A Comparison of Constrained and Unconstrained Upper Quarter Y-Balance Tests Performance in the Adult Active Population

ETCHEBASTER MICHELLE, AMASAY TAL, CEDENO RYAN & VILMEAU SAMUEL

Motion Analysis Center; Department of Sports and Exercise Science; Barry University; Miami Shores, FL

Category: Masters

Advisor / Mentor: Amasay, Tal (tamasay@barry.edu)

ABSTRACT

Common screening tools for upper extremity functionality tend to focus only on power, speed, and/or stability of the shoulder. Previous research studies validated the reliability of the Upper Quarter Y-Balance Test (UQYBT) as a clinical tool to measure unilateral upper extremity function, dynamics, as well as indirectly thoracic mobility. The distinctiveness of this test is the combination of shoulder girdle mobility and stability, core stability, thoracic rotation, and overall muscles strength to reach as far as possible without losing balance in the single arm stance position. Thus, measuring upper body strength and thoracic rotation may predict performance. **PURPOSE**: The aim of this study is to compare the performance of physically active individuals in two variations of the UQYBT, constrained and unconstrained, and to measure the relation of upper body strength and trunk mobility with the UQYBT reach scores. **METHODS**: Five male (31.2±9.0 years, 1.73±.02 m, 78.8±7.0 kg) and five female (24.4±.8 years, 1.67±.06 m, 71.4±2.7 kg) college students participated in two testing sessions. Participants completed a maximal push-up test and a maximal seated trunk rotation mobility test. During the second session, participants performed the Constrained UQYBT (participant keeps the push-up position) and the Unconstrained variation in which it was allowed to flex elbow of supporting arm and flex the hip when reaching in any direction. For each test, subjects completed three reaches in medial, inferolateral, and superolateral directions. Maximal reach scores in each direction were identified and composite scores were calculated for the two UQYBTs. MANOVA was used to identify differences in reach scores between the Constrained and Unconstrained UQYBTs, significance level was set to .05. Pearson correlation was used to identify relations between maximal push-up score and maximal trunk rotation range of motion (ROM) with the UQYBT reach scores. **RESULTS**: Significant differences were observed for all reach scores between the Constrained and Unconstrained UQYBTs. Unconstrained UQYBT had higher reach score scores than the Constrained UQYBT in medial (119±9% vs 100±7%, p-value<.001), inferolateral (110±14% vs 80±10%, p-value<.001), and superolateral (82±13% vs 73±13%, p-value=.042) directions, and in the composite score (103±10% vs 84±8%, p-value<.001). Moderate to strong positive correlations were observed between maximal trunk rotation ROM and most reach scores in Constrained and Unconstrained UQYBTs. The correlation coefficients were between .331 to .605. Moderate positive coefficient (r=.365) was identified between max push-ups and Constrained Inferolateral reach. In contrast, strong negative correlation (r=-584) was identified between Unconstrained superolateral reach and max push-ups. **CONCLUSION**: The main finding of this study identified the big difference in reach scores between Constrained and Unconstrained UQYBTs. Practitioners need to be cautious when performing the UQYBT and when comparing reach scores from different resources. Moreover, it seems that large trunk mobility is associated with higher UQYBT reach scores.