

# Changes in the technical readiness of volleyball players 10–11 years under the influence of visual perception of movement parameters

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**Purpose:** increase in the level of technical preparedness of volleyball players at the stage of initial training under the influence of visual perception of the parameters of movements.

**Material & Methods:** 36 female athletes from the initial training group aged 10–11 years old participated in the study in Kharkov. In the course of the study, the following methods were used: analysis of scientific and methodological literature; pedagogical testing pedagogical experiment, methods of mathematical statistics. The pedagogical experiment lasted 8 weeks and was built with the participation of two groups: a control (18 players), the training process of which corresponded to the contents of the Youth Sports School's volleyball program, and an experimental (18 players), the content of the training was supplemented by a program using the technique of technical training, on the basis of visual perception by athletes of the specifics of performing technical techniques. The pedagogical experiment lasted 3 months, after which the changes in the level of technical preparedness of volleyball players of both groups.

**Results:** after the pedagogical experiment, there were established significant improvements in the performance of two test exercises at the athletes of the experimental group. Changes in the results of the volleyball players in the control group were unreliable.

**Conclusions:** our proposed technique of technical training, which is based on the visual perception of athletes of biomechanical peculiarities of performing technical techniques, is effective and can be used by trainers of initial training groups.

**Keywords:** female volleyball players, technical preparedness, preparation of female volleyball players, visual perception.

## Introduction

One of the central problems of the theory and methods of sporting coaching is the attentiveness of the process of technical preparation, the elements of how to realize in the minds of sports discipline [1; 2; 5; 8]. In particular, the problem is represented in such variative types of activities, as well as sporting, de-elementary ruches, motor, and psychic processes, which are often not interchanged, and are not repartitioned by people in the time-and-space-time structure [6; 10].

In the scientific literature there is a lot of information that emphasizes the importance of creating an athlete's correct idea of the action he must perform. Thus, in their studies, Lucy Parrington, Kevin Ball & Clare MacMahon (2015) found that the kinematic characteristics of handball movements affect the performance of individual techniques, which underscored the need to improve technical techniques with regard to ergonomic parameters of movements [11]. Zh. L. Kozina, A. Pugunets argue that for a correct understanding of all the details of the technique of performing certain tricks in sports games, the athlete needs static and dynamic models of elements of technology and tactics that are reproduced by multimedia technical devices [3].

At present, multimedia computer technologies are being actively implemented in many sports, which simplify the learning and improvement of various theoretical and practical knowledge [3; 4; 7; 9], but similar techniques for the technical improvement of young athletes have not been widely used

among volleyball players, which determined the direction of our research.

**Relationship of research with scientific programs, plans, themes.** The research was carried out in accordance with the theme of the research plan of the Kharkov State Academy of Physical Culture "Psycho-sensory regulation of the motor activity of sportsmen of situational sports" (2016–2018). And "Scientific and methodical foundations of using information technologies in the training of specialists in the field of physical culture and sports" (No. 0113U001207).

**Purpose of the study:** to increase the level of technical preparedness of volleyball players at the stage of initial training under the influence of visual perception of the parameters of movements.

*Objectives of the study:*

1. Analyze the scientific and methodical literature on the chosen subject.
2. Determine the level of technical preparedness of volleyball players of the second year of training.
3. Prepare special video fragments for the implementation of technical methods of the game, exercises for training him and experimentally test the effectiveness of their use in the training process.

Table 1

Technical preparedness of volleyball players of the control and experimental groups at the beginning of the experiment, the number of times, ( $n_1=n_2=18$ ),  $\bar{X}\pm m$

Groups, statistical indicators	Second serve from the top with both hands(from 10 attempts)	Transfer of the ball with two hands for the hoop (from 10 attempts)	Transfer of the ball 2 hands with a jump (from 5 attempts)	Transfer of the ball with two hands from below in the pair (from 10 attempts)	Transfer of the ball after the targeted serve (from 5 attempts)	Serve in the right and left, near and far parts of the site into a zone of 3x3 m (from 8 attempts)
Control group	4,81±0,22	3,50±0,21	0,36±0,13	8,13±0,31	0,69±0,13	1,94±0,20
Experimental group	5,25±0,36	3,94±0,27	0,44±0,13	8,19±0,10	0,93±0,18	2,06±0,26
t	1,04	1,26	0,34	0,19	1,16	0,38
p	>0,05	>0,05	>0,05	>0,05	>0,05	>0,05

**Material and Methods of the research**

The study involved 36 female athletes from the initial training group at the age of 10–11 years old. In the course of the study we used the following methods and techniques: analysis of scientific and methodological literature; pedagogical testing pedagogical experiment, methods of mathematical statistics.

Examining the level of technical preparedness of volleyball players for 2 years of training, we used the test tasks recommended by the curriculum for the Youth in volleyball, namely: the second transfer of the ball with 10 attempts, the transfer of the ball with two hands through the hoop with 10 attempts, the transfer of the ball with both hands in a jump with 5 attempts, passing the ball with two hands from below in pair with 10 attempts, transfer the ball after the targeted feed with 5 attempts and feeding to certain areas of the site with 8 attempts.

Based on the results of the initial testing, a group of female volleyball players was divided into a control group ( $n=18$ ) and an experimental ( $n=18$ ), taking into account the lack of reliability of differences in the indices of technical fitness of athletes. Both groups of young athletes were trained in the same training program, which met the requirements of the Youth Volleyball School. The difference in the training method was that during the training sessions for the experimental group athletes, specially prepared video fragments were provided for viewing before the work on the technique, which provided a visual representation to the volleyball players about the biomechanical characteristics of the performance of a technical serve.

