

10 Meter Walking Test (10 MWT)

Assessment Overview

Assessment Area

ICF Domain:

Activity

Subcategory:

Mobility

You Will Need

Length:

Less than 5 minutes

Equipment:

14m corridor

Stopwatch

Scoring:

The time (to the nearest second) is reported.

Walking speed (m/s) can be calculated by dividing 10 metres by time in seconds.

Summary

The 10 Meter Walking Test (10 MWT) assesses short duration walking speed (m/s). It has been used in various patient populations including stroke, Parkinson's disease, general neurologic movement disorders and SCI.

The 10 Meter Walking Test (10 MWT) is clinician-administered, and measures the time required to walk 10 meters. The test is performed using a "flying start": the patient walks 14 meters and the time is measured for the intermediate 10 meters.

The individual performing the test:

- Walks at his/her preferred walking speed,
- May use their usual assistive devices (e.g, braces, walker), and
- Must wear shoes.

Availability

Available for free here (Under How to Use):

<https://scireproject.com/outcome-measures/outcome-measure-tool/10-meter-walking-test-10-mwt/#1467983894177-6b9fb7a3-f550>

Video: <https://www.scireproject.com/outcome-measures/video>

Assessment Interpretability

Minimal Clinically Important Difference

0.15 m/s

(Forrest et al. 2014; n=249, 190 male, incomplete SCI, outpatient, median time since injury = 0.7 years)

Statistical Error

Standard Error of Measurement:

0.05 m/s

(Lam et al. 2008, calculated from measurements made in van Hedel et al. 2005; n=22, 14 males, mixed injury types, no information on chronicity)

Minimal Detectable Change:

0.105 m/s

(Tester et al. 2016; N=72, 57 male; 20 sessions of locomotor training; mixed injury type; median (range) time post-SCI = 0.7 (0.1-14.7) years)

Typical Values

Median (range) Scores:

All individuals: 0(0-2.0)-0(0-2.6)

AIS-A/B: All non-ambulatory

AIS-C: 0(0-0.5)-0(0-1.7)

AIS-D: 0.3(0-2.0)-0.8(0-2.6)

(Post locomotor training; Harkema et al. 2016; N=152, 123 male; mixed injury type; median (range) time post-SCI = 0.9 (0.1-45.2) years)

Threshold Values:

Not established in SCI, but for stroke patients:

Household ambulation: < 0.4 m/s

Limited community ambulation:

0.4 – 0.8 m/s

Full community ambulation: > 0.8 m/s

(Perry et al., 1995, N=147, stroke patients)

Measurement Properties

Validity – **Low** to **High**

High correlation with Walking Index for SCI:

At 3 months $r = 0.78$
At 6 months $r = 0.85$
At 12 months $r = 0.77$

High correlation with Functional Independence Measure-Locomotor Score:

At 3 months $r = 0.80$
At 6 months > 0.80
At 12 months $r = 0.66$

High correlation with 6-Minute Walk Test:

At 3 months $r = 0.95$
At 6 months > 0.80
At 12 months $r = 0.92$

(Ditunno et al. 2007; $n=146$, 114 males, inpatient, incomplete SCI, within 1 year post-injury)

Low to **Moderate** correlation with ASIA Motor Scale:

UEMS $r = 0.24$
LEMS $r = 0.69$
ASIA Motor Score $r = 0.63$

(Harkema et al. 2016; $N=152$, 123 male; mixed injury type; median (range) time post-SCI = 0.9 (0.1-45.2) years)

Moderate to **High** correlation with WISCI-II

$r = -0.37$ to -0.795

Moderate correlation with LEMS

$r = -0.4$ to -0.39

(Perez-Sanpablo et al. 2017; $n=23$, 15 males, mean age: 45.6 ± 12.6 years, chronic and subacute injury types).

Number of studies reporting validity data: 15

Reliability – **High**

High Test-retest Reliability:

ICC = 0.977-0.981

(Musselman and Yang 2013; $n=20$, 14 males, incomplete SCI, time since injury (SD) = 5.4 (8.8) years)

High Inter-rater Reliability:

ICC = 0.997

(Srisim et al. 2015; $n=83$, chronic SCI, mixed injury types, mean time since injury (multiple and non-multiple fallers) = 46.72-58.70 months)

High Intra-rater Reliability:

ICC = 0.974

(Van Hedel et al. 2005; $n=22$, 14 males, mixed injury types, no information on chronicity)

High Test-retest Reliability:

ICC = 0.983-0.97

(Perez-Sanpablo et al. 2017; $n=23$, 15 males, mean age: 45.6 ± 12.6 years, chronic and subacute injury types).

High Test-retest Reliability:

ICC = 0.99

(Rini et al. 2018; $n=25$, 22 males, mean age: 27 years, AIS A/B)

Number of studies reporting reliability data: 8

Responsiveness

Floor/Ceiling Effect:

Not established in SCI

Effect Size:

Mean change (m/s):
1 to 3 months post-injury = 0.92
3 to 6 months post-injury = 0.47

(Lam et al. 2008, calculated from measurements made in van Hedel et al. 2007; $n=51$, 42 males, incomplete SCI, 46 with traumatic injury)

Standardized Response Mean:

All individuals: 0.51
AIS-A/B: 0.51
AIS-C: 0.50
AIS-D: 0.98

(Post locomotor training; Harkema et al. 2016; $N=152$, 123 male; mixed injury type; median (range) time post-SCI = 0.9 (0.1-45.2) years)

Number of studies

reporting responsiveness data: 3