## Six-Minute Arm Test (6-MAT)

### Assessment Overview

#### Assessment Area

**ICF Domain:**
Body Function

**Subcategory:**
Functions & Structures of the Cardiovascular, Haematological, Immunological and Respiratory Systems

#### Summary

The Six-Minute Arm Test (6-MAT) assesses cardiovascular fitness in people with SCI. It involves 6 minutes of sub-maximal arm ergometry at a constant power output. This single stage test is simple and quick to administer clinically.

#### You Will Need

**Length:**
6 minutes

**Equipment:**
- arm ergometer
- heart rate monitor
- RPE scale

**Scoring:**
Clinician-administered. Scores over several administrations are compared to assess changes resulting from cardiovascular fitness interventions.

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### Assessment Interpretability

#### Minimal Clinically Important Difference

Not established in SCI

#### Statistical Error

**Standard Error of Measurement:**
- Heart rate = 7.12 beats/min (95% CI, 0.75-0.96)
- VO2 = 1.62 mL/kg/min (95% CI, 0.58-0.92)

**Minimal Detectable Change:**
- Heart rate = 19.74 beats/min
- VO2 = 4.49 mL/kg/min

(Hol et al. 2007; n=30, 25 males, mixed injury types, chronic SCI, mean time since injury (SD)= 12.0 (9.8) years)

#### Typical Values

**Mean (SD) Scores:**
- Heart rate (beats/min) = 129 (29), range = 75-183
- VO2 peak (mL/kg/min) = 18.6 (8.4), range = 6.5-38.1

(Hol et al. 2007; n=30, 25 males, mixed injury types, chronic SCI, mean time since injury (SD)= 12.0 (9.8) years)

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*http://www.scireproject.com/sites/default/files/worksheet_6-mat.docx*
## Measurement Properties

<table>
<thead>
<tr>
<th>Validity – <strong>High</strong></th>
<th>Reliability – <strong>High</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong> correlation between 6-MAT VO\textsubscript{2} and VO\textsubscript{2} Peak: Correlation = 0.92</td>
<td><strong>High</strong> Test-retest Reliability (1 week interval): Heart Rate: ICC = 0.90 VO\textsubscript{2}: ICC = 0.81</td>
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<tr>
<td><strong>High</strong> correlation between 6-MAT Power Output and VO\textsubscript{2} Peak: Correlation = 0.73</td>
<td>(Hol et al. 2007; n=30, 25 males, mixed injury types, chronic SCI, mean time since injury (SD)= 12.0 (9.8) years)</td>
</tr>
<tr>
<td><strong>High</strong> correlation between 6-MAT Heart Rate and VO\textsubscript{2} Peak: Correlation = 0.63</td>
<td><strong>Number of studies reporting reliability data:</strong> 1</td>
</tr>
</tbody>
</table>

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

## Responsiveness

| Floor/Ceiling Effect: Not established in SCI | Effect Size: Not established in SCI | Number of studies reporting responsiveness data: 0 |