

Dynamics of The Development of Technical-Tactical Abilities in Control and Experimental Groups Of 15–16-Year-Old Volleyball Players During the Experimental Period

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Abstract: This article presents the results of an experimental study aimed at determining the dynamics of the development of technical and tactical abilities in 15–16-year-old volleyball players. The study involved 60 athletes divided into control ($n=30$) and experimental ($n=30$) groups. Over a 12-month period, the experimental group focused on developing technical and tactical skills. At the end of the experiment, significant improvements were observed among the participants of the experimental group, demonstrating the effectiveness of the proposed method.

Keywords: Volleyball, young athletes, technical and tactical abilities, training process, experiment.

Introduction: Modern trends in training young volleyball players emphasize the importance of targeted development of technical-tactical abilities, especially in the 15–16 age group. During this period, there is active development of game maturity, necessitating scientifically grounded approaches in the educational process. However, there is a lack of research analyzing the dynamics of these abilities based on the specific characteristics of training.

METHOD

According to the conclusions of leading experts and scientists who have conducted many fundamental studies on the theory and methodology of sports training and created scientific and theoretical concepts and methodological laws within the framework of training highly qualified, competitive athletes, achieving high results in sports practice can be achieved by using types of training (physical, technical-tactical, psychofunctional) in a proportional order, in an integrated direction, increasing the volume and intensity of loads in accordance with the possibilities, and taking measures to restore and strengthen working capacity in a timely manner. [1,2,3,4,5,6,7,8,9,10,11,12].

These authors argue that failure to comply with the above-mentioned methodological laws, procedures

and principles is likely to “destroy” existing technical skills. Therefore, even if technical and tactical methods are improved with the help of appropriate exercise sets, if their effectiveness or indicators (accuracy, number of repetitions, speed, etc.) fall below model indicators and normative requirements over a certain period of time, then it is possible to assume that the traditional training or appropriate exercise sets used do not have sufficient impact value.

RESULTS AND DISCUSSION

Based on the above-mentioned conceptual problems and considerations, we studied the effectiveness of a number of technical and tactical methods in traditional and experimental training sessions conducted with 15–16-year-old volleyball players during a 12-month pedagogical experience. It is known that the overall effectiveness of game activity in modern volleyball depends on the effectiveness of the main technical and tactical methods, such as passing, receiving the ball and delivering it to the necessary zone (to the connecting player), attacking strokes and blocking.

Leading expert-scientist in volleyball, Honored Trainer of Russia, Doctor of Pedagogical Sciences, Professor Yu.D. Zheleznyak (2007, 2009) [13,14] noted that it is appropriate to use movement tests that reflect the accuracy of technical methods when assessing the level

of technical and tactical preparation. In his opinion, the accuracy of movement (technical-tactical method) is related to the technique of movement, and if the

technical skill is high, the accuracy of movement will also be high, or vice versa.

Table 4.3.1

Dynamics of formation of technical-tactical components of special work ability in control and experimental groups of 15-16 year old volleyball players during 12 months of pedagogical experience, ($\bar{X} \pm \sigma$)

Tests	Group	Before the experiment, July 2024.	After the experiment, June, 2025.	Difference in indicators	t _{st}	p
Passing the ball over oneself alternately from below and above within a circle with a diameter of 1 m (30 times)	TG	23,5±1,85	28,9±0,87	+5,4	11,42	<0,001
	NG	21,9±3,09	24,8±2,43	+2,9	1,89	>0,05
Throw the ball into the zones 1, 6, 5 (a circle is drawn every 2 meters, the center of the maximum circle is taken as the target) 3 times each - 9 times in total.	TG	4,46±0,53	8,93±0,24	+4,5	33,79	<0,001
	NG	4,1±0,53	6,6±0,85	+2,5	7,19	<0,05

At the end of the experimental training, the following positive changes were observed in the ability of athletes to perform technical movements accurately and qualitatively:

1. 30 times alternately passing the ball above and below themselves in a circle with a diameter of 1 meter: experimental group (tg): in this exercise, the athletes' accuracy of movement and stability of the pass increased from 23.5 to 28.9 times (+5.4 times, $p < 0.001$). This indicates a fairly high level of formation of the passing technique. control group (ng): the results increased from 21.9 to 24.8 times (+2.9 times, $p > 0.05$), which was not considered statistically reliable. (Table 4.5).

