



Analysis of Angular Kinematic Variable During Float Serve of Shoulder Joint (Striking Arm)

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ABSTRACT

The purpose of this study was to analyze the relationship of selected angular kinematic variable with the performance of Volleyball players in float serve. The subjects for this study were ten male volleyball players of match practice of Lakshmi Bai National University of Physical Education, Gwalior. The performance of subjects was evaluated by Russell Lounge test. The digital photography was used as a technique for Biomechanical analysis of Float serve in volleyball. The Pearson's Product moment Correlation was calculated between selected kinematics variable and performance of the subject in float serve. For testing the level of significance was set at 0.05. The variables which might have contributed to the effectiveness of the technique could be identified and undertaken to analyze the technique of float serve were:-Angular Kinematic variable: Shoulder joint (striking arm). The results have exhibited that the obtain value of correlation coefficient in case of the height of center of gravity of player at moment execution and height of center of gravity of the ball from the ground at moment execution has shown the significant relationship with the performance of subjects in float serve whereas angular kinematic variable show an insignificant relationship at the 0.05 level of significance.

KEYWORDS

Centre of Gravity, Float Serve, Angular Kinematics, Striking Arm.

INTRODUCTION

Volleyball is a sport played by two teams on a playing court divided by a net. There are different versions available for specific circumstances in order to offer the versatility of the game to everyone. The object of the game is to send the ball over the net in order to ground it on the opponent's court, and to prevent the same effort by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is put in play with a service, hit by the server over the net to the opponents. The rally continues until the ball is grounded on the playing court, goes "out" or a team fails to return it properly. In Volleyball, the team winning a rally scores a point (Rally Point System). When the receiving team wins a rally, it gains a point and the right to serve, and its players rotate one position clockwise. Volleyball is the game played by two team each having six players on a 9mt square court, the two court separated by the net (height 2.43mt for men and 2.24mt for women). Three are called front row player and three are called back row players.

The object of the game is to send the ball over the net in a way that the opponent is unable to return it without committing a fault. The team has three set for returning the ball (in addition to the block contact).the ball is put in play with the service by the right back player: hit by the server over the net to the opponents. The rally continues until the players commit a fault, the ball is grounded o the playing court, or goes "out"; or if a team fails to return it properly. In volleyball, the team winning a rally scores a point. When the receiving team wins a rally, it gains a point and right to serve, and its players rotate one position clockwise. Volleyball is a game that can be played by all ages and both sexes indoors and outdoors. It can be highly competitive, requiring a high level of fitness, agility and co-ordination, or it can be relaxing and highly enjoyable recreation.

Played competitively the game requires concentration, quick thinking and a great deal of movement. The speed of the game means that players must be thinking one moment attack and the next about defense. They must be concentrating all the time, if they are to keep up with play. Volleyball is an all action game with none of the players acting as involuntary spectators for part of the game as in other games such as football, hockey and netball. As the game is played for best

of three or five it is possible to win despite playing badly for a particular period of the game. In many sports mistakes made at the beginning of the game can have a disastrous effect on the rest of the game.

For the coach the game can be as mentally demanding as chess. Tactical formation, moves, substitutions, use of time outs and team line-ups all have so many variations and have an effect on quality and result of the game. The rotation rule is ensuring that every player play in every position and that outstanding player in the front or back court cannot dominate the game all the time. The limitation imposed by the rules on consecutive plays of the ball mean that a player must make his shot as good as possible because he will not have a second chance to play it as in other most team games.

For the spectator the game is fast and full of contrasting action. From the power of the smash to the agile recovery shots in back court. The small playing area concentrates the action so that spectators have a clear view of the game all the times.

Statement of the Problem

The purpose of the study was to analyze the angular kinematics variable at shoulder joint (striking arm) of volleyball players during service.

Delimitations

- The study was delimited to the float serve in volleyball.
- The study was further delimited to ten male volleyball players only, age group of 19 to 23 years.
- The study was further delimited to the angular kinematics variables.
- Angular Kinematic variable at Shoulder joint (striking arm)

Hypothesis

It is hypothesized that there may not be significant relationship between the selected angular kinematic variable with the performance of the volleyball player in float serve.

Significance of the Study

- The research in this field may add lot in improvement in the performance of volleyball players.
- The findings of present study may reveal the contributing

factors to the performance of float serve in volleyball.

The findings of the study may also help to make the biomechanical module of float serve.

The findings of the study may help to form the basis of efficient structure of the float serve.

The study may help in drawing conclusions and generalizations which may be used by physical education teachers and coaches for better teaching and coaching.

Selection of subjects

Ten male volleyball players of Lakshmbai National Institute of Physical Education were selected as subjects for the study. The ages of subjects were between 19 to 23 years.

Criterion measures

The Criterion measure for the study was the performance of the subjects as assessed by Russell-Lange test with only difference the subjects used Float Serve instead of Overhead Serve.

Filming Protocol & Analysis of the Film

The digital photography was used as a technique for Biomechanical analysis of Float serve in volleyball. A standard motor driven camera i.e. Nikon D -100 was used to obtain photo sequences of selected movements during the float serve, moment execution in sagittal plane.



Fig1. Float Serve at Moment Execution

The camera was mounted on a tripod at a height of 1.46mt from the ground. The camera was placed perpendicular to the initial line and parallel to horizontal plane at a distance of 4.70mt from the mid-point of initial line. The serving skills of float serve of different subjects were filmed at Lakshmbai

National University of Physical Education, Gwalior. The photographic sequence was taken under controlled conditions. The subject performed the skill 10 times.

The photographs as obtained by the use of digital photography were analyzed by standard analysis method. Only one moment was analyzed. Selected variables were as under.

RESULT

The Pearson's product moment correlation was used in order to analyze the angular kinematics variable at shoulder joint (striking arm) of Volleyball players in float serve. For testing the level of significance was set at 0.05.

Findings

The score of independent variable of angular kinematics variable were correlated with the performance of subjects in volleyball float serve. The value of correlation of angular kinematics variable i.e. angle at shoulder joint (striking arm) at selected moment with the performance of subjects in float serve are presented in Table 1.

Analysis of selected angular kinematic variable at Shoulder Joint (striking arm) of subjects in float serve

Variables	Mean (degree)	Coefficient of correlation(r)
Shoulder Joint (Striking Arm)	164.1	0.501

Required value of 'r' for 8 degree of freedom is 0.632.

As shown in Table 1 the required value of correlation $r = 0.632$ for 8 degree of freedom. However the calculated value of coefficient of correlations in both variables were less than the required value at selected level of significance, therefore, these selected angular kinematic variables at selected moment have shown insignificant relationship with the performance of subjects in float serve of volleyball.

Discussion of findings

As shown by the table 1 shows insignificant relationship that may be due to the nature of score that it showed the relationship but mechanism of float serve depends upon the point of application of force on ball. The force of the impact must pass through the ball's center of gravity in the direction of the desired flight and to avoid spin. However the angular kinematic variable shoulder joint (striking arm) did not shows the significant relationship with the performance of float serve in volleyball.

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