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IMPROVING THE METHODOLOGY OF TEACHING BADMINTON TO STUDENTS AT HIGHER EDUCATION INSTITUTIONS

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ABOUT ARTICLE

Key words: badminton, higher education students, physical education, badminton teaching methodology, technical training, tactical training, technical and tactical actions, motor skills, training process, physical qualities.

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Abstract: This article examines ways to improve the methodology of teaching badminton to students at higher education institutions, with a particular focus on the use of modern pedagogical approaches and effective instructional tools during the training process. The teaching process was organized around the gradual acquisition of badminton-specific technical skills, the development of specialized physical and coordination abilities, the formation of technical and tactical skills, and the integration of theoretical knowledge with practical skills. The study aimed to determine the positive impact of the improved teaching methodology on students' ability to perform badminton techniques correctly and accurately, make independent decisions in game situations, improve their physical fitness, and enhance the effectiveness of their motor activity.

Introduction. Relevance of the Research Topic. At present, improving the process of teaching badminton to students at higher education institutions, organizing training sessions

in accordance with students' physical fitness levels and individual capabilities, and employing modern pedagogical approaches and effective teaching tools are of great importance. At the same time, issues related to mastering badminton-specific technical and tactical skills, developing motor abilities and skills, scientifically organizing the educational and training process aimed at improving physical qualities, and enhancing its effectiveness have not been sufficiently studied. In this regard, there is a need for a scientific investigation into improving the methodology of teaching badminton to students at higher education institutions.

Aim of the Research: To develop a methodology for teaching badminton to students at higher education institutions.

Research Methods: The study employed the analysis of scientific and methodological literature on improving the methodology of teaching badminton to students at higher education institutions, pedagogical observation, pedagogical testing, analysis of physical development and physical fitness indicators, a pedagogical experiment, and mathematical and statistical methods for processing the research results.

Research Objectives: To develop a set of specialized exercises aimed at developing technical motor skills and abilities, as well as improving students' physical and coordination abilities in the process of teaching badminton at higher education institutions; to determine the optimal ratios of training loads; and to evaluate the effectiveness of the improved teaching methodology through a pedagogical experiment.

Research Methods and Materials. In order to improve the effectiveness of teaching badminton to students at higher education institutions, a methodology for organizing the training process, purposefully distributing and planning training loads was developed and implemented in practice. This methodology was designed taking into account students' age-related characteristics, physical fitness levels, motor abilities, and the specific patterns involved in mastering badminton techniques.

The study focused primarily on developing students' basic knowledge, motor skills, and abilities specific to badminton, including racket grip, stroke techniques, movement around the court, receiving and returning the shuttlecock, and the ability to move appropriately in different game situations. Particular attention was also paid to developing speed, agility, coordination abilities, and special endurance, which are essential for effectively mastering technical skills. The results of the pedagogical experiment confirmed that the special exercises, active games, and technical training methods incorporated into the developed teaching methodology contributed to the proper and consistent acquisition of badminton-specific motor skills, their

effective application during gameplay, and the systematic improvement of students' physical fitness.

It is well known that the higher the intensity and duration of a training load, the more pronounced its training effect. From this perspective, during general physical training, it is important to increase the training load to a level approaching the maximum capacity of athletes in accordance with their functional capabilities, while simultaneously extending the duration of its impact. This approach contributes to improving physical performance, strengthening the muscular system, and enhancing the adaptive capacity of the cardiovascular and respiratory systems in young badminton players.

To achieve these objectives, eight stations (exercises) were selected for the circuit training sessions. The exercises performed at each station were developed in accordance with the leading components of general physical fitness. The duration of work at each station was approximately one minute, of which 50 seconds were allocated for performing the exercises, while the remaining 10 seconds were designated for short-term rest and transition to the next exercise. This work-to-rest ratio enabled athletes to adequately adapt to the training load while maintaining proper exercise technique.

The total work duration across the eight stations was designed to approximate the average duration of a badminton match. This ensured the transfer of general physical training exercises to competitive activities and facilitated the application of physical fitness improvements to sports performance. Such an organization of training loads during circuit training sessions contributed not only to the development of general physical abilities in young badminton players but also to maintaining work capacity throughout the training session and improving their resistance to fatigue. As a result, the circuit training sessions implemented at the basic training stage contributed to improving the overall physical fitness levels of young badminton players. The specially developed set of circuit training exercises is presented in the figure.



Figure 1. Set of Special Circuit Training Exercises.

