Lower Extremity Injuries of Volleyball Players During Moving Spike Landing

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ABSTRACT
Volleyball games worldwide have developed into aggressive volleyball games involving various types of attacking techniques. Among the various attacking techniques, the moving spike is most likely to cause body imbalance. When volleyball players perform a moving spike, to acquire more time and space when hitting the ball, they typically change their attack angle, timing, and position continually. Previous studies on run-up and landing have typically focused on vertical or forward landing. However, in actual sports scenarios, the directions of an attack landing may vary according to situations. To clarify the various sports injuries of volleyball players may sustain from landing after performing a moving spike, 10 male open level volleyball players were recruited from universities to perform 72-cm moving spike landing maneuvers. In the experiment, 11 digital motion cameras were used for 3D image capture, reflective markers were applied to track the locations of the body joints, and two AMTI 3D force plates were used to collect ground reaction force generated by the landing. The results revealed that the participant with the highest risk of sustaining a cruciate ligament tear was 172-cm tall and weighed 63 kg. The negative tibial shear force and horizontal reaction force generated from performing a moving spike were deduced to cause collateral ligament injuries to the participants who had played volleyball for 9–10 yrs. Therefore, we deduced that when volleyball players continually perform moving spike landing maneuvers without appropriate cushioning maneuvers and gear protection during training or competition, their collateral ligaments may develop chronic tendinitis.

Keywords: Volleyball, Moving Spike, Landing, Lower Extremity Injuries

REFERENCES