

## 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

Download the measure here:

[https://scireproject.com/wpcontent/uploads/worksheet\\_4ftpspmw\\_UPDATED-Aug.22.16.pdf](https://scireproject.com/wpcontent/uploads/worksheet_4ftpspmw_UPDATED-Aug.22.16.pdf)

Available in: English

### Assessment Interpretability

#### Minimal Clinically Important Difference

Not established in SCI

#### Statistical Error

**Standard Error of Estimate:**

Timed forward wheeling: 0.82 seconds

Ramp ascent: 8.17 seconds

Forward vertical reach distance:

0.91 cm

One-stroke push: 3.84 cm

**Minimum Detectable Change:**

Timed forward wheeling: 2.27 seconds

Ramp ascent: 22.65 seconds  
Forward vertical reach

#### Typical Values

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

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

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

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:*

	<p>distance:</p> <p>2.52 cm</p> <p>One-stroke push: 10.64 cm</p> <p>(May et al. 2003; Group 1 n=10, Group 2 n=10, all male, neurological condition affecting spinal cord)</p>	<p>Minimum: 3.2 seconds Maximum: 219.9-255.1 seconds</p> <p><i>Forward vertical reach distance:</i> Minimum: 145.6-147.4 cm Maximum: 172.3-173.6 cm</p> <p><i>One stroke push:</i> Minimum: 45.7-47.7 cm Maximum 175.5-188.7</p> <p>(May et al. 2003; Group 1 n=10, Group 2 n=10, all male, neurological condition affecting spinal cord)</p>
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Measurement Properties

<div>Validity – <b>Not Established in SCI</b></div> <div>Number of studies reporting validity data: 0</div>	<div>Reliability – <b>High</b></div> <div> <div>High Intra-rater Reliability:</div> <div> <div>Excellent Test-retest Reliability for all 4 tasks (performed twice on same day):</div> <div>ICC = 0.99, P&lt;.001</div> </div> <div> <div>Excellent Inter-rater Reliability calculated for all tasks except 1-stroke push:</div> <div>ICC = 0.99, P&lt;.001</div> </div> <div>(May et al. 2003; Group 1 n=10, Group 2 n=10, all male, neurological condition affecting spinal cord)</div> <div>Number of studies reporting reliability data: 1</div> </div>
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Responsiveness

<div>Floor/Ceiling Effect:</div> <div>Not established in SCI</div>	<div>Effect Size:</div> <div>Not established in SCI</div>	<div>Number of studies reporting responsiveness data:</div> <div>Not established in SCI</div>
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