

Differences in Reach Scores Between Three Upper Quarter Y-Balance Test Versions in Older Adults

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ABSTRACT

The Upper Quarter Y-Balance Test (UQYBT) is often used to measure shoulder mobility and stability and screen for upper extremities musculoskeletal disorders in the physically active and athletic population. Shoulder injuries are typical among older adults, often decreasing the quality of life. There are no studies investigating the functionality of the UQYBT in older adults. **PURPOSE:** To examine the functionality of the UQYBT and two variations on the older population, 50 years old and older. **METHODS:** Eight individuals (2 males and 6 females) participated in this study (56.8 ± 3.9 years, 166.0 ± 10.0 cm, 69.6 ± 13.5 kg). Each participant completed a five-minute warm-up on an arm ergometer followed by an arm length measurement. Participants completed the three UQYBT variations in a randomized order; Standard push-up position (SUQYBT), Modified push-up position (MUQYBT), and Wall push-up position (WUQYBT). In each variation, participants completed three reaches in the medial, inferolateral, and superolateral directions for the right and left hands. Highest score for each reach from the different UQYBT variations and supporting hand were saved to further analysis. Relative reach scores were calculated using the right arm length as reference. Composite scores were calculated by averaging the reach scores of the three directions. Repeated measured ANOVAs were used to compare reach score between the UQYBT variations in the older population. This was followed by post-hoc analysis; alpha level was set to 0.05. **RESULTS:** Significant main effects were identified in the medial reach (p -value <0.01), superolateral reach (p -value <0.01), and composite score (p -value <0.01) between the test variations. No significant differences were observed in the inferolateral reach (SUQYBT $84.3 \pm 12.4\%$; MUQYBT $80.8 \pm 9.5\%$; $83.5 \pm 14.4\%$), p -value $=0.710$. Post hoc analyses identified that in the medial reach, on average, the scores were lower in the SUQYBT ($99.7 \pm 7.9\%$), than in the MUQYBT ($111.1 \pm 14.5\%$), and WUQYBT ($121.5 \pm 10.9\%$), p -value <0.01 . MUQYBT had lower scores than the WUQYBT, p -value $=0.02$. In the Superolateral reach, on average, WUQYBT scores ($81.1 \pm 9.5\%$) were higher than MUQYBT ($70.1 \pm 10.1\%$) and SUQYBT ($58.3 \pm 7.5\%$), and MUQYBT scores were higher than SUQYBT, p -value <0.01 . Similar results were identified in the composite scores, on average, WUQYBT scores ($95.4 \pm 9.3\%$) were higher than MUQYBT ($87.3 \pm 10.7\%$) and SUQYBT ($80.8 \pm 7.7\%$), and MUQYBT scores were higher than SUQYBT, p -value <0.02 . **CONCLUSION:** Several differences were observed between the three UQYBT variations. When the reach was outside of the participant's base of support (medial and superolateral reaches) WUQYBT had the highest score followed by MUQYBT and last SUQYBT. During the inferolateral reach, participants were able to get similar reach scores between the different UQYBT variations. Further studies should study the option to use the two UQYBT variations in the older population.