

Lower Extremity Strength and Mobility in Division I Male Basketball Players Across Vertical Jump Performance

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ABSTRACT

Vertical jump (VJ) performance is a commonly used assessment to measure explosive muscular power in collegiate strength and power athletes such as basketball players. However, research on the relationship between VJ performance and measures of lower extremity (LE) strength and mobility is inconsistent. **PURPOSE:** The purpose of this study was to analyze hip and ankle strength and mobility measures among collegiate male basketball players by comparing those with higher and lower VJ performance. **METHODS:** During pre-season screening, ten Division I male basketball players were assessed to determine VJ height by completing a countermovement VJ test. Players were divided into two groups based on VJ performance which were comprised of the top 5 performers (T; 20.8 ± 2.0 years, 186.4 ± 7.4 cm, 79.6 ± 8.6 kg; VJ: 70.4 ± 6.9 cm) and the bottom 5 performers (B; 20.0 ± 1.6 years, 197.4 ± 9.9 cm, 94.2.6 ± 19.7 kg; VJ: 56.9 ± 2.5 cm). Hip range of motion (ROM) was measured with a goniometer, and total hip ROM was calculated as the sum of internal and external rotation for each limb. Ankle dorsiflexion was assessed using a clinometer instrument. Hip abduction (ABD) and adduction (ADD) strength was measured using a dynamometer and calculated relative to body weight. Players also self-reported LE injuries in the prior 12 months. Descriptive statistics were calculated as mean ± standard deviation. **RESULTS:** Compared to B, T had lower left leg hip ROM (69.4 ± 6.6° vs 72.6 ± 7.5°). T had higher right leg hip ROM (73.4 ± 5.0° vs 70.0 ± 11.9°) and left/right ankle ROM (36.8 ± 4.1° vs 33.2 ± 3.0° and 35.4 ± 2.4° vs 32.8 ± 4.0°, respectively). T had higher relative right/left leg ABD strength (43.5 ± 6.3 vs 37.5 ± 10.9 % and 37.8 ± 7.1 vs 36.8 ± 11.8 %, respectively), and right/left leg ADD strength (44.0 ± 21.4 vs 40.9 ± 6.1 % and 41.2 ± 10.5 vs 39.5 ± 12.3 %, respectively). However, only 20% of the T group compared to 60% of the B group reported experiencing a recent LE injury. **CONCLUSION:** Although the T group had higher right leg hip ROM, ankle ROM, and greater hip strength these were just trends, making it difficult to draw any inferences about the association between hip and ankle strength and mobility measures on VJ performance. It is also possible that the greater presence of recent LE injury in the B group may have impacted the findings of this study.