After the pedagogical experiment, which lasted three months, we again conducted pedagogical testing of the technical preparedness of female volleyball players of both groups and analyzed the data. After the pedagogical experiment, which lasted three months, we again conducted pedagogical testing of the technical preparedness of female volleyball players of both groups and analyzed the data.

**Results of the research and their discussion**

The conducted preliminary testing of the technical fitness of volleyball players for 2 years of training (Table 1) established that the test exercises recommended by the program Youth Sports School did not match the physical capabilities of athletes.

In such test exercises as the transfer of the ball by 2 hands in a jump – 50% of the female athletes failed to perform any

successful attempt, 23,8% of the athletes participating in our studies did not perform any successful transfer of the ball after the targeted feed and 2,6% athletes failed to correctly deliver the ball to certain areas of the site.

The pedagogical experiment lasted 8 weeks, during which the athletes of the experimental group were provided with specially prepared video fragments of the standard performance of a certain technical technique before the work on the technique. On the days of rest, the experimental group was asked to view a video clip (determined by the technical coach, studied at the last training session) determined by the trainer at home in the morning and evening one time. For this purpose, a video was uploaded to the electronic medium of the trainer-instructor and students of the experimental group, which was structured according to the name of the technical methods. The video fragment was constructed as follows: playing the performance of the reception in the game, then performing the reception in specially created conditions, then repeating at a slow pace, then performing the reception in training conditions. Performing one technical technique in one training session, periodically reviewing the corresponding video fragment within the training, lasted 20–25 minutes of time.

The plan for the distribution of training aids, we applied in a weekly microcycle of training, is given in Table 2.

Table 2  
Distribution of training aids in the weekly training cycle

Day of microcycle	Means of education			
	Visual preparatory	Preparatory exercise	Imitations exercises	Basic exercises
1	X	X	X	X
2	X	X	–	X
3	X	–	–	–
4	–	X	X	X
5	X	–	–	–
6	X	X	X	X
7	–	–	–	–

After 3 months of classes on the method we proposed, the newly obtained indicators of technical preparedness of volleyball players of the control and experimental groups (Table 3).

Analyzing the changes in the results of the test exercises performed by volleyball players in the experimental group, it

Table 3

Technical preparedness of volleyball players of the control and experimental group before and after the pedagogical experiment, ( $n_1=n_2=18$ ),  $\bar{X}\pm m$

Groups, duration of the experiment, statistical indicators	Second serve from the top with both hands	Transfer of the ball with two hands for the hoop (from 10 attempts)	Transfer of the ball 2 hands with a jump (from 5 attempts)	Transfer of the ball with two hands from below in the pair (from 10 attempts)	Transfer of the ball after the targeted serve (from 5 attempts)	Serve to certain areas of the site
<b>Indicators of the experimental group</b>						
At the beginning of the experiment	5,25±0,36	3,94±0,27	0,44±0,13	8,19±0,10	0,93±0,18	2,06±0,26
At the end of the experiment	7,00±0,38	4,56±0,19	0,50±0,13	9,88±0,09	1,00±0,13	2,44±0,21
t	2,04	0,92	0,12	3,85	0,11	0,55
p	<0,05	>0,05	>0,05	<0,05	>0,05	>0,05
<b>Indicators of the control group</b>						
At the beginning of the experiment	4,81±0,22	3,50±0,21	0,36±0,13	8,13±0,31	0,69±0,13	1,94±0,20
At the end of the experiment	5,13±0,38	3,81±0,40	0,44±0,13	8,75±0,20	0,75±0,12	2,00±0,19
t	0,72	0,69	0,34	1,69	0,37	0,23
p	>0,05	>0,05	>0,05	>0,05	>0,05	>0,05

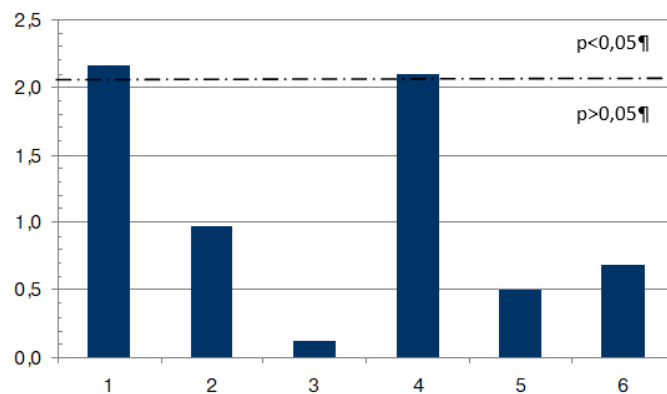
can be seen that significant improvements in the results were made in two test exercises ( $p<0,05$ ), in contrast to the results of athletes in the control group, where no significant improvement was observed ( $p<0,05$ ).

Comparing the results of the test exercises of the athletes of both groups after the pedagogical experiment, it is seen (Figure 1) that in 2 problems of the volleyball player of the experimental group had significantly higher indices ( $p<0,05$ ) than the athletes of the control group.

**Conclusions**

Summarizing, it can be recognized that the technique of technical training that we have proposed, which is based on the visual perception by athletes of the biomechanical features of the implementation of technical methods, is effective and can be used by the coaches of initial training groups.

**The prospect of further research** in this area is considered in the creation of an electronic textbook with a detailed exposition of underwater, imitation exercises and media-free books for training technical techniques for playing volleyball athletes and testing it in practice.



1 – second serve from the top with both hands, 2 – transfer of the ball with two hands for the hoop, 3 – transfer of the ball 2 hands with a jump, 4 – transfer of the ball with two hands from below in the pair, 5 – transfer of the ball after the targeted serve, 6 – serve to certain areas of the site

**Figure 1. Numerical values of the t-test and the probable level (p) of the technical readiness of young female volleyball players of the control and experimental groups after the pedagogical experiment ( $n_1=n_2=18$ ).**

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