Assessing Risk of Lower Extremity Injury: Y-Balance Test™ Lower Quadrant

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Background and Purpose

- Utility of functional testing has become increasingly popular by clinicians in an effort to assess injury risk, baseline deficits from injury, and improvement after treatment. 1,2,3,4,5
- Previous injuries may lead to subtle deficits in neuromuscular control, dynamic posture control, strength, and flexibility. 3,4

Methods

- Prior to balance testing, lower extremity length is measured from the anterior superior iliac spine (ASIS) to the medial malleolus on all patients to standardize reach distances.

- Following familiarization with the YBT-LQ protocols, dynamic standing balance can be quantified by measuring lower extremity reach distances anteriorly (A), posteromedially (PM), and posterolaterally (PL) from 3 successful attempts.

- Initial results of the reach distances may be compared for left to right asymmetries. 3

- Composite score (CS) can be calculated by the sum of three reach directions divided by three times lower limb length (cm), then multiplied by 100. (A + PM + PL) X 100 = CS (3 x Limb Length)

- Using the composite score, a clinician could utilize the injury risk algorithm by Move2Perform for pre-participation physical screenings and to assist with return to sport decisions. 3

- Various treatment modalities can be tested for effectiveness. 7,8

Results and Conclusions

- Composite scores below cut off points (i.e. college football = 89%) increased probability of injury by 37.7% to 68.1%. 3

- Subjects with a composite score under 80 for PL have 48% greater risk of suffering an ankle sprain. In contrast, participants who were able to reach a distance equivalent to 90% of their limb length or higher, had a significantly lower incidence of sprains. 3

- Neuromuscular training and rearfoot distraction manipulation significantly improve YBT-QL scores. 3,4

- Future studies using YBT-LQ should evaluate effectiveness of various chiropractic manipulation treatments.

References


