

Walking Index for Spinal Cord Injury (WISCI II)

Assessment Overview

Assessment Area

ICF Domain:

Activity

Subcategory:

Mobility

You Will Need

Length:

30 minutes

Equipment:

Equipment is typically available in the clinical setting: 5-meter parallel bars and mobility aids (e.g. braces, cane, walker).

Scoring:

The clinician observes walking and rates the level (0-20), which the person is considered safe.

- Level 0: “patient is unable to stand and/or participate in walking”
- Level 20: “ambulates with no devices, with brace and no assistance”

Summary

The Walking Index for Spinal Cord Injury (WISCI) is a functional capacity scale designed to measure improvements in ambulation in persons with spinal cord injury, by evaluating the amount of physical assistance, braces or devices required to walk 10 meters. A score is possible even if the person cannot walk 10 m. However, because the furthest walk distance is 10m, it may not be suitable for people with minor impairments.

The WISCI II is currently the most recent version. People with SCI are progressed systematically through a validated sequence of capacity levels, incorporating devices and personal assistance, to their maximum walking capacity. There is minimal additional burden for clinicians to use the WISCI II as the test falls into typical clinical practice parameters. The purpose of the WISCI II is to understand the severity of underlying impairment on walking rather than the prescription for aids or the need for support.

Given its ceiling effect with incomplete SCI, additional tests may be necessary to assess endurance (e.g. 6MWT) and/or walking speed (e.g. 10MWT), especially for individuals with greater walking capacity.

Availability

Worksheet:

- WISCI I: Can be found [here](#).
- WISCI II: Can be found [here](#).

Languages: English

Assessment Interpretability

Minimal Clinically Important Difference

0.06 m/s

(Musselman 2007; n=19; 19 incomplete SCI; and mean time since injury: 6.97 years)

Statistical Error

Std Error of Measurement:

WISCI level = 0.318

(Scivoletto et al. 2014; n=33; 28 males, 5 females; median age 44 years; ASIA C-D; 20 cervical, 8 thoracic, and 5 lumbar; median time since injury: 40 days)

WISCI speed = 0.05 m/s

(Musselman 2007; n=19; 19 incomplete SCI; and mean time since injury: 6.97 years)

Typical Values

Mean (SD) Scores:

16.9 (3.4); range = 11-20

(Wirz et al. 2010; n=42; 33 males, 9 females; mean (SD) age: 49.3 (11.5) years; 2 ASIA A, 2 ASIA B, 35 ASIA C, 3 ASIA D; and mean (SD) time since injury: 66.5 (66.2) months)

Minimal Detectable Change:

WISCI level: 0.785 (Comfortable),
0.597 (Max)

WISCI speed: 0.254
(Comfortable), 0.163 (Max) m/s

(Burns et al. 2011, n=76; 60 males, 14 females; 42 tetraplegia, 34 paraplegia; ASIA A 3%, ASIA B 1%, ASIA C 8%, and ASIA D 88%; and mean (SD) time since injury: 6.32 (5.99) years)

Measurement Properties

Validity – **Moderate** to **High**

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

r = 0.68-0.76

High correlation with Berg Balance Scale (BBS):

r = 0.89-0.92

(Ditunno et al. 2007; n=146; 114 males, 32 females; mean (range) age 32 (16-69) years; 58 cervical, 18 thoracic, and 24 lumbar; and 36 ASIA B, 90 ASIA C, and 20 ASIA D)

Moderate to High correlation with ASIA Motor Score:

UEMS: Correlation = 0.496-0.502

(Burns et al. 2011; n=41; tetraplegic only)

LEMS: Correlation = 0.572-0.717

(Burns et al. 2011, n=76; 60 males, 14 females; 42 tetraplegia, 34 paraplegia; ASIA A 3%, ASIA B 1%, ASIA C 8%, and ASIA D 88%; and mean (SD) time since injury: 6.32 (5.99) years)

High correlation with Spinal Cord Independence Measure (SCIM-indoor mobility item):

R = 0.96

Moderate to High correlation with Trunk Assessment Scale for SCI (TASS):

r = 0.67

(Sato et al. 2023; n=30; 25 males, 5 females; mean (SD) age: 63.9 (10.7) years; 17 tetraplegia, 13 paraplegia; 6 ASIA A, 8 ASIA C, and 16 ASIA D; and mean (SD) time since injury: 1142 (1721) days)

Moderate to High correlation with the Spinal Cord Injury Gait Deviation Index (SCI-GDI)

r = 0.521

(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 to High correlation with the 2 Minute Walk Test (2MWT)

r = 0.571

(Willi et al. 2023; n=50; mean (SD) age: 52.6 (16.2) years; 24 tetraplegia, 26 paraplegia; 2 ASIA A, 7 C, and 41 D; mean time since injury: 6.11 years)

Reliability – **High**

High Test-retest Reliability:

ICC = 0.930-0.995

(Burns et al. 2011, n=76; 60 males, 14 females; 42 tetraplegia, 34 paraplegia; ASIA A 3%, ASIA B 1%, ASIA C 8%, and ASIA D 88%; and mean (SD) time since injury: 6.32 (5.99) years)

High Inter-rater Reliability:

ICC = 0.975-0.996

High Intra-rater Reliability:

ICC = 0.979-0.999

(Scivoletto et al. 2014; n=33; 28 males, 5 females; median age 44 years; ASIA C-D; 20 cervical, 8 thoracic, and 5 lumbar; median time since injury: 40 days)

Number of studies reporting reliability data: 5

High correlation with Functional Gait Assessment

$r = 0.74$

(Kahn et al. 2020; n=12; 11 males, 1 female; mean (SD) age: 55.41 (11.65); 7 cervical, 5 thoracic; 2 ASIA C, 10 ASIA D; mean (SD) time since injury: 7.8 (7.8) years)

Number of studies reporting validity data: 16

Responsiveness

Floor/Ceiling Effect:

44.8% at ceiling

(Lemay & Nadeau 2010; n=32, 25 males, 7 females; mean (SD) age: 47.9 (12.8) years; 15 paraplegia, 17 tetraplegia; 32 ASIA D; 17 cervical, 10 thoracic, and 5 lumbar; and mean (SD) time since injury: 77.2 (44.3) days)

95.5% at ceiling

(van Hedel et al. 2006; n=22, 18 males, 4 females; mean (SD) age: 45.5 (16.7); incomplete SCI; 13 cervical, 1 thoracic, 7 lumbar, and 1 sacral; and within 1-year post-injury)

Effect Size:

0.46

(Musselman 2007; n=19; mean age: 42 years; incomplete SCI; and mean time since injury: 6.97 years)

Number of studies reporting responsiveness data: 6