The Effectiveness of the Y Balance Test Compared to the Star Excursion Balance Test: A Critically Appraised Topic

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Abstract

Clinical Question: Is the Star Excursion Balance Star Excursion Balance Test data interchangeable with the Y Balance Test data in physically active females and males?

Clinical Bottom Line

There is supporting evidence to indicate a significant difference between the anterior reach direction for the Star Excursion Balance Test compared to the Y Balance Test. Evidence also supports that the protocol for the Y Balance Test is more reliable. Ultimately, the clinician’s choice in which test to use when evaluating balance in the anterior reach direction should be based on the reliability and validity of the test.

Inclusion and Exclusion Criteria

Inclusion

• Studies that compared Y Balance Test and Star Excursion Balance Test
• Limited to English language
• Limited to the last six years (2006 - 2016)
• Level 3 evidence or higher

Exclusion

• Not Y Balance Test
• Not Star Excursion Balance Test
• Nonphysically active or sedentary

Characteristics of Included Studies


Study Design
Coughlin et al. (2011) Cohort Study
Goble et al. (2011) Cohort Study
Petry (2009) Cohort Study
Future (2016) Cohort Study

Participants
20 healthy male participants volunteered (age 18 - 30 years old; mean age = 21.1 years; height = 177.1 cm; weight = 77.1 kg).
20 healthy male participants volunteered (age 18 - 30 years old; mean age = 20.8 years; height = 176.8 cm; weight = 77.0 kg).
15 male collegiate soccer players (17 - 21 years old; mean age = 19.5 years).
16 healthy, lean and 14 healthy females volunteered. Ethnicity: Caucasian (86%), Hispanic (13%), African-American (1%).

Intervention/Investigated

Participants were randomized to test, excepting any concomitant factors, such as lower limb injuries. Demonstrations were given to all participants and participants were randomized to either test. The Star Excursion Balance Test and the Y Balance Test were evaluated using the(settings for each reach of the test) to be performed in the change of plane. All participants were instructed to perform the tests only once, and every participant was instructed to perform the test "as correctly as possible" in the 15-minute session. The Star Excursion Balance Test and the Y Balance Test were evaluated using the following methods: reach distance, initial position of the foot at the start of the test, and angle of hip at the start of the test. Participants were instructed to perform the tests "as correctly as possible" in the 15-minute session. Participants were randomized to test, excepting any concomitant factors, such as lower limb injuries. Demonstrations were given to all participants and participants were randomized to either test. The Star Excursion Balance Test and the Y Balance Test were evaluated using the(settings for each reach of the test) to be performed in the change of plane. All participants were instructed to perform the tests only once, and every participant was instructed to perform the test "as correctly as possible" in the 15-minute session. The Star Excursion Balance Test and the Y Balance Test were evaluated using the following methods: reach distance, initial position of the foot at the start of the test, and angle of hip at the start of the test.

Outcome Measures

The reach distance for the left test and reach distance for the three directions of the Y Balance Test and the Star Excursion Balance Test were measured. The inter-rater reliability and validity of the test were measured by calculating the intraclass correlation coefficient (ICC) that ranged from 0.86 to 0.92. The test was performed on the right side in all studies and on the left side in three studies. The test was performed on three test trials. The test was performed on the right side in all studies and on the left side in three studies. The test was performed on three test trials. The test was performed on the right side in all studies and on the left side in three studies. The test was performed on three test trials.