This exercise serves to increase control over the ball by

repeating the technique consistently. The high results achieved in the TG indicate the effectiveness of the technical-tactical training program.

2. Putting the ball into the 1,6,5 zones (total 9 attempts): the experimental group's accuracy in directing the ball to the desired zones during the game increased from 4.46 times to 8.93 times (+4.5 times, $p < 0.001$). This indicates a significant increase in positioning accuracy and shot control. In the control group, this indicator increased from 4.1 times to 6.6 times (+2.5 times, $p < 0.05$), that is, although there is a change, it is much lower than in the experimental group.

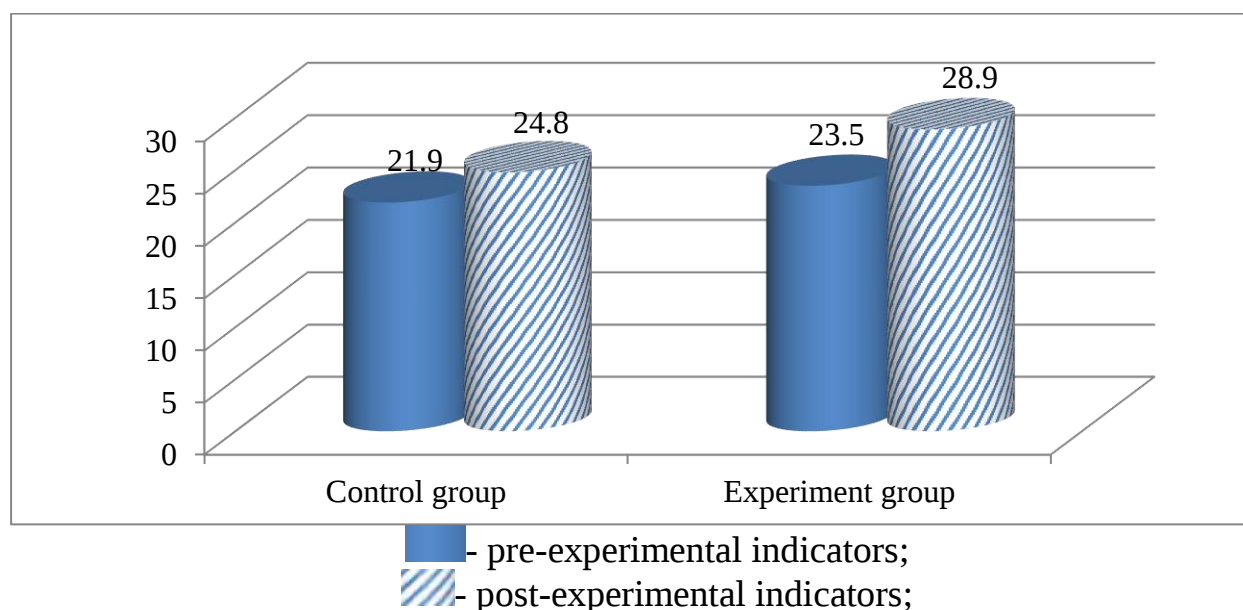


Diagram 4.3.1. Change in the asymmetric difference between the control and experimental groups before and after the experiment of alternating passes from below and above (30 times) within a circular line with a diameter of 1 m

This task serves to develop the skills of accurately putting the ball into play and correctly targeting zones. This was observed to be significantly successful in the experimental group.

