

**Research Summary – Moorong Self-Efficacy Scale (MSES) – Other Physiological Measures**

Author Year Country Research Design Setting	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
<p><a href="#">Middleton et al.</a> 2016</p> <p>Cross-sectional survey</p> <p>Australia and US (Miami Project research volunteer registry in US, not specified in AUS)</p>	<p>Total: N=161 (118M, 43F) Age: 48.5±15.1 years Level of injury: 86 paraplegic, 75 tetraplegic Time postinjury: 16.2±12.2 years</p> <p>Australia: N=82 Age: 48.6±13.1 years Level of injury: 44 paraplegic, 38 tetraplegic Time postinjury: 15.8±13.7 years</p> <p>US: N=79 Age: 48.5±13.1 years</p>	<p>Negative correlation found between age and factor 1 (<math>r=-.32</math>, <math>P&lt;.01</math>)</p> <p>No sex differences found in factors 2 and 3, but women scored higher in factor 1 than men (<math>P&lt;.05</math>)</p>	<p><b>Internal consistency:</b> Factor 1 (social function self-efficacy; 5 items): <math>\alpha=.77</math></p> <p>Factor 2 (general self-efficacy; 4 items): <math>\alpha=.81</math></p> <p>Factor 3 (personal function self-efficacy; 7 items): <math>\alpha=.80</math></p>	

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	Level of injury: 42 paraplegic, 37 tetraplegic Time postinjury: 16.7±10.5 years			
<a href="#">Munce et al. 2016</a>  Online Survey  Rick Hansen Institute and an outpatient spinal clinic	N=99 Age: 50.5 ± 1.0  Time Since Injury (years): 17.5 ± 12.3	Negatively correlated with Depression portion of HADS (Spearman rho=-0.560, P< 0.01)  Negatively correlated with Anxiety portion of HADS (Spearman rho=-0.315, P< 0.01)		
<a href="#">Kilic et al. 2013</a>  Cross sectional Survey  Hampstead Rehabilitation Centre, South	N=60 (19F, 41M) Age: 50.8 ± 17.0  Time Since Injury (years): 5.7 ± 7.3  Incomplete lesion: 41 Complete: 18 Missing data: 1	Negatively correlated with Depression portion of DASS-21 (Pearson r=-0.63, P< 0.01)  Negatively correlated with Anxiety portion of DASS-21 (Pearson r=- 0.54, P< 0.01)		

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Australia		Negatively correlated with Stress portion of DASS-21 (Pearson $r=-0.58$ , $P<0.01$ )		
<p><a href="#">Miller</a> 2009</p> <p>Study examining factorial and concurrent validity</p> <p>Florida Brain and Spinal Cord Injury Program and the Florida Spinal Cord Injury Resource Centre</p>	<p>162 SCI participants (68.5% male, 31.5% female) mean age: <math>45.8\pm13.4</math> mean years post-injury: <math>9.2\pm8.6</math></p> <p>Ethnic background: 73.5% European American 14.2% African American 7.4% Latino/Latina 2.5% Native American 2.5% Asian American.</p> <p>Injury level: 54.3% cervical 40.8% thoracic 3.7% lumbar</p>	<p>MSES scores were found to be significantly positively related to Satisfaction with Life Scale (SWLS) scores (<math>r=0.51</math>, <math>P&lt;.001</math>) and Personal Resources Questionnaire-2000 (PRQ-2000) scores (<math>r=0.56</math>, <math>P&lt;.001</math>). MSES scores were significantly negatively associated with Centre for Epidemiologic Diseases Depression Scale (CESD-10) scores (<math>r=-0.54</math>, <math>P&lt;.001</math>). Employment status was found to be positively related to</p>		

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	1.2% sacral	<p>the total score of the MSES (<math>r=0.23</math>, <math>P&lt;.001</math>). Years since disability, injury level and living situation were found to be unrelated to self-efficacy, as measured by the total score of the MSES.</p> <p>Correlations of Moorong Self-Efficacy Scale Factors with selected variables: MSES Factor 1 (Interpersonal): Years since injury: <math>-.018</math> Injury Level: <math>-.051</math> Living situation: <math>.087</math> Employment: <math>.222</math> (<math>P&lt;.01</math>) SWLS: <math>.473</math> (<math>P&lt;.001</math>) CESD-10: <math>-.557</math> (<math>P&lt;.001</math>) PRQ-2000: <math>.625</math> (<math>P&lt;.001</math>)</p>		

