs, depending on the tasks of the educational and training process, can be used as a simulator, a training system, used in diagnosing and assessing the level of knowledge and skills.

In this regard, the attractive development of a methodology in such technical and aesthetic sports as gymnastics, which is also one of the mass physical and sports sports, is one of the important tasks of the population.

In this regard, the purpose of our work is to substantiate the possibilities of using computer technologies in training in rhythmic gymnastics training groups, as well as to develop and introduce qualitatively new methods and scientific research into the training process using the above technologies in improving the skills of performing complex movements in young people. gymnasts used at different stages of the formation of the technical skills of athletes.

Gymnasts of the II category 2011-2013 were the object of the study. birth, the third year of study as part of the UTG-2 Children's Sports School of the city of Tashkent.

The peculiarities of the experimental methodology for training gymnasts were the use of audiovisual means in technical training, in particular, videos with a recording of the studied technical elements with the possibility of slow-motion viewing and an electronic training program. These tools are a vivid example of a visual teaching method with elements of visualization of technical elements and ideomotor training.

To assess the special technical readiness of the gymnasts, such indicators as throwing the hoop in the lateral plane and catching without the help of the hands, rolling the ball over the arms and chest from the left and right hands, two-stroke "mill" (with maces), horizontal «snake» along air standing on half toes.

Also, in the experimental and control groups, statistically significant differences were recorded between the results at the beginning of the study and at the end for all control tests of special technical preparedness.

The results of these tests of the experimental and control groups are presented in Table 1. The table shows that the level of special technical readiness of the gymnasts of the experimental and control groups did not differ significantly before the pedagogical study. After applying the experimental methodology in control tests on special technical readiness, statistically significant differences were recorded between the control and experimental groups ($p < 0,05$).

Table 1

The results of the assessment of the special technical readiness of gymnasts of the II category

Test	Stage	Experimental group		Control group		R
		$X \pm \sigma$ (Ы)	v (%)	$X \pm \sigma$ (Ы)	v (%)	
Throwing the hoop in the lateral plane and catching without the help of the hands (number of times)	Before exp-t	8,9±0,54	6,05	9,5±0,8	8,4	< 0,05
	After exp-t	14,6±0,49	3,35	12,3±3,16	25,7	
	t-test	2,27				
Rolling the ball over the arms and chest from the left and right hands (number of times)	Before exp-t	2±0,77	38,7	2,1±0,53	25,6	<0,05
	After exp-t	4,8±0,4	8,3	3,2±0,74	23,4	
	t-test	5,96				
Two-stroke «mill» (points)	Before exp-t	1,7±0,45	26,9	1,9±0,3	15,78	<0,05
	After exp-t	4,7±0,46	9,75	3,5±0,5	14,28	
	t-test	5,59				
Horizontal «snake» in the air while standing on the toes (points)	Before exp-t	2±0,44	22,36	2,1±0,3	14,28	<0,05
	After exp-t	4,8±0,4	8,83	3,7±0,45	12,38	
	t-test	5,71				

The results obtained made it possible to reveal that the students of the experimental group had significant changes in all the studied indicators for special technical training.

This can be explained by the fact that in our methodology, a prerequisite was the use by athletes in individual training of daily viewing of video materials, in

particular, videos with a recording of the studied technical elements with the possibility of slow-motion viewing.

It should be noted that the implementation of this technique does not require significant material costs. To shoot videos, you need a camcorder (analogue, digital, or web cam) or a digital camera that can shoot movies with sufficient quality. The resulting video materials must be digitized (if the camera is analog) and subsequently processed on a computer for ease of use in the created multimedia training materials (combine or cut video fragments, provide them with titles, overlay sound, etc.).

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