

## 4 Functional Tests for Persons who Self-Propel a Manual Wheelchair (4FTPSMW)

### Assessment Overview

#### Assessment Area

**ICF Domain:**

Activity

**Subcategory:**

Mobility

#### You Will Need

**Length:**

Approximately 30 minutes to complete 4 tasks

**Equipment:**

- 23m corridor
- 1m measuring stick
- Ramp (10.3m and 1:13 grade)
- Carpeted surface (1.5 cm pile)
- Stop watch

#### Summary

Developed to assist clinicians in assessing the effect of different postural supports (e.g. back support and seat cushions) by an experienced group of physiotherapists using a literature review and input from individuals with SCI and researchers.

The test includes four functional tasks:

- 1) Timed Forward Wheeling (23m)
- 2) Ramp Ascent (forward wheeling)
- 3) Forward Vertical Reach Distance
- 4) One-Stroke Push

#### Availability

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

**Language:** English

### Assessment Interpretability

#### Minimal Clinically Important Difference

Not established in SCI

#### Statistical Error

**Standard Error of Estimate:**

Timed forward wheeling: 0.82 s

Ramp ascent: 8.17 s

Forward vertical reach distance: 0.91 cm

One-stroke push: 3.84 cm

**Minimum Detectable Change:**

Timed forward wheeling: 2.27 s

Ramp ascent: 22.65 s

Forward vertical reach distance: 2.52 cm

One-stroke push: 10.64 cm

(May et al. 2003; Group 1 n=10, Group 2 n=10, all male, neurological condition affecting spinal cord)

#### Typical Values

**Mean (SD) scores for trial 1 and trial 2:**

Timed forward wheeling: 14.6-14.7 (8.2-7.3) s

Ramp ascent: 39.6-34.4 (81.7-70.1) s

Forward vertical reach distance: 160.7-160.8 (9.1-10.1) cm

One stroke push: 102.1-109.8 (38.4-40.6) cm

**Threshold Values:**

*Timed forward wheeling:*

Minimum: 6.6-6.9 seconds

Maximum 31.0-34.3 seconds

*Ramp ascent:*

Minimum: 3.2 seconds

Maximum: 219.9-255.1 seconds

*Forward vertical reach distance:*

Minimum: 145.6-147.4 cm

Maximum: 172.3-173.6 cm

*One stroke push:*

Minimum: 45.7-47.7 cm

Maximum: 175.5-188.7

(May et al. 2003; Group 1 n=10, Group 2 n=10, all male, neurological condition affecting spinal cord)

## Measurement Properties

### Validity – **Not Established in SCI**

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

### Reliability – **High**

#### **High Intra-rater Reliability:**

**Excellent Test-retest Reliability for all 4 tasks (performed twice on same day):**

ICC = 0.99, P<.001

**Excellent Inter-rater Reliability calculated for all tasks except 1-stroke push:**

ICC = 0.99, P<.001

(May et al. 2003; Group 1 n=10, Group 2 n=10, all male, neurological condition affecting spinal cord)

**Number of studies reporting reliability data: 1**

## Responsiveness

### **Floor/Ceiling Effect:**

Not established in SCI

### **Effect Size:**

Not established in SCI

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