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		<p>MSES Factor 2 (instrumental):</p> <p>Years since injury: - .079</p> <p>Injury Level: .027</p> <p>Living situation: .011</p> <p>Employment: .305 (P&lt;.001)</p> <p>SWLS: .495 (P&lt;.001)</p> <p>CESD-10: -.494 (P&lt;.001)</p> <p>PRQ-2000: .465 (P&lt;.001)</p>		
<a href="#">Middleton et al.</a> 2003  Descriptive, correlational study, validation study of a new instrument  Moorong Spinal	<p>Sample 1: People with SCI living in the community who previously were at in-patient rehabilitation</p> <ul style="list-style-type: none"> <li>- N=36, 28 male</li> <li>- Mean age 36.33 (SD = 9.52)</li> <li>- Mean time post-trauma 11.23 (SD = 9.67) years</li> </ul>	<p>Spearman correlations of MSES with (Sample 1 only, N=36):</p> <ul style="list-style-type: none"> <li>- Hospital Anxiety and Depression Scale (HADS) anxiety: -0.58 (P&lt;0.001)</li> <li>- Functional Independence Measure (FIM) motor(N=34): 0.04 (P&gt;0.05)</li> </ul>	<p><b>Internal consistency:</b></p> <p>Item-total Spearman correlations (Sample 1 only, N=36):</p> <p>6 of 8 items: 0.46-0.80 (P&lt;0.01)</p> <p>Item 2 (bowel accidents): 0.17 (P&gt;0.05)</p>	<p><b>Responsiveness:</b></p> <p>Wilcoxon signed-ranks tests (Sample 2 only, N=31):</p> <p>Test occasion 1 (T1) – 1-month post remobilization following acute treatment</p> <p>Test occasion 2 (T2) – 3-month post remobilization</p>

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Unit of the Royal Rehabilitation Centre Sydney, Sydney, New South Wales, Australia.	<ul style="list-style-type: none"> <li>- 11 paraplegia, 25 tetraplegia</li> <li>- 15 incomplete, 21 complete</li> </ul> <p>Sample 2: People who had recently sustained a SCI and were currently enrolled at in-patient rehabilitation</p> <ul style="list-style-type: none"> <li>- N=31, 23 male</li> <li>- Mean age 31.48 (SD = 10.46)</li> <li>- Mean time post-trauma 2.01 (SD = 2.50) months</li> <li>- 21 paraplegia, 10 tetraplegia</li> <li>- 13 incomplete, 18 complete</li> </ul> <p>Sample 3: People with SCI living in the community who previously were at in-patient rehabilitation</p>	<ul style="list-style-type: none"> <li>- FIM cognitive: 0.39 (P&lt;0.05)</li> <li>- Sickness Impact Profile (SIP-136) physical: -0.11 (P&gt;0.05)</li> <li>- Craig Handicap Assessment and Reporting Technique (CHART) physical (N=29): -0.07 (P&gt;0.05)</li> <li>- CHART mobility: 0.15 (P&gt;0.05)</li> <li>- CHART occupational: 0.47 (P&lt;0.05)</li> <li>- CHART social: -0.24 (P&gt;0.05)</li> </ul>	Item 4 (family relationships): 0.25 (P>0.05)	<p>Test occasion 3 (T3) – 6-month post remobilization</p> <p>Significant improvement in between T1 &amp; T2 in: Total score: <math>z = -3.29</math>, <math>P &lt; 0.01</math> Item 1 (personal hygiene): <math>z = -3.34</math>, <math>P &lt; 0.001</math> Item 3 (household participation): <math>z = -3.34</math>, <math>P &lt; 0.05</math> Item 8 (leisure): <math>z = -3.09</math>, <math>P &lt; 0.01</math> Item 12 (accomplishing things): <math>z = -2.18</math>, <math>P &lt; 0.05</math> Item 14 (meeting people): <math>z = -1.99</math>, <math>P &lt; 0.05</math> Item 15 (good health): <math>z = -2.24</math>, <math>P &lt; 0.05</math></p>

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	<ul style="list-style-type: none"> <li>- N=108, 30 male</li> <li>- Mean age 45.26 (SD = 15.99)</li> <li>- Mean time post-trauma 7.92 (SD = 9.83) years</li> <li>- 66 paraplegia, 42 tetraplegia</li> <li>- 58 incomplete, 49 complete</li> </ul>			<p>Significant improvement in between T2 &amp; T3 in: Total score: <math>z = -0.01</math>, <math>P &gt; 0.05</math></p> <p>Item 13 (persistence in learning things): <math>z = -2.24</math>, <math>P &lt; 0.05</math></p> <p>No significant difference found in total score between any test occasions comparing lesion levels or completeness of injury.</p> <p><b>Interpretability:</b> Sample 1: Time 1 (in outpatient clinic) = 92.15 (16.57) Time 2 (6 weeks later) = 94.81 (14.95)</p> <p>Sample 2: 2</p>

# **Research Summary – Moorong Self-Efficacy Scale (MSES) – Other Physiological Measures – Cross-cultural Validation Studies**