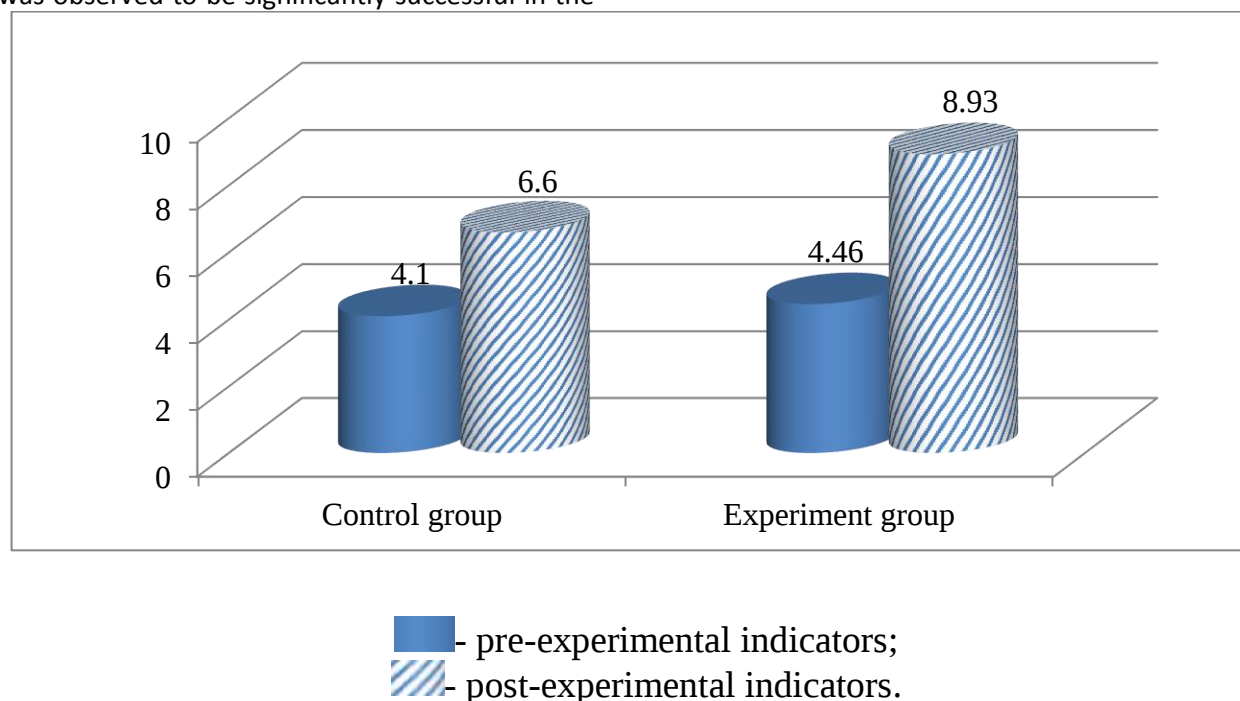


Diagram 4.3.2. Change in the asymmetric difference between the number of throws (total of 9 times) in the zones 1, 6, 5 (a circle is drawn every 2 meters, the center of the maximum circle is taken as the target) before and after the experiment in the control and experimental groups

The results show that the experimental group members achieved significant improvements in the accuracy, speed, and stability of technical movements as a result of special training. This clearly demonstrates the high effectiveness of the technical-tactical training program. The changes in the control group were

relatively low, indicating the limitations of the usual training methods.

There is no doubt that the rapid increase in the accuracy of passing, passing, and shooting in the TG by the end of the experiment was due to the experimental exercise sets that were developed and regularly used in

the training of this group.

CONCLUSION

The conducted studies showed that 30 times of alternating passes from above and below in a circle with a diameter of 1 meter: Experimental group (TG): In this exercise, the athletes' accuracy of movement and pass stability increased from 23.5 to 28.9 times (+5.4 times, $p < 0.001$). This indicates a significantly higher level of formation of the passing technique. Control group (CG): The results increased from 21.9 to 24.8 times (+2.9 times, $p > 0.05$), which was not considered statistically significant. This exercise serves to increase control over the ball by repeating the technique consistently. The high results achieved in TG indicate the effectiveness of the technical and tactical training program. Putting the ball into the 1,6,5 zones (total 9 attempts): The experimental group's accuracy in directing the ball to the desired zones during the game increased from 4.46 times to 8.93 times (+4.5 times, $p < 0.001$). This indicates a significant increase in positioning accuracy and shot control. In the control group, this indicator increased from 4.1 times to 6.6 times (+2.5 times, $p < 0.05$), that is, although there is a change, it is much lower than in the experimental group. This task serves to develop the skill of putting the ball into the game accurately and targeting the zones correctly. It was observed that it was formed significantly successfully in the experimental group.

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