This approach made it possible to significantly improve training effectiveness and laid a solid foundation for subsequent stages of specialized and technical-tactical training. It also ensured the scientific validity of the training process and contributed to the sustainable development of athletes within the long-term training system. The results of the pedagogical experiment demonstrated that, when teaching badminton to students at higher education institutions, repeatedly performing technical strokes at the same pace over an extended period may lead to insufficient improvement in motor skills. Therefore, it is considered appropriate to divide complex technical movements into separate structural elements, improve them progressively, and focus on performing them under optimal conditions of speed and physical effort. Badminton-specific strokes and court movement activities have a complex coordinative structure. Their effective mastery is achieved through the consistent improvement of individual components of motor activity. At the same time, in order to develop the integrated structure of technical movements, their constituent elements must be taught in an interconnected manner. Thus, the process of teaching badminton to students at higher education institutions should be based, on the one hand, on developing integrated motor skills and, on the other hand, on the purposeful improvement of individual movement components. To implement this approach, the scientific selection and application of technical training methods appropriate to students' physical fitness, individual capabilities, and motor experience are of particular importance. The rational selection of training methods is one of the key factors in ensuring the effective acquisition of badminton technical skills, their correct application during gameplay, the stability of motor skills, and the systematic improvement of students' physical fitness.

At the end of the pedagogical experiment, the general physical fitness indicators of athletes in the experimental and control groups were examined through a comparative analysis. The athletes in the experimental group demonstrated higher results than those in the control group in most of the test exercises. The statistical significance of the differences was assessed using Student's t-test and P-values. In the test involving running eight times to the four corners of the court, the experimental group achieved an average result of 90.75± 4.14 seconds, outperforming the control group by 10.08 seconds (t 3.98; P <0.01). In the 4×10-meter shuttle run test, the experimental group also demonstrated a better result by 0.98 seconds (t 3.49; p <0.01). In the one-minute skipping rope test, the experimental group achieved 7.33 more repetitions than the control group, recording 79.50±4.19 repetitions. However, according to the reported statistical indicators, this difference was not statistically significant (t 2.80; P <0.01). The greatest statistical difference was observed in the forward-bending test performed on a

gymnastics bench with the knees kept straight. The experimental group outperformed the control group by 1.34 cm (t 4.83; P <0.001). In the 30-second jumping test performed on a gymnastics bench, the experimental group achieved a result that was 4.08 repetitions higher than that of the control group (t 3.98; p < 0.01).

Table 1. Comparative Analysis of the General Physical Fitness Indicators Recorded by Athletes in the Experimental and Control Groups at the End of the Pedagogical Experiment (n = 24)

Control Tests	Research Group			Control Group			t	P
	$\bar{X}$	σ	V, %	$\bar{X}$	σ	V, %		
Running to the Four Corners of the Court 8 Times (seconds)	90,75	4,14	4,56	100,83	7,73	7,67	3,98	<0,01
4 × 10-Meter Shuttle Run (seconds)	9,99	0,54	5,40	10,97	0,81	7,41	3,49	<0.01
Skipping Rope for 1 Minute (repetitions)	79,50	4,19	5,27	72,17	8,05	11,16	2,80	<0.01
Forward Bend Without Bending the Knees from a Gymnastics Bench (cm)	5,17	0,44	8,43	3,83	0,49	12,84	4,83	<0.001
Jumping onto a Gymnastics Bench for 30 Seconds (repetitions)	32,50	1,78	5,49	28,42	3,37	11,86	3,98	>0.001

Note: $\bar{X}$ – mean value of the results; σ – standard deviation; V, % – coefficient of variation; cm – centimetre; AF – absolute difference; NF – relative difference; t – Student's t-test criterion; P – statistical significance.

Conclusion. Based on the analysis of the results of the pedagogical study aimed at improving the methodology of teaching badminton to students of higher education institutions, the following conclusions were drawn:

At the end of the pedagogical experiment, a comparative analysis of the general physical fitness indicators of the experimental and control groups was conducted. The results obtained demonstrated that students in the experimental group achieved higher performance than those in the control group in most of the control tests. In particular, in the test involving running to the four corners of the court eight times, the experimental group recorded a result of 90.75 ± 4.14 seconds, outperforming the control group by 10.08 seconds (t = 3.98; P < 0.05). In the forward bend test performed from a gymnastics bench without bending the knees, the experimental group achieved 5.17 ± 0.44 cm, exceeding the control group by 1.34 cm.

The findings confirm that the application of the improved methodology for teaching badminton to students of higher education institutions has a positive effect on the development of physical fitness components, including speed, agility, flexibility, and speed-strength abilities. This substantiates the pedagogical significance of the developed methodology in improving the effectiveness of educational and training sessions.

The importance of integrating students' physical and technical-tactical fitness. Integrating general physical fitness exercises with specialized movement activities and technical-tactical tasks during badminton sessions contributed to the development of students' speed, agility, coordination abilities, and movement accuracy. In particular, the use of exercises aimed at movement across the court, adopting an appropriate position for executing strokes, determining the direction of the shuttlecock, and selecting subsequent actions enabled students to master movement activities specific to badminton more effectively.

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