

# Analysis of Blocking Technique in Volleyball

Amritpal Singh Sidhu

Physical Education Teacher Govt. Model Sen. Sec. School Sheron Sunam Punjab, India

**Abstract:** Volleyball is an open skill sport and for this reason the variability of the movement is very high. Blocking was ranked as the second skill in importance to win the Game. In this study researcher tried to evaluate the three different techniques of movement of center blocker and find best one. There were three main techniques used in blocking slide step, shuffle step and cross step. To find the best technique the study was conducted on 5 male junior level volleyball players (age  $16.8 \pm 1.5$  years, height  $189.6 \pm 5.5$  cm, weight  $83.4 \pm 4.1$  Kg, all right handed). The study resulted the most efficient techniques used by players in matches to block was the cross step and shuffle step according to their anthropometrical measurements and strength.

**Keywords:** Block, Technique, Slide step, Shuffle step, Cross step

## 1. Introduction

In today's volleyball Blocking is a crucial feature of winning teams it is a method of defending a spike attack in which the defensive team jumps up at the net and stops the spike from crossing the net by contacting it with the hands and arms. In volleyball Blocking is the first line of defense against an attacking opponent.

A successful block is accomplished when either the ball rebounds off the hands of the blocker and directly back in to the opponent's court or deflects off the hands in such a way that the blocker's team may play the ball (Hammon 2005b).

A block has the further advantage for the defensive team that by placing the ball immediately back to the opponent's court it forces them to put up another attack. Timing is the key to an effective block and the jump must be timed so that the blocker jumps immediately after the attacker jumps, depending on how far the hitter is from the net. The further off the net the hitter is hitting the ball, the later the jump. The blocker should attempt to reach over the top of the net to penetrate over to the opponent's side of the net. The blocker should be positioned opposite the attacker's hitting arm (Hammon 2005).

To block efficiently players should use a technique allowing the shortest time to arrive at the target (the ball-contact), the longest lateral movement along the net and a vertical jump. Also penetration and angulations of the hands relatively to the net plane are determinant to form an efficient surface over the net and to control the rebound of the ball.

## 2. Literature Survey

There are very few published studies that have attempted to determine the most effective footwork technique for the lateral movement required in volleyball blocking. Kwak et al. (1989) compared the cross-over and the slide steps used by female and male Korean players in terms of horizontal velocity, maximum vertical take-off velocity and maximum vertical ground reaction force. Vint (1997) analyzed these studies and built a complete deterministic model of the block. Lehnert et al. (2001) performing a 3D videography (APAS) of only two male middle blockers stated that dropping hands during lateral displacement positively affects

the kinematic characteristics of the movement and other studies like study Cox (1978), Cox (1980) (Vint, 2005).

## 3. Problem

In this study researcher tried to evaluate the three different techniques of movement of center blocker and find best one.

## 4. Selection of Subject

The study was conducted on 5 male junior level volleyball players (age  $16.8 \pm 1.5$  years, height  $189.6 \pm 5.5$  cm, weight  $83.4 \pm 4.1$  Kg, all right handed). All players are national medalist and attended camp for Indian volleyball team.

## 5. Protocol Of Blocking Movements

- 1) **Slide Step to block Jump:** In the slide step the right foot moves laterally and the left foot follows close to the leading foot, than the feet push up for the jump.

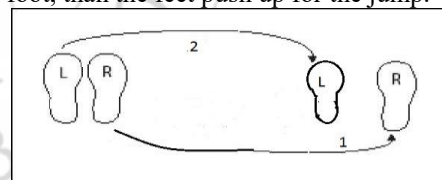


Figure 1: Slide step to block jump

- 2) **Shuffle Step to block Jump:** In the shuffle step right foot is raised from the ground and the right hip is laterally rotated to point the toe in the direction of the step. A very long step in the direction of the block is required, which is produced by a forceful extension of the left leg and a long step onto the right leg.

