Analysis of the Volleyball Jump Serve

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INTRODUCTION

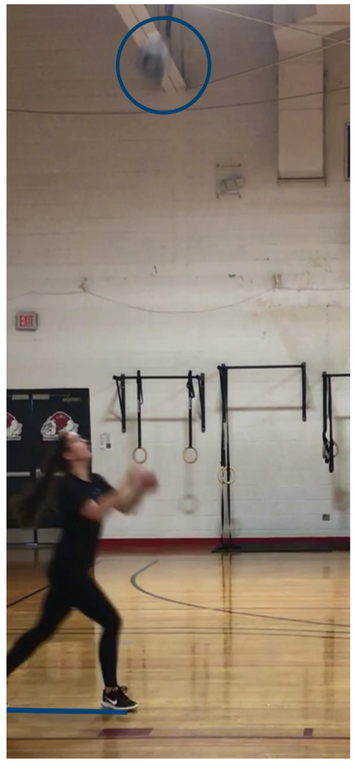
In modern volleyball, the jump serve is one of the most dramatic and dynamic skills of the game. There are many different way to serve a volleyball for different outcomes.

For this serve the athlete will be using the jump serve. The athlete will be performing the jump serve from about 5 meters behind the service line. The jump serves creates a lot of power and velocity using the proper toss, proper arm swing and proper extension of the whole body when contacting the ball. The key to the jump serve is the toss, and the ball contact.

The purpose of the analysis is to provide feedback from volleyball experts and statistics to the athlete performing a dynamic jump serve.

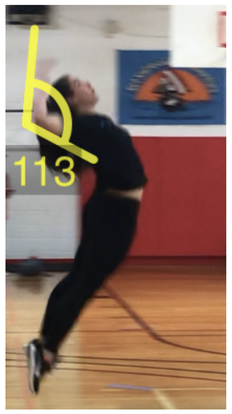
BALL TOSS

According to Hanners, "The key to the jump serve is to toss the ball far enough in front of you, not too high and with a lot of spin, so that you can take a three-step approach using forward momentum to drive the ball at the opponent.



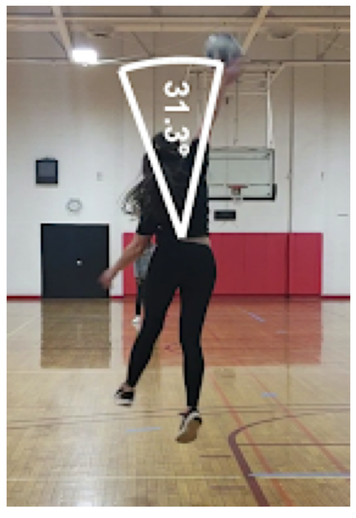
During the ball toss phase, the athlete is using the legs to gain momentum to get the maximum amount of power to produce an efficient volleyball jump serve. Also tossing the ball at the correct height and far enough out and away from the body is critical. According to Alexander and Honish, “The key to a reliable toss is the upward arm swing in which the ball must remain on the palm of the hand and the lower arm must remain in supination to support the ball squarely. “ As you can tell in Figure 1, her palm is in the supination position while throwing the ball up and into the air. After slowing down the video we noticed that the volleyball had a natural topspin to it. According to Alexander and Honish, “The ball should roll off the finger tips rotating forward with topspin, to stabilize the ball’s flight and possibly help the generation of topspin at impact.”

AIRBORNE PHASE



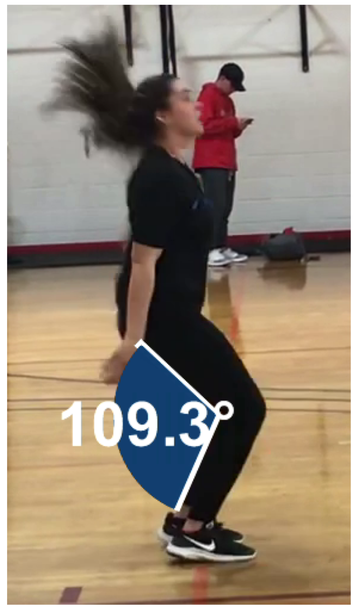
The serving arm is moved back behind body in a larger degree of 90 degrees for optimal execution. The opposite arm is adducted to the trunk and both shoulders are medially rotated. The wrist needs to be flexed and lower arm pronated. According to Alexander, from the position of trunk hyperextension and rotation to the right, the shoulder girdle will rotate forcefully to the left and move into flexion resulting in quick hand speed at impact with the ball.

BALL CONTACT



According to Alexander the ball should be contacted at peak height of the jump, and at the reach of the athlete. At impact the hitting arm is fully extended above the hitting shoulder. The trunk is also leaning to the left in order to increase the height of reach of the right hand. The athlete is contacting the ball at the highest point of the jump. The hitting arm is fully extended above the shoulder at contact of the ball. According to Alexander, trunk lean to the left at impact increases height of reach and may decrease shoulder impingement of abduction angle decreases.
According to Reeser, the shoulder abduction at the instant of ball contact is approximately 130 degrees.
The athlete contacts the ball with an abduction angle of 140.2. The abduction angle is greater and because of this it could cause shoulder impingement. Decrease in shoulder abduction reduces injury and increases power and velocity when contacting the ball.

LANDING



According to Bisseling, between 40% and 50% of elite volleyball player experience patellar tendinopathy, better known as jumper’s knee.
After making impact with the ball, it is essential for the server to land in the proper athletic position. The hip and knee are essential for relieving impact. Landing in the athletic position takes off load and balance pressure from the joints in the ankle and knee. prevent patellar tendinopathy. It is ideal for knee flexion to be less than 90 degrees. The athlete has an angle of 109.3 which increases the chance of “jumper's knee”

CONCLUSION

- Servers should attempt to utilize as much lateral trunk lean as possible in order to increase reach height as well as decrease the possibility of impingement by decreasing the angle of shoulder abduction
- Resistance bands will increase speed of arm swing and velocity of ball contacting the ball at highest peak.
- Vertical jump exercises will increase height of jump which increases the highest point of reach for serving arm. This results in faster speeds of the ball.

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