

Timed Up and Go (TUG) Walking Test

Assessment Overview

Assessment Area

ICF Domain:

Activity

Subcategory:

Mobility

You Will Need

Length:

5-10 minutes

Equipment:

- A chair
- A 3m walkway
- A cone or line to demarcate 3-meter boundary
- A stopwatch

Scoring:

The time for the up and go test is measured in seconds. Instability during turning and walking aid used are also noted.

Summary

- The Timed Up and Go (TUG) walking test measures gait performance and balance. The task of this test incorporates mobility, balance and lower extremity leg strength. The individual is instructed to stand up from an arm chair, walk 3 meters, return to the chair and sit down at their preferred walking speed.
- The distance walked in the TUG is only 3 meters and so it is not a test of walking endurance.
- The test is simple and fairly easy to administer, however, it is not appropriate for many individuals with SCI.
- The TUG test was originally developed to measure walking balance in older adults, and has yet to be widely used in the SCI population.
- Some proponents have advocated for use of a mean time from 3 successive trials due to potential learning effect.

Availability

Worksheet: Can be found [here](#).

Video: [SCIREproject.com - Timed Up and Go - YouTube](https://www.youtube.com/watch?v=SCIREproject.com)

Assessment Interpretability

Minimal Clinically Important Difference

14.5 seconds

(Duffell et al. 2015; n=83; 57 males, 26 females; mean age: 47.28 years; outpatient; and incomplete SCI; and >12 months post-injury)

Statistical Error

Standard Error of

Measurement: 0.23 to 0.41

(Srisim et al. 2015; n=83; ASIA C-D)
(Poncumhak et al. 2014; n=60; ASIA C-D)

Standard Error of

Measurement:

3.9 seconds

Minimal Detectable Change:

10.8 seconds

(Lam et al. 2008, calculated from measurements made in van Hedel et al. 2005; n=22; 14 males; AIS A-D; paraplegia; and no information on chronicity)

Typical Values

Mean (SD) Scores:

36 (27) seconds; range = 8-156 seconds

(van Hedel et al. 2005; n=75; 45 males; level of injury: cervical - sacral; no information on chronicity)

Threshold Values:

Not established in SCI; but for community-dwelling older adults, a time of > 13.5s indicates a risk of falling.

(Shumway-Cook et al 2000; n=30; mean (SD) age 78 (6) years; sensitivity = 80%, specificity = 100%)

Measurement Properties

Validity – **Moderate** to **High**

High correlation with Berg Balance Scale (BBS):

$r = -0.75$ to -0.815

(Jorgensen et al. 2017; $n=46$; 32 males, 14 females; 7 ASIA A-C, 39 ASIA D)
(Lemay & Nadeau 2010; $n=32$; 25 males; AIS D; level of injury: cervical – lumbar; and mean (SD) time since injury: 77.2 (44.3) days)

High correlation with SCI-Functional Ambulation Inventory (SCI-FAI):

Correlation = -0.724 to -0.802

High correlation with 10 Meter Walk Test (10MWT):

Correlation with 10MWT speed = -0.646

(Lemay & Nadeau 2010; $n=32$; 25 males; AIS D; level of injury: cervical – lumbar; and mean (SD) time since injury: 77.2 (44.3) days)

High Correlation with 10MWT time:

$r = 0.81$ - 0.96

(van Hedel 2008; $n=6$ - 127 (depending on time-point), calculated at 2 weeks, 1 month, 3 months, 6 months, and 12 months post-injury, no info on injury types)

High correlation with Walking Index for SCI (WISCI-II):

Correlation = -0.76

High correlation with 6 Minute Walk Test (6MWT):

Correlation = -0.88

(van Hedel et al. 2005; $n=62$; mixed injury types, no information on chronicity)

High correlation with Mini BESTest:

Correlation = -0.75

Moderate correlation with SCI Gait Deviation Index

$r=0.582$

(Sinovas-Alonso et al. 2023; $n=35$; 24 males, 11 females; mean (SD) age: 35.5 (17.2) years; and incomplete SCI. $n=50$ non-SCI).

Moderate correlation with Standing and Walking Assessment Tool

Correlation $\rho=-0.691$ ($p<0.001$)

(Musselman et al. 2022; $n=618$; 141 females; and traumatic SCI)

Number of studies reporting validity data: 9

Reliability – **High**

High Inter-rater Reliability:

ICC = 0.999

(Srisim et al. 2015; $n=83$; ASIA C-D; and mean time since injury (multiple and non-multiple fallers): 46.72-58.70 months)

High Intra-rater Reliability:

Correlation = 0.979

(van Hedel et al. 2005; $n=22$; 14 males; 7 cervical, 7 thoracic, 7 lumbar, and 1 sacral; and no information on chronicity)

Number of studies reporting reliability data: 4

Responsiveness

Floor/Ceiling Effect:
Not established in SCI

Effect Size:
Not established in SCI

**Number of studies reporting
responsiveness data: 0**