

## **Relationship Between the Y-Balance Test and Lower Extremity Strength and Mobility in Collegiate Lacrosse Players**

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### **ABSTRACT**

Lacrosse players must make quick directional changes, often on one leg while under force. This demands strength, mobility, and motor control throughout the kinetic chain. The Y-Balance test (YBT) has been used to gauge motor control in athletes. Still, more research on the relationship between the YBT and lower extremity (LE) mobility and strength in lacrosse players is needed. **PURPOSE:** The purpose of this study was to examine the relationship between YBT scores, hip range of motion (ROM), ankle dorsiflexion, hip abduction (ABD) and adduction (ADD) strength, and passive and active thoracic rotation in male college lacrosse players. **METHODS:** Fifty Division I male lacrosse players (age:  $20 \pm 1.6$  y; height:  $182.0 \pm 6.3$  cm; weight:  $83.2 \pm 6.0$  kg) performed a YBT including measures of leg length to determine a composite score for the right and left leg (YBT-R and YBT-L, respectively). Thoracic spine active rotation (TS-AR), passive rotation (TS-PR), and range of motion (ROM) at the hip (sum of internal and external rotation) for each limb was measured with a goniometer. 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. Hamstring flexibility was measured using the sit-and-reach test. All players were cleared for testing by the team physician and had no current LE injury precluding them from participating. Descriptive statistics were calculated as mean  $\pm$  standard deviation and Pearson product-moment correlation coefficients were calculated. The level of significance was set at  $p < 0.05$ . **RESULTS:** YBT-R (but not YBT-L) was significantly correlated with TS-AR to the right and left ( $r = 0.41$  and  $r = 0.31$ ,  $p < 0.05$ ), and with the sit-and-reach test ( $r = 0.28$ ,  $p < 0.05$ ). Both YBT-R and YBT-L were significantly correlated with hip ROM on the right only but with both right and left ankle dorsiflexion ( $p < 0.05$ ). **CONCLUSIONS:** YBT scores on the right and left side were related to thoracic spine, hip, and ankle mobility, but not to hip ADD and ABD strength in collegiate male lacrosse players. Hip rotation measures could reflect capabilities for single-leg balance, stability, and proprioception and could improve YBT performance, however further research incorporating alternative LE strength measures is recommended.