

Core Strength as a Predictor of Performance During Three Functional Movement Screens

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Current measures of core stability utilized by clinicians and researchers suffer from a number of shortcomings. Three functional movement screens appear, at face-value, to be dependent on the ability to activate and control core musculature. As a whole, these three screens may present a viable alternative to current measures of core stability. **PURPOSE:** To determine the relationship of core strength and muscle activation to performance on these three screens **METHODS:** Thirty-nine subjects completed a deep squat (DS), trunk stability push-up (TSP), and rotary stability (RS) screen. Scores on the three screens were summed to form a composite score (COMP). During the screens, muscle activity was collected to determine the length of time that the bilateral erector spinae, rectus abdominus, external oblique, and gluteus medius muscles were active during the screens. Strength was assessed for core muscles (trunk flexion/extension, trunk rotation, hip abduction/adduction) and accessory muscles (knee flexion/extension, and pectoralis major). Strength variables were eliminated due to multicollinearity and two ordinal logistic regression equations were calculated with COMP as the outcome variable. The first equation included both core strength variables and accessory strength variables as predictors. To compare the relative amount of variance explained, independent of the accessory strength variables, the second equation only contained core strength variables. **RESULTS:** The first model was significant in predicting COMP ($p=.004$) (Pearson's Chi-Square=149.132, $p=.435$; Nagelkerke's R-Squared=.369). The second model was significant in predicting COMP ($p=.001$) (Pearson's Chi Square=148.837, $p=.488$) and the explained variance was similar to the full model (Nagelkerke's R-Squared=.362). The core muscles were found to be active for the majority of screens, with percentages of 'time active' for each muscle ranging from 54%-86%. **CONCLUSION:** Performance on the three screens is predicted by core strength, even when accounting for other strength variables. Further, it appears the screens elicit wide-ranging activation of core muscles. While more investigation is needed, the DS, TSP, and RS, collectively, appear to be a good assessment of core strength.

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