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Segmental Assessment of Trunk Control (SATCo)

Availability:	**For more information, and to obtain a copy of the instrument, please click here:** **Segmental Assessment of Trunk Control Link** For more information, please contact: **info@the-movement-centre.co.uk**
Classification:	**Exploratory:** Spinal Cord Injury (SCI)-Pediatric (ages 0–18 years old) **Supplemental:** Cerebral Palsy (CP)
Short Description of Instrument:	**Construct measured:** Static and Dynamic Trunk Control. **Generic vs. disease specific:** Generic **Means of administration:** Examiner administered. **Intended respondent:** Administrator. **Background:** The Segmental Assessment of Trunk Control (SATCo) (Butler et al., 2010; The Movement Centre, 2016) tests the child's trunk control in sitting as the evaluator progressively changes the level of trunk support from a high level of support at the shoulder girdle to assess cervical (head) control, through support at the axillae (upper thoracic control), inferior scapula (mid thoracic control), lower ribs (lower thoracic control), below ribs (upper lumbar control), pelvis (lower lumbar control), and finally, no support, in order to measure full trunk control. This evaluation tool looks at the present level of trunk control and the ability to achieve balance when a perturbation is imposed.
Comments / Special Instructions	For each trunk segmental level static, active, and reactive control are assessed, except for reactive control of the head. It should be noted that these various aspects of control may or may not be simultaneously present at the same or even at adjacent levels. The child's ability to maintain or quickly regain a vertical position of the unsupported trunk in all planes is assessed during static, active, and reactive testing and control accordingly scored as present or absent. The nudge to test reactive control, is applied once from each principal direction (front, back, left, right) and the point of nudge application remains at the shoulder level throughout. This means that, as the support level is lowered, the number of joints free of support and which thus require voluntary control will increase. At the same time the disturbing moment increases at the joint directly above the support as the length of the moment arm increases. Both frontal and sagittal video views are recommended In cases when vertical collapse of the trunk (where the center of mass of the head remains within the base of support) is noted during administration of the test particular attention to a true sagittal video view is recommended.
Scoring:	For each trunk segmental level static, active and reactive control are scored as present, absent, or not tested (NT). Static control is credited if the child can maintain a neutral trunk posture above the level of hand support for 5 seconds; active control is credited if the child can maintain a neutral posture during head turning or reaches toward an object with both hands; reactive control is credited if the trunk above the support remains stable during an external perturbation (a nudge).

Rationale/ Justification:	**Strengths/Weaknesses:** It's validation includes children with CP of all GMFCS and MACS levels from ages 1 year to 17 years. It also looks at the trunk, not as a single segment, but as differing segments to allow more accuracy with identifying the level of the trunk that the child has control, offering a way to test children with greater impairments. There may be some challenges for administration as specific equipment is needed, including a bench and strapping system, and it may be difficult to recognize loss of control versus maintenance of a habitual posture in more impaired children. **Psychometric Properties**: Intraclass correlation coefficient (ICC) for interrater reliability (6 raters with varied experiences) was 0.85 to 0.88 for typically developing infant group and 0.80 to 0.82 for children with cerebral palsy. ICC for intrarater reliability was 0.98. In children with CP, GMFM 66 Dimension B (sitting), and Pediatric Evaluation of Disabitlity Inventory Mobility Domain all had positive correlations with the SATCo, while GMFCS (lower score means higher functional level) negatively correlated with the SATCo (higher score means higher functional level).
References:	**Key References:** Butler PB, Saavedra S, Sofranac M, Jarvis SE, Woollacott MH. Refinement, reliability, and validity of the segmental assessment of trunk control. Pediatr Phys. 2010;22(3):246–257. Butler PB. A preliminary report on the effectiveness of trunk targeting in achieving independent sitting balance in children with cerebral palsy. Clin Rehab. 1998;12(4):281–293. The Movement Centre. (2016). Segmental Assessment of Trunk Control – SATCo. Retrieved https://www.the-movement-centre.co.uk/. **Additional References:** Banas BB, Gorgon EJ. Clinimetric properties of sitting balance measures for children with cerebral palsy: a systematic review. Phys Occup Ther Pediatr. 2014;34(3):313–334. Curtis DJ, Butler P, Saavedra S, Bencke J, Kallemose T, Sonne-Holm S, Woollacott M. The central role of trunk control in the gross motor function of children with cerebral palsy: a retrospective cross-sectional study. Dev Med Child Neurol. 2015;57(4):351–357. Hansen L, Erhardsen K, Bencke J, Magnusson SP, Curtis DJ. The reliability of the segmental assessment of trunk control (SATCO) in children with cerebral palsy. Physiother. 2015;101(Suppl 1):e522–e523. Saether R, Helbostad JL, Riphagen, II, Vik T. Clinical tools to assess balance in children and adults with cerebral palsy: a systematic review. Dev Med Child Neurol. 2013;55(11):988–999.