ABSTRACT

**Background:** It has been recognized that anterior cruciate ligament (ACL) injuries typically occur when athletes are attending to a secondary task or object, including teammates, opponents, and/or a goal. Commonly applied tests after ACL injury include a series of hop tests to determine functional status, yet do not control for visual fixation.

**Purpose:** To examine the influence of visual fixation during two functional hop tests in healthy individuals.

**Study Design:** Repeated measures

**Methods:** Participants performed the crossover triple hop for distance (XHOP) on the left lower limb, and the medial triple hop for distance (MHOP) on the right. For the hop test only conditions, participants were not instructed where to fix their vision while performing the hop test. The visual fixation condition required participants to fix their vision on an alternating plus/minus sign at the center of a display monitor located in front of the participant while performing each hop test, respectively. A retest session occurred 48-72 hours after the initial test session in order to examine reliability.

**Results:** Thirty-four healthy adults (age: 24.0 ± 3.9 years) completed testing procedures, performing the XHOP and MHOP under standard and visual fixation conditions. Of those participants, twelve completed a retest session for reliability analysis. Hop distance was not altered by the addition of visual fixation (p = 0.27), with trivial effect sizes found across conditions (d = 0.02 - 0.07); however, the addition of visual fixation slightly improved within- and between-session intrarater reliability, standard error of measurement, and minimal detectable change of the MHOP.

**Conclusion:** Hop distance during the XHOP and MHOP was not influenced by visual fixation. Measurement of both the XHOP and MHOP was reliable, but lacked precision. Measurement properties for the MHOP including within- and between-session reliability, standard error of measurement, and minimal detectable change improved slightly with the addition of visual fixation compared to normal MHOP procedures.

**Level of Evidence:** 2b

**Keywords:** anterior cruciate ligament, hop testing, knee, movement system, vision

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