

SELF-ASSESSMENT DURING JUMP SHOT DRILLS TRANSLATES TO DECREASED VERTICAL GROUND REACTION FORCES DURING SINGLE LIMB DROP JUMP LANDING

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ABSTRACT

Background: Prevention programs reduce hard and stiff landings associated with risk of anterior cruciate ligament (ACL) injury, yet cost and time are barriers to implementation. Providing feedback about landing mechanics during shooting drills at practices using minimal resources and time may improve adherence to educating athletes how to avoid risky mechanics associated with ACL injury when landing. Implementing video, auditory, written, and pictorial feedback into basketball practices to cue athletes on landing mechanics after taking a jump shot may soften the landing.

Purpose: The purpose of this study was to test whether implementing video, auditory, written, and pictorial feedback into a basketball practice jump shot drill (i.e., double limb drop jump landing task) will result in lesser vertical ground reaction force (vGRF) during a single limb drop jump landing without decreasing maximal jump height.

Study Design: Observational, Case-control Study

Methods: During a summer league, 16 female high school basketball players were assigned to an intervention (Int) or control (Con) group. The Int group (n=8) utilized delayed video feedback and task cards (written and pictorial cues) at six practices while the Con group (n=8) received typical coaching only. Cost and compliance with the intervention were measured. Pre- and post-season data collections included five single limb drop jumps from a 31 cm high box onto force plates. The vGRF impulses over the first 10% of landing were calculated for each limb. Data did not differ between limbs, thus data for both limbs were pooled. Two mixed model ANOVAs were used to compare groups over time (p<0.05) for vGRF and maximum jump height, respectively.

Results: Compliance with the intervention was 100% and did not increase the time of drills. The implementation cost was less than \$10. A time*group interaction (p=0.04; Int significantly decreased vGRF over time), main effect of time (p=0.004), and no main effect of group (p=0.412) were found for vGRF during single limb drop jump landings. A time*group interaction (p=0.03; Int significantly decreased max jump height over time), no main effect of time (p=0.10) and no main effect of group (p=0.32) were found for max jump height.

Conclusion: Athletes landed more softly and jumped less high during a single limb drop jump landing task after receiving feedback during jump shot drills. High team compliance may occur since the intervention required minimal resources and addressed different learning styles.

Level of Evidence: Level 3b

Keywords: ACL, injury prevention, knee, movement system, soft landing, video feedback

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