Increasing the efficiency of attacking strike after a negative receipt of the ball in volleyball

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Abstract

Objective of the study was to develop means to increase the efficiency of the attacking blow after a negative ball reception among qualified volleyball play-ers.

Methods and structure of the study. The pedagogical experiment involved a survey of trainers and pedagogical observation using the Data Volley computer program.

Results and conclusions. It was revealed that it is advisable to include spe-cially designed exercises in the training process of qualified volleyball players to improve attacking actions after a negative ball reception. It was experimentally established that the effectiveness of an attacking blow after a negative reception of the ball increased (before the experiment 25.6 ± 6.9%, after 41.7 ± 7.9%), which made it possible to increase the effectiveness of all attacking blows during competitive activity (before the experiment 46.6±4.6%, after 51.0±4.2%).

Keywords: *volleyball, means of the training process, attacking blow, negative technique, increasing the efficiency of the attack.*

Introduction. Modern volleyball is characterized by a highly situational nature of the game in conditions of a lack of time to assess, solve and perform tactical and technical problems [1]. During the game, situations of negative ball reception increasingly arise, in which the set player finds himself in a disadvantageous position for organizing combination play. The quality of positive ball reception from a serve should be no lower than 65-75% [3]. The efficiency of receiving serve, even by libero players, is no more than 64.8%. The efficiency of receiving the opponent's attacking blows in women's teams of masters is in the range of 30-37%, in men's – no more than 38.5% [1].

Attacking players of the second pace (diagonal players and finishers) are forced to make attacking strikes in an organized group block without proper preparation, which involves 2-3 steps for a run-up and jump, visual control of the ball and peripheral vision control of the net and blocking players. The success of attacking strikes in emerging non-standard situations depends on the development of physical abilities (motor potential), ensuring the effectiveness and reliability of the technical and tactical actions of volleyball players in competitive gaming activities (in particular, the speed of a single movement, the ability to differentiate muscle effort and the ability to rearrange movement). It has been experimentally proven that athletes of different specializations demonstrate the ability to relax according to the relaxation coefficient: the higher the coefficient, the sooner the muscles relax and are less susceptible to injury due to lack of recovery or the occurrence of additional effort from the participation of antagonist muscles [2].

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22 volleyball coaches from different cities of Russia took part in the survey and answered questionnaire questions related to the research problem.

To determine the indicators of the effectiveness of an attacking strike after a negative reception of the ball by attacking players of the second pace, pedagogical observation was carried out using video recordings of games of qualified volleyball players and the use of the Data Volley computer program. The following characteristics of ball reception were taken into account: the distance of the ball from the zone of the setting player, the height of reception, the speed of finishing the ball, which made it possible to determine the quality of each ball reception in accordance with the varieties - from the program manual (Table 1). The flight trajectories of the ball after a positive and negative reception are presented in a computer image. The effectiveness of an attacking strike for qualified players in competitive activities was calculated.

The study involved 6 qualified volleyball players-finisher from St. Petersburg, with the first adult category and a Candidate Master of Sports.

At the first stage, a survey of coaches was conducted, pedagogical observation was carried out, and tools were developed aimed at improving the individual technical and tactical actions of volleyball players in attack after a negative reception of the ball. At the second stage of the study, during a sequential pedagogical experiment, the effectiveness of the developed tools was checked.

Results of the study and discussion. Indicators of the effectiveness of performing all attacking strikes (46.6%) and attacking strikes after a negative ball reception (25.6%) were calculated for qualified volleyball players during the first round of the St. Petersburg Championship among men's volleyball teams. The results confirmed the relevance of the ongoing research.

Options for the trajectory of the ball after receiving a serve based on the Data Volley computer program

Table 1. *Designation of types of game situations for receiving the ball in the Data Volley computer program*

Symbols	Characteristics of receiving the ball in volleyball
R=	The ball is lost
R/	Passing the ball or receiving the ball without attacking
R-	Reception of the ball is 4 m away from the net and beyond, beyond the side lines, low ball trajectory
R!	Reception of the ball is 2.5 - 3.5 m away from the net
R+	Reception of the ball is 1 - 2.5 m away from the net
R#	Reception of the ball is 0 - 1 m away from the net (perfect finishing), jumping pass to the setter with the possibility of a discount

Table 2. *Results of pedagogical observation of the competitive activity of qualified volleyball players*

Indicators	Before experiment	After experiment	Conclusion about the difference
Efficiency of all offensive strikes (%)	46,6±4,6	51,0±4,2	p≤0,05
The effectiveness of offensive strikes after a negative ball reception (%)	25,6±6,9	41,7±7,9	p≤0,05
R/ (%)	13,8±9,02	37,5±15,4	p≥0,05
R- (%)	37,1±11,8	46,3±6,2	p≥0,05
R! (%)	34,8±10,5	41,6±8,7	p≥0,05

During the survey, it was revealed that only 5% of volleyball coaches regularly use exercises to improve an attacking strike after a negative ball reception, very rarely used by 46% of respondents, and not included in the training process by 49% of respondents. The majority of coaches (71%) noted the strong influence of the effectiveness of the offensive strike after a negative ball reception on the overall effectiveness of the players' attacking actions. The coaches agreed that it is possible to increase the effectiveness of an attacking strike after a negative ball reception by using special means that develop physical qualities and improve individual technical and tactical actions. Taking into account the types of game situations for receiving the ball and the recommendations made, three blocks of exercises were developed and introduced into the training process:

Block 1. Exercises of associated influence, developing physical abilities (speed and coordination abilities), and at the same time, improving the technique of attacking actions against a passing ball.

Block 2. Exercises that improve technical and tactical actions when performing attacking shots from advanced passes (2.5 - 3.5 m from the net) in difficult conditions.

Block 3. Exercises that improve technical and tactical transition actions from defense to attack, performing an offensive strike after a negative reception of the ball to the center of the playing court.

The exercises were performed in the main part of the training sessions. The blocks alternated every two training sessions. After the pedagogical experiment, in the second round of the St. Petersburg Championship, the indicators of negative ball reception and the effectiveness of serves were analyzed and compared with those demonstrated in the first round (Table 2).

Before the experiment, the effectiveness of the attacking blow after a negative technique was 21% less than in other situations of competitive activity of qualified volleyball players. During the study, statistically significant differences were obtained in the indicators of technical and tactical actions before and after the experiment. The effectiveness of all attacking shots of volleyball players in the game increased by 4.6%, and the increase in the efficiency of attacking shots after a negative ball reception was 16.1%. The changes that have occurred are based on an increase in characteristics under the codes: "R/" - by 23.7%; "R-" – by 9.2%, and "R!" – by 6.8%, which are combined into a single indicator of the effectiveness of an attacking strike after a negative ball reception, which has a significant difference at p≤0.05.

Conclusions. The effectiveness of an attacking blow after a negative technique has a high impact on the overall result of attacking actions - this is the opinion of 71% of surveyed volleyball coaches. Its increase can be achieved through the use of developed means in the form of blocks of special exercises (by more than 16%).

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