Trunk Control Test for individuals with SCI (TCT-SCI)

Assessment Overview

Assessment Area

ICF Domain: Activity

Subcategory: Mobility

You Will Need

Length:
13 items, approx. 10 minutes.
Initial Position – Seated with feet on a supporting surface, knees flexed at 90 degrees, without trunk support, hands resting on thighs.

- Static equilibrium:
  - 1: Maintaining the initial sitting position
  - 2 & 3: Maintaining the sitting position with each leg crossed over the other in turn
- Dynamic equilibrium:
  - 4: Touching the feet.
  - 5: Lying down in the supine position and returning to the initial position.
  - 6 & 7: Rolling onto the right and left sides.
- Dynamic equilibrium activities with arms:
  - Items 8-12: Reaching tasks performed from the initial position with one arm in 90° shoulder flexion, elbow in full extension, forearm in pronation, hand joint in neutral plantar dorsiflexion, and fingers in extension (3 directions on each side).

Scoring:
Items on test are scored 0 to 2.
0 = Not able to complete
1 = Needs support of arms
2 = Maintains position for 10 seconds

Summary

The Trunk Control Test for individuals with SCI (TCT-SCI) is a 13-item trunk function scale for individuals with SCIs.

It evaluates a person's balance during the completion of 13 different motor tasks, starting from an unsupported seated position, then attempting motor tasks that are either static or dynamic in equilibrium.

The TCT-SCI will help to identify the level of trunk control people have, and which activities of daily living (ADLs e.g., toileting, dressing, feeding) that people may be able to perform independently - **with or without upper limb support**.

Recently, cutoff scores on the TCT have been established that predict whether someone can perform ADLs independently (as measured by the SCIM-III – see Typical Values cell below).

Availability

Worksheet: Can be found in the Supplementary information of the following article:
https://pubmed.ncbi.nlm.nih.gov/24710149/

*Items 6 & 7 – Rolling onto left/right side are scored 0 if person can not complete and 1 if they can (supported or not). Maximum score is 24 points, with higher scores indicating better trunk function. Person may test 3 times and best result is their score.

Assessment Interpretability

Minimal Clinically Important Difference

Not established in SCI

Statistical Error

Not established in SCI

Typical Values

SCIM III Item: TCT Cutoff score for performing task independently:

1. Feeding: 2
2A. Bathing: 5
2B. Bathing: Lower body 14
3A. Dressing: Upper body 6
3B. Dressing: Lower body 15
4. Grooming: 4
5. Respiration: 1
8. Use of toilet: 18
9. Mobility in bed: 10
10. Transfers: bed-wheelchair: 17
11. Transfers: Wheelchair-toilet/tub: 18
12. Mobility indoors wheelchair users: 9
13. Mobility for moderate distances - Wheelchair users: 11
14. Mobility outdoors - Wheelchair users: 13
16. Transfers: wheelchair-car: 20
17. Transfers: ground-wheelchair: 19

(Quinzaños-Fresnedo et al. 2024; N=604 participants with SCI; 70.6% males, 29.4% females; mean(SD) age: 34.5 (14.17) years AIS A (47.1%), AIS B (9.4%), AIS C (23.2%), AIS D (20.2%); Injury level: High tetraplegia (C4 and above) (31.4%), low tetraplegia (below C4) (16.1%), high paraplegia (T6 and above) (14.9%), and low paraplegia (below T6) (37.6%); mean (SD) time since injury was 134 ± 360 days)

Measurement Properties

Validity – **High**

High correlation with the TASS:

rs = 0.68

High correlation with the UEMS:

rs = 0.82

High correlation with the mFIM:

rs = 0.72

(Sato et al. 2023; n=30; 5 males, 25 females; mean age 63.8 years; ASIA A-D; tetraplegia and paraplegia; mean (SD) time since injury: 1142.0 (1720.7) days)

High correlation with the SCIM:

rs = 0.873

(Quinzaños et al. 2014; n=177; 72.9% males, 27.1% females; mean age 38.1 years; ASIA A-D; injury level: 39.5% cervical, 54.2% thoracic, 6.2% lumbar; mean (SD) time since injury: 6.65 (8.38) months)

Number of studies reporting validity data: 2

Reliability – **High**

High Inter-rater reliability:

ICC: 1.00 (0.99-1.00)

K_W = 0.987

(Sato et al. 2022; n=9; 8 males, 1 female; mean age 64.0 years; ASIA A-D; mean (SD) time since injury: 3515.9 (5984.2) days)

(Quinzaños et al. 2014; n=177; 72.9% males, 27.1% females; mean age 38.1 years; ASIA A-D; injury level: 39.5% cervical, 54.2% thoracic, 6.2% lumbar; mean (SD) time since injury: 6.65 (8.38) months)

High Test-retest reliability:

K_W = 0.99

(Quinzaños et al. 2014; n=177; 72.9% males, 27.1% females; mean age 38.1 years; ASIA A-D; injury level: 39.5% cervical, 54.2% thoracic, 6.2% lumbar; mean (SD) time since injury: 6.65 (8.38) months)

High Internal Consistency:

α = 0.98

(Quinzaños et al. 2014; n=177; 72.9% males, 27.1% females; mean age 38.1 years; ASIA A-D; injury level: 39.5% cervical, 54.2% thoracic, 6.2% lumbar; mean (SD) time since injury: 6.65 (8.38) months)

Number of studies reporting reliability data: 2

Responsiveness

Floor/Ceiling Effect:

Not established in SCI

Effect Size:

Not established in SCI

Number of studies reporting responsiveness data:

Not established in SCI