6 Minute Walk Test (6 MWT)

Assessment Overview

Assessment Area

ICF Domain:
Activity
Subcategory:
Mobility

You Will Need

Length:
6 minutes
Equipment:

- Countdown timer
- Tape measure
- Mechanical lap counter
- Cones to mark the turnaround
- Chair that can be easily moved along the walking course.

Scoring:
Total distance walked (rounding to the nearest meter) and the number and duration of rests during the test is reported.

Summary

The 6 Minute Walk Test (6MWT) is a self-paced test that measures the distance a patient can walk on a flat, hard surface in 6 minutes. It assesses the sub-maximal level of functional capacity. The test in its entirety evaluates the integrated response of pulmonary, cardiovascular, and circulatory systems, in addition to level of motor control, functional neuromuscular units, and muscle. The 6MWT is widely used in many populations and primarily in incomplete SCI.

Availability

Available for free here:
http://www.cscc.unc.edu/spir/public/UNLICOMMSMWSixMinuteWalkTestFormQxQ08252011.pdf

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

Assessment Interpretability

Minimal Clinically Important Difference

0.10 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:
12.3 m; 0.0342 m/s

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

Minimal Detectable Change:

0.086 m/s

(Tester et al., 2016; N=72, 57 male; mixed injury types; median (range) time since SCI = 0.7 (0.1-14.7) years)

37.1 m; 0.103 m/s

(Duffell et al. 2015; n=83, 57 males, outpatient, incomplete SCI, >12 months post-injury, AIS C or D)

Typical Values

Mean (SD) Scores:
Within 1st month = 314 (137.0)
After 3 months = 473 (110.1)
After 6 months = 502 (132.6)
After 12 months = 495 (125.1)

(van Hedel et al. 2006; n=22, 18 males, incomplete SCI, tests performed between 1 month and 12 months post-injury)

Measurement Properties

Validity – Low to High

High **correlation with 10 Meter Walk Test:**
r = 0.94

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

High **correlation with Walking Index for SCI:**
At 3 months: r = 0.76
At 6 months: r = 0.68
At 12 months: r = 0.69

High **correlation with Functional Independence Measure-Locomotor Score:**
At 3 months: r = 0.78
At 6 months: r = 0.69
At 12 months: r = 0.62

(Ditunno et al. 2007; n=146, 114 males, incomplete SCI, inpatient)

Low **to** ***High*** **correlation with ASIA Motor Scales:**
Upper Extremity Motor Score: r = 0.24
Lower Extremity Motor Score: r = 0.70
ASIA Motor Score: r = 0.64

(Harkema et al. 2016; n=156, 123 male, mixed injury types; median (range) time since injury = 0.9 (0.1-45.2) years)

Moderate to ***High*** **correlation with WISCI-II:**
r=0.36-0.69

Moderate correlation with LEMS
r=0.49-0.55

(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: 9

Reliability – High

High **Test-retest Reliability:**
ICC = 0.989

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

High **Inter-rater Reliability:**
ICC = 0.970

High **Intra-rater Reliability:**
ICC = 0.981, P<.001

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

Number of studies reporting reliability data: 4

Responsiveness

Floor/Ceiling Effect:
Not established in SCI

Effect Size:
23+ sessions of locomotor training:
SRM = 0.48

(Harkema et al. 2016; n=156, 123 male, mixed injury types; median (range) time since injury = 0.9 (0.1-45.2) years)

2-month endurance training:
SRM = 0.88

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

Number of studies reporting responsiveness data: 3