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All Limbs Lead to the Trunk

Daniel E. Graves, PhD
*Thomas Jefferson University*

Darryn Atkinson, PhD, PT
*University of Louisville*

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This poster describes the development of and the psychometric properties of the trunk scale that measures the voluntary motor ability in the thoracic and upper lumbar regions. The function of the trunk musculature has far reaching implications, particularly in persons with SCI, where postural control and voluntary movement are compromised to varying degrees. Precisely coordinated muscle actions must occur in the appropriate sequence, duration, and combination for the optimal movement function and maintenance of balance and posture during dynamic activities. Trunk mobility is required for nearly all mobility tasks, particularly transitional movements such as rolling, supine to sit, and sit to stand, as well as activities of daily living which involve upper extremity movements such as reaching. The muscles innervated by the thoracic and lumbar spine play key roles in body positioning and posture which are very important in conducting functional activities such as ambulation, reaching and activities of daily living (ADL).

**Methods**

Participants: Data collected from a total of 867 individuals. Three hundred twenty five (325) observations of the trunk scale by the five contributing study centers is entered into the National SCI Database for the validity study; Five Hundred eighty five (585) observations from a collaborating network will be utilized for scaling the measure. There are also 60 able bodied controls that were included.

Inclusion Criteria: 1) cervical motor incomplete or thoracic SCI; 2) no mobility restrictions (i.e., no body jackets or collars) and no spinal instability precautions.

Thirteen Items: Lumbar and thoracic trunk extension, right and left elevation of the pelvis, trunk flexion and right and left trunk rotation, sit to supine, supine to sit, sitting posture, sitting extension, sitting and standing balance. The total time for administering 10 to 15 minutes.

**Dimensionality**

Factor analysis indicated that there is a single dominant factor accounting for 55% of the variance contained in the 13 items. The single factor had a 4.85-

**Validity**

All of the construct validity hypotheses were confirmed. The table shows the hypotheses correlation coefficients and 95% confidence intervals for the variables utilized in the validity investigation. Additionally it was hypothesized that the trunk scale should distinguish between able bodied and SCI participants. The figure below shows that the mean MLE estimates with 95% confidence intervals for the trunk scale scores and level and extent of spinal cord injury. The scores clearly distinguish between able bodied and SCI participants.

**Conclusion**

This study presents data that shows the trunk scale is a reliable and valid instrument for assessing a subject’s control of the trunk musculature following SCI. The trunk scale is quick and easy to administer. More research is needed to more fully understand the metric properties of this instrument. For more information Daniel.Graves@Jefferson.edu