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<p><a href="#">Mangold et al.</a> 2024</p> <p>Psychometric study to translate and explore the data completeness, targeting, reliability and aspects of validity of the <b>Swedish version</b> of s-MSES</p> <p>Community rehabilitation program</p>	<p><b>N = 92 program participants</b> 58M, 24W Median (IQR) age 47.0 (27.5) years Median (IQR) time since injury 1 (2) years Cause of injury: Traumatic (n = 75), non-traumatic (n = 17) Level of injury: Tetraplegia (n = 48), paraplegia (n = 44) Completeness of injury: Complete (n = 37), incomplete (n = 54)</p> <p><b>N = 42 peer mentors</b> 37M, 11W Median (IQR) age 38.0 (18.25) years Median (IQR) time since injury 10 (9.25) years</p>	<p>The s-MSES scores were positively correlated with the LiSat11 (total score <math>r_s = 0.72</math>, <math>p &lt; 0.001</math>) and the CD-RISC (total score <math>r_s = 0.76</math>, <math>p &lt; 0.001</math>). A statistically significant and negative correlation was found between the s-MSES total score and HADS (<math>r_s = -0.58</math>, <math>p &lt; 0.001</math>) and HADS D (<math>r_s = -0.43</math>, <math>p = 0.14</math>).</p> <p>Correlations between the Swedish version of the Moorong Self-Efficacy Scale and life satisfaction<sup>a</sup>, resilience<sup>a</sup>, depression/anxiety<sup>b</sup></p>	<p><b>Internal consistency:</b> The Cronbach's alpha coefficient of the total group for the full scale was 0.92, for the social sub-scale 0.81, for the general sub-scale 0.83 and for the personal sub-scale 0.74.</p> <p><b>Test-retest reliability (peer mentors):</b> The ICC for the full scale was 0.91 (n = 34), for the social sub-scale 0.84 (n = 36), for the general sub-scale 0.92 (n = 38) and for the personal sub-scale 0.78 (n = 36). The</p>	<p><b>Scoring:</b> The mean (SD; min-max) total score for program participants was 88 (15; 32–112), for peer mentors 101 (9; 76–112) and for the total group 92 (15; 32–112).</p> <p><b>Data completeness:</b> Of the 92 participants, 84 (91%) had answered all items in the s-MSES and obtained a total score at baseline. Missing data were found in all three subscales with response rates of 97% (social function), 98% (general) and 99% (personal function). Of the 42 peer mentors, 38 (91%)</p>



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	<p>Cause of injury: Traumatic (n = 37), non-traumatic (n = 5)</p> <p>Level of injury: Tetraplegia (n = 10), paraplegia (n = 32)</p> <p>Completeness of injury: Complete (n = 21), incomplete (n = 20)</p>	<p>and depression<sup>b</sup></p> <p>Please see Table 1 below.</p>	<p>lowest value for weighted kappa was found in item 15 (good health and well-being): 0.42, and the highest in item 6 (sexual relation): 0.86. In total, 10 items had a kappa <math>\geq</math> 0.60, indicating substantial agreement, out of which one had a kappa <math>&gt;0.80</math>, representing excellent agreement. When performing the Wilcoxon signed rank test for the items with a kappa of <math>\leq 0.61</math> no statistical significance was found, indicating no systematic error in ratings.</p>	<p>answered all items at the first evaluation point. Missing data were found in the social function and personal function subscales, both with response rates of 95%.</p> <p><b>Targeting:</b> For the program participants, the total score ranged from 32– 112 (full range: 16–112), the social sub-scale from 11 to 35 (full range: 5–35), the general sub-scale from 8–28 (full range: 4–28), the personal sub-scale from 8–28 (full range: 4–28). No program participant scored the lowest possible score in any subscale. Ceiling effects were noted in the social sub-scale</p>

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				<p>where 17.6% scored the highest possible score. In total, 4.3% of the participants scored the highest possible score on the full scale.</p> <p>For the peer mentors, the total score ranged from 76 to 112, the social sub-scale from 21 to 35, the general sub-scale from 15–28 and the personal sub-scale from 19–28. No peer mentor scored the lowest possible score on any subscale. Ceiling effects were noted in all subscales; 47.6% for the social sub-scale, 26.2% for the general sub-scale and 23.8% for the personal sub-scale. In total, 9.5% of peer mentors scored the</p>

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				highest possible score on the full scale.  <b>Variability and systematic changes of the mean:</b> The SEM and the SDD for the full scale were 2.60 and 7.21, respectively. The ds for the full scale and all subscales were close to 0 and the confidence interval included 0, indicating no systematic differences between evaluation points. The LOA ranged between -9.68 and 11.32 for the full scale.		
	<b>Table 1.</b> Correlations between the Swedish version of the Moorong Self-Efficacy Scale and life satisfaction <sup>a</sup> , resilience <sup>a</sup> , depression/anxiety <sup>b</sup> and depression <sup>b</sup>					
	Scale	Mean (SD)	Social Function	General Subscale, r <sub>s</sub>	Personal Function Subscale, r <sub>s</sub>	Total Score, r <sub>s</sub>

