
ORIGINAL RESEARCH

DETERMINATION OF CLINICALLY RELEVANT DIFFERENCES IN FRONTAL PLANE HOP TESTS IN WOMEN'S COLLEGIATE BASKETBALL AND SOCCER PLAYERS

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ABSTRACT

Background: ACL injury prevention programs are less successful in female basketball players than in soccer players. Previous authors have identified anthropometric and biomechanical differences between the athletes and different sport-specific demands, including a higher frequency of frontal plane activities in basketball. Current injury risk screening and preventive training practices do not place a strong emphasis on frontal plane activities. The medial and lateral triple hop for distance tests may be beneficial for use in the basketball population.

Hypothesis/Purpose: To 1) establish normative values for the medial and lateral triple hop tests in healthy female collegiate athletes, and 2) analyze differences in test scores between female basketball and soccer players. It was hypothesized that due to the frequent frontal plane demands of their sport, basketball players would exhibit greater performance during these frontal plane performance tests.

Study Design: Cross-sectional.

Methods: Thirty-two NCAA Division-1 female athletes (20 soccer, 12 basketball) performed three trials each of a medial and lateral triple hop for distance test. Distances were normalized to height and mass in order to account for anthropometric differences. Repeated measures ANOVAs were performed to identify statistically significant main effects of sport (basketball vs. soccer), and side (right vs. left), and sport x side interactions.

Results: After accounting for anthropometric differences, soccer players exhibited significantly better performance than basketball players in the medial and lateral triple hop tests ($p < 0.05$). Significant side differences ($p = 0.02$) were identified in the entire population for the medial triple hop test, such that participants jumped farther on their left (400.3 ± 41.5 cm) than right (387.9 ± 43.4 cm) limbs, but no side differences were identified in the lateral triple hop. No significant side x sport interactions were identified.

Conclusions: Women's basketball players exhibit decreased performance of frontal plane hop tests when compared to women's soccer players. Additionally, the medial triple hop for distance test may be effective at identifying side-to-side asymmetries

Level of Evidence: 3

Key words: Basketball, frontal plane, hop testing, performance tests, screening, soccer

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