

Jump serve performed by volleyball players of different qualifications

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Abstract

Background and Study Aim An important component of volleyball competitive activity is to obtain statistics on the performance of the jump serve. This allows the coach to decide on the appropriateness of its use in different moments of the game to obtain optimal results. The purpose of the work is to determine the indicators of the effectiveness of jump serve by volleyball players of student teams.

Material and Methods The analysis of statistical data obtained as a result of pedagogical observations of the performance of jump serve. Volleyball players (aged 17-21 years) were monitored during the competitions. 8 games with the total number of jump serve 410 were selected for analysis.

Results The corresponding indicators of efficiency of jump serve depending on number of a zone of a playground are defined. The efficiency of serve and different zones was the following: in zone 1 - 34.9%; in zone 5 - 31.1%; in zone 6 - 23.6%. Zones 1 and 5 have been determined to be the most vulnerable to the opponent's defensive actions in the jump serve. It was shown that the jump serve significantly reduces the chances of the opponent to attack effectively.

Conclusions The results can be used to solve the problem of improving the efficiency of jump serve in the training and competitive activities of student teams. It is recommended to use the jump serve in the first two games, when its effectiveness reaches its maximum values. It is also recommended to direct such a serve to the playground zones 1 and 5. It is necessary to find ways to improve the technique and accuracy of the jump serve and increase its efficiency in competitive activities.

Keywords: pedagogical observations, set, zone, competitive activity, playground.

Introduction

In modern volleyball, the serve is used as an effective means of attack, with which you can immediately gain a point or complicate the preparation of tactical combinations in the attack of the opposing team [1-6]. In recent years, a clear trend in the development of volleyball is the desire to widely use in the game of jump serve. The number of volleyball players who perfectly master this serve is constantly growing [7-9].

Thanks to the jump serve, the game gathers a large number of volleyball fans and makes it more exciting and emotional. This presentation can change the dynamics of the match. At high efficiency of jump serve the opponent does not have an opportunity to use fast attacks of teammates [10, 11].

At the same time, jump serve is a very risky type of attack. Achieving stability in the performance of the jump serve is incredibly difficult. Performing this serve requires considerable physical effort and can reduce the effectiveness of athletes during a difficult and protracted match. This technical element has the highest error rate than any other feed. Unsuccessful execution of this serve can lead to a decrease in the emotional mood of the player and reduce his/her ability to perform other technical elements [12, 13].

Therefore, technical and tactical improvement of the jump serve, increasing its efficiency is one of the main reserves for improving the effectiveness of competitive activities of volleyball players. A number of authors have studied this issue [3, 8, 14, 15]. It has been shown that not all players can make effective jump serve. This is especially evident against the background of fatigue and at the end of the set.

Previous studies [1] proposed a method for assessing the effectiveness and quality of serves in volleyball. The technique is based on mathematical processing using the theory of probability of data of pedagogical observations during the game. It is shown that: the quality of the jump serve is almost 2 times higher than the quality of the targeted supply; the efficiency of these feeds is quite high – more than 32%; the tendency to decrease the efficiency of the jump serve with each subsequent game is revealed; the efficiency of the targeted serve is at about the same level. Other studies [16, 17] conducted a detailed analysis of the performance of jump serve and targeted serve, which were obtained during the competitive activities of experienced volleyball players.

Shl'ons'ka [18] presents the results of a study of the jump serve of the teams of the World League and Super League of Ukraine. Volume and efficiency indicators were calculated. It was found that in the teams of the World League the most effective is the

jump serve with an efficiency of 32.7%. In the teams of the Ukrainian Super League, the efficiency of jump serve is 16.2%. It is noted that the teams of the Ukrainian Super League are significantly behind the teams of the World League in terms of volume and efficiency. It is also noted that the use of jump serve greatly facilitates the organization of technical and tactical actions of players after successful simple defensive actions of the opponent.

Gamaliy and Shl'ons'ka [19] found that the jump serve on the model indicators is used in 51.6% of cases: Jump Float Serve (target) - 21.7%; Jump Float Serve (shortened) - 4.4%. Attacks from the back line of the site, according to model indicators, are used in the amount of 20.8%. Their efficiency is 13.7%. It is proved that the indicators of technical and tactical actions in the attack can be used as models in the management system of training and competitive process of experienced volleyball players.

Artemenko [20] found that the distribution of jump and tactical serves in Ukrainian teams is almost the same. Tactical «jump float serve» serves have a slight advantage - 59.7% against 40.3%. The strongest teams in the world use jump serve much more often (72.5%) than jump float serve (tactical, 27.5%). This indicates the need to pay special attention to the use of force in the training process and in the game. The world's leading teams use jump serve much more often, which indicates the strength of world volleyball.

