ABSTRACT

Background: The Modified Star Excursion Balance Test (MSEBT) and the Y-Balance Test- Lower Quarter (YBT-LQ) are utilized to assess dynamic postural stability. These assessments cannot be used interchangeably secondary to kinematic variations and performance differences. A Modified Y-Balance Test-Lower Quarter (MYBT-LQ) was developed to determine if a modification allows performance scores to be directly compared to the MSEBT.

Purpose: The purpose of this research was to determine if reach distances were similar for young, healthy individuals between three different balance tests: the YBT-LQ, the MYBT-LQ, and the MSEBT.

Study Design: Repeated measures, descriptive cohort study

Methods: Twenty-eight participants (17 males, 11 females) were recruited from a convenience sample of young, healthy adults. Participants completed all testing within a single session and performed three trials in each direction, on each leg, for all balance tests. Scoring performance was calculated for each balance test using the average normalized reach distance in the anterior, posterolateral, and posteromedial directions. A one-way ANOVA was used to compare between-subject posteromedial and posterolateral scores, while anterior scores were analyzed using a Kruskal Wallis test. The intraclass correlation coefficient (ICC) was used to determine within-subject participant performance reliability.

Results: Analyses indicated significant differences in the posterolateral and posteromedial reach directions between the YBT-LQ and MSEBT and between the MYBT-LQ and MSEBT, while no significant difference was found between the YBT-LQ and MYBT-LQ in any direction. No anterior reach differences were noted between any of the tests. Within-subject ICCs showed a very strong level of agreement between right and left anterior and right posteromedial reaches between all three tests, while only the YBT-LQ and MYBT-LQ demonstrated very strong agreement in all directions.

Conclusion: Reach performance on the MSEBT differed from the performance on the YBT-LQ and MYBT-LQ in the anterior, posteromedial and posterolateral directions in this population. These findings further support the difference in motor control strategies used during these tests.

Levels of Evidence: 2c

Key Words: balance, postural stability, movement system

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