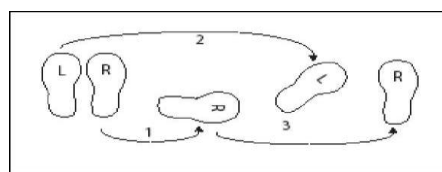


Figure 2: Shuffle step to block jump

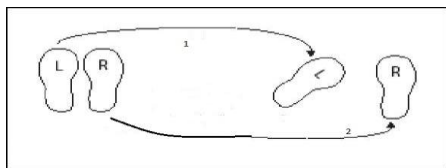
- 3) **Long Crossover Step to Block Jump:** In the cross over step the left foot first crosses over the right foot passing closer to the net and than the right foot closes the move crossing back, then both feet push up for the jump.

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Frequently the cross-over follows a previous short slide of the right foot.



**Figure 3:** Cross over step to block jump.

## 6. Procedure and Methodology

The measurements were carried out at Sri Narain Sharma Memorial volleyball outdoor court Mastuana Sahib Sangrur. According to the protocol each player performed 5 blocks on each side (zone 4 and zone 2). In each trail Player starts from center block position (zone no 3) and first move toward zone no 2 than came back to zone no 3 again moved toward the zone no 4. All trails were recorded with Panasonic-90 high definition video camera. Video camera was placed perpendicular to net at height of 1.50m and 9m away from net.

## 7. Criterion Measure

Researcher after reviewing the available literature and own experience in volleyball find the three major techniques of movement used in blocking. The first technique is to use slide steps prior to the stop for the jump. A second technique is to use the shuffle step in which the blocker uses 1-2 shuffle steps prior to the stop to cover the distance to the side for the block. Third technique of footwork for blocking is to use a long crossover step to the right by crossing the left foot over the right, followed by the stop for the block jump. A. Researcher tried to find out the best technique among the above written three techniques. Researcher keeping the feasibility, availability of instrument and software in mind and selected the following parameters.

- 1) Time to reach from one zone to another
- 2) Height of block jump.

## 8. Results and Discussion

**Table 1:** Mean value of time spent on movement and elevation at zone no 2

Blocking technique	Time spent on movement from zone no 3 to 2	Elevation Cm
Slide step to jump	1.45 sec	41 cm
Shuffle step to jump	1.43 sec	45 cm
Cross step to jump	1.39 sec	48 cm

**Table 2:** Mean value of time spent on movement and elevation at zone no 4

Blocking technique	Time spent on movement from zone no 3 to 4 sec	Elevation Cm
Slide step to jump	1.49 sec	40 cm
Shuffle step to jump	1.48 sec	44 cm
Cross step to jump	1.40 sec	46 cm

During the trails researcher find out that there was fastest movement in cross step jump and heights elevation in same technique when blocker move from zone no 3 to 2 but at the same time when blocker move from zone no 3 to 4 in cross

step blocker take more time as comparative to first one. Reason behind that all blockers are right handed. Researcher found there where small difference between elevation during shuffle step, cross step and slide step. But in time spent to reach the blocking place is most important in volleyball. Researcher found that blocker with tall height perform better with cross step and slide step but medium height blocker performed well with shuffle step. In blocking technique most important is timing of blocking according to attack.

## 9. Conclusion

Volleyball is an open skill sport and for this reason the variability of the movement is very high. The type of blocking footwork used by a volleyball player is dependent on their strength and jumping ability. A very tall and strong player can move from the middle blocking position to the outside by use of a single long crossover step onto the middle foot, followed by a step in with the outside foot. Medium height players require a long shuffle step from the outside foot prior to the crossover step onto the middle foot. This extra step will enable the player to reach the outside with only one extra step and will provide additional linear momentum toward the sidelines that may be used for the loading of the legs for the jump. Long players also prefer the slide step technique that provides slow approach to the block as well as enabling the player to jump low. Blocking was ranked as the second skill in importance to win the game. The most popular techniques used by players in matches to block are cross step and shuffle step athlete opts either according to their anthropometrical measurements and strength.

## 10. Future Scope

The study will help the coaches to understand suitable best technique for players and planned further strategies of defense during the match. In present scenario blocking is first line of defense and foundation counter attack.

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### Author Profile



**Dr. Amritpal Singh Sidhu** is Physical Education Teacher, Govt. Model Senior Secondary School ,Sheron, Sunam, Sangrur, Punjab, India. Educational Qualification : B.P.ED, M.P.ED, M.PHIL, PHD in Physical Education. Specialization Academic: Sports Biomechanics. Specialization Sports: Volleyball