The purpose of the study is to determine the indicators of the effectiveness of the performance of power in the jump by students-volleyball players in competitive activities.

Material and Methods

Participants.

Pedagogical observations were conducted on the student team during the 8 games of the 2020-2021 championship. Indicators of jump serve performance were studied. Age of volleyball players - 18-21 years. The total number of jump serve by the appropriate team is 410.

Research design.

The corresponding protocol was filled in pedagogical supervision. The protocol used a special

system of conditionally coded recording, which captures the relevant information: player; in which zone the serve is directed; with what result the jump serve is executed. A seven-point rating scale (0 to 6) was used to analyze the feed efficiency. Each score corresponds to its coefficient of the corresponding game action. Research of efficiency of serve is carried out in the given work on the basis of a technique which is presented in works [3, 5]. The method is based on mathematical processing of statistical data obtained during pedagogical observations.

Statistical analysis.

Statistical analysis was performed using the MS Excel license package. The indicators were determined: arithmetic mean (\bar{x}) and standard deviation (σ).

Results

Indicators of efficiency of jump serve depending on number of a zone of a playground in which volleyball players most often performed jump serve are defined. Each set with numbers from 1 to 5 was also registered (Table 1).

Zones 1 and 5 are the most vulnerable to the defensive actions of the opponent during the jump serve. There is a tendency to reduce the efficiency of the service with each subsequent set. Its most effective use is in the first two games, when players are not yet tired and emotionally exhausted.

Discussion

The data obtained by us confirm and supplement the results of previous studies [3, 5] concerning experienced volleyball players. There is a tendency to reduce the efficiency of the corresponding filing with each subsequent set. We agree with other authors [3, 5] that increasing the efficiency of the feed in the jump serve will significantly affect the final result of the game. Therefore, it is necessary to find ways to improve the technique and accuracy of the jump serve and increase its efficiency in competitive activities.

Badami [21] investigated the influence of feedback type on students' intrinsic motivation and volleyball training. The authors note that «The effect of personality type on acquisition and intrinsic motivation was significant.» In our opinion, this

Table 1. Indicators of the effectiveness of jump serve in accordance with the zone of the playground and the game number (n = 8)

The effectiveness of jump serve							
Zone of a playground			Number of set				
Zone 1	Zone 6	Zone 5	Party 1	Party 2	Party 3	Party 4	Party 5
$\bar{x} \pm s$			$\bar{X} \pm s$				
34.86±1.7	23.63±1.27	31.11±2.22	36.31±1.30	35.13±1.95	30.21±2.67	26.44±2.09	23.34±1.20

approach should be used in the training of volleyball students.

Barzouka et al. [22] investigated current trends in serve skills for each of the high-level volleyball players' roles. The authors evaluated the actions of elite players in 20 volleyball matches of the final phase of the 2018 World League. Also highlight the main preferences that players choose when serve. In our research, student volleyball players follow a similar pattern. However, the performance of the serve is significantly lower than the teams of the 2018 World League.

Hunchenko et al. [23] determined the influence of the components of special physical training on the effectiveness of individual elements of the game technique in competitive activities. The use of the author's program allowed to significantly increase the number of jump serve. Lima et al. [24] studied the speed of the ball and the speed of the hand when perform the jump serve. We also compared the results between the game positions. The research was conducted with the participation of young elite volleyball players from the French national team. The results show that players reduce their variability in the result. Palao et al. [25] determined the influence of the method of admission on the effectiveness of admission in volleyball among men. The authors argue that the jump serve was the type of serve that most limited the actions of the opponent's players. Another study [26] noted a high degree of reliability

of the jump height during jump serve, which affects the quality of the feed itself. Our research has also shown that the jump serve significantly reduces the opponent's chances of an effective attack.

In study by Vargaset al. [27] fifteen matches between the six national teams (Japan, Brazil, China, Belgium, Turkey and Russia) participating in the 2014 Women's World Volleyball Grand Prix final were analyzed. A total of 56 sets and 7,176 ball possession situations. We followed similar recommendations for the organization of our study. This approach allowed us to obtain reliable results.

Conclusions

The results can be used to solve the problem of improving the efficiency of jump serve in the training and competitive activities of student teams. It is recommended to use the jump serve in the first two games, when its effectiveness reaches its maximum values. It is also recommended to direct such a jump serve to the playground zones 1 and 5.

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Conflict of interest

The authors declare no conflict of interest.

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