Findings

Differences were found when comparing the SEBT to the YBT in the anterior reach direction. The rolling hip angle (data) of the SEBT was significantly higher than the YBT, ranging from 4.57% to 14.85% at the left leg and ranging from -0.35% to 14.97% at the right leg. The data didn’t change for the left leg, but the data changed for the right leg. The data that wasn’t changed for the left leg, but the data changed for the right leg. The data that wasn’t changed for the left leg, but the data changed for the right leg. Differences were found when comparing the SEBT to the YBT in the anterior reach direction. The rolling hip angle (data) of the SEBT was significantly higher than the YBT, ranging from 4.57% to 14.85% at the left leg and ranging from -0.35% to 14.97% at the right leg. The data didn’t change for the left leg, but the data changed for the right leg. The data that wasn’t changed for the left leg, but the data changed for the right leg. Differences were found when comparing the SEBT to the YBT in the anterior reach direction. The rolling hip angle (data) of the SEBT was significantly higher than the YBT, ranging from 4.57% to 14.85% at the left leg and ranging from -0.35% to 14.97% at the right leg. The data didn’t change for the left leg, but the data changed for the right leg. Differences were found when comparing the SEBT to the YBT in the anterior reach direction. The rolling hip angle (data) of the SEBT was significantly higher than the YBT, ranging from 4.57% to 14.85% at the left leg and ranging from -0.35% to 14.97% at the right leg. The data didn’t change for the left leg, but the data changed for the right leg. Differences were found when comparing the SEBT to the YBT in the anterior reach direction. The rolling hip angle (data) of the SEBT was significantly higher than the YBT, ranging from 4.57% to 14.85% at the left leg and ranging from -0.35% to 14.97% at the right leg. The data didn’t change for the left leg, but the data changed for the right leg.

The inter-rater reliability was excellent for all 16 reach directions for each reach trial. The inter-rater reliability was excellent for all 16 reach directions for each reach trial. The inter-rater reliability was excellent for all 16 reach directions for each reach trial. The inter-rater reliability was excellent for all 16 reach directions for each reach trial.

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The Y Balance Test has three reach directions, a clear starting position, a clear, standardized protocol; and a commercially crafted testing kit to improve reliability and repeatability. The Y Balance Test has three reach directions, a clear starting position, a clear, standardized protocol; and a commercially crafted testing kit to improve reliability and repeatability. The Y Balance Test has three reach directions, a clear starting position, a clear, standardized protocol; and a commercially crafted testing kit to improve reliability and repeatability.

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Implications for Practice, Education, and Future Research

Two studies in this CAT evaluated the differences between the Star Excursion Balance Test and the Y Balance Test on physically active males and females. Both studies found that the anterior reach direction had a significant difference between the two tests. There was no significant difference between the other two reach directions. Therefore, the two tests cannot be used interchangeably. The other two studies evaluated the reliability for the two balance tests. The Star Excursion Balance Test was shown to have good reliability as long as the tester has been trained and practiced. The Y Balance Test demonstrated excellent reliability due standardized protocol and testing instrument. However, all four studies have limited quality, and so each, conclusions should be interpreted with caution.

The conclusion from the four studies in this CAT is that the Y Balance Test is designed to improve the limitations of the Star Excursion Balance Test. It is noteworthy that three of the four studies were not conducted within the United States; therefore, it may limit the ability to generalize the outcomes and recommendations. The four studies combined 20, 29, 13, and 15 participants making it difficult to generate with a limited number of studies conducted. All of the studies were conducted using university participants suggesting that they were physically active. However, it is unclear how the results translate to other age groups regardless of physical activity level.

Future research should include determining which balance test is more clinically appropriate when looking at the entire scope of determining injury risk, return to play, and possibly concussion protocol. Longitudinal studies would provide data on the effectiveness of the test in preventing injuries. The reliability and validity of the Y Balance Test is better than the Star Excursion Balance Test. The Y Balance Test is more reliable, and the Y Balance Test is more reliable. The Y Balance Test is more reliable, and the Y Balance Test is more reliable. The Y Balance Test is more reliable, and the Y Balance Test is more reliable.

In conclusion, the Y Balance Test has been shown in this CAT to have good reliability as long as the tester has been trained and practiced. The Y Balance Test demonstrated excellent reliability due standardized protocol and testing instrument. However, all four studies have limited quality, and so each, conclusions should be interpreted with caution.

References


Search Strategy

Terms Used to Guide Search Strategy

• Patient/Client Group: Active females OR males
• Intervention (or Assessment): Y Balance Test
• Comparator: Star Excursion Balance Test
• Outcome: Inter-rater reliability between test data (reach distances for all three directions)