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			<b>Subscale, <math>r_s</math></b>		
	<b>LiSat</b>	45.51 (10.05) (n = 122)	0.652*** (n = 119)	0.528*** (n = 121)	0.596*** (n = 121)
	<b>CD-RISC</b>	75.53 (16.52) (n = 94)	0.675 *** (n = 91)	0.741*** (n = 94)	0.525*** (n = 93)
	<b>HADS</b>	9.76 (3.09) (n = 36)	-0.356* (n = 32)	-0.533** (n = 33)	-0.407* (n = 33)
	<b>HADS D</b>	4.03 (3.09) (n = 36)	-0.310 (n = 34)	-0.378* (n = 35)	-0.388* (n = 35)
<p>*p &lt; 0.05 **p &lt; 0.01 ***p &lt; 0.001.</p> <p>CD-RISC Connor Davidson Resilience Scale, HADS the Hospital Anxiety and Depression Scale, HADS D the depression domain of HADS, LiSat11 the Life Satisfaction Questionnaire, rs Spearman's rho.</p> <p><sup>a</sup>Participants in Active Rehabilitation programs and peer mentors.</p> <p><sup>b</sup>Participants in Active Rehabilitation programs</p>					
<a href="#">Jia et al.</a> 2022	N = 176 129M, 47F Mean (SD) age 39.51		<b>Content validity:</b> The content validity	Internal consistency: Cronbach's a coefficients were	

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<p>Cross-sectional study to translate the MSES into Chinese and to examine its reliability and validity</p> <p>Four rehabilitation centers in China</p>	<p>(14.07) years</p> <p>Cause of disease: Trauma (n = 152), non-trauma (n = 20)</p> <p>Injury severity: Missing data (n = 10), complete (n = 76), incomplete (n = 90)</p> <p>Injury level: Cervical (n = 46), thoracic (n = 93), lumbosacral (n = 32)</p> <p>Mean (SD) time since injury 10.32 (14.84) months</p>	<p>index of the scale was 0.99.</p> <p><b>Criterion-related validity:</b> Pearson's correlation coefficient between the total scores of the MSES and the General Self-Efficacy Scale was 0.660 (<math>p &lt; 0.001</math>).</p> <p><b>Construct validity:</b> Principal components analysis with varimax orthogonal rotation was used. Three factors were extracted accounting for 39.083%, 11.149%, and 8.391% of the total variance and labeled as general self-efficacy (eight items), social self-efficacy (five items), and self-management self-</p>	<p>0.892, 0.862, 0.817, and 0.739 for the total items and three factors, respectively, and decreased when any item was eliminated.</p> <p>Test-retest reliability representing MSES stability was confirmed to be good among 40 patients with SCI. The ICC of the total scores for pretest and retest was 0.859 (<math>F = 7.082, p &lt; 0.001</math>), and all items' <math>p</math> values were <math>&lt; 0.05</math>.</p>	

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		efficacy (three items). Confirmatory factor analysis showed acceptable fit compared with previous studies.		
<a href="#">Marquez et al.</a> 2022  Psychometric and transverse study to evaluate the psychometric properties of the <b>Italian</b> <b>version</b> of the MSES  Two Italian Spinal Units	N = 65 41M, 24W Mean (SD) age 55.4 (14.3) years Injury level: Not answered (n = 11), C3- C7 (n = 1), C6-C7 (n = 5), C7-T11 (n = 1), T2-T4 (n = 7), T4-T6 (n = 7), T7-T10 (n = 18), T12 (n = 9), T12- L1 (n = 1), L1-S1 (n = 5) AIS A (n = 17), AIS B (n = 41), AIS C (n = 3), AIS D (n = 4) Mean (SD) time since injury 26 (20.3) years	<b>Concurrent validity:</b> There are correlations between the MSES-IT and the SF-36. Particularly, MSES-IT total score and subscales showed a moderate correlation ( $0.30 < p < 0.44$ ) with the following components of SF-36: Role limitations physical health; Role limitations emotional problems; Emotional well-being; General health. No correlations emerged between MSES-IT and SCIM-SR.	<b>Internal consistency:</b> Cronbach's alpha for the MSES-IT was 0.87.  <b>Test-retest reliability:</b> All items showed an ICC value $>0.7$ and total MSES-IT showed ICC value of 0.99 (0.98-0.99).	

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<p><a href="#">Gounelle et al.</a> 2022</p> <p>Cross-sectional study to adapt MSES in the <b>French language</b> and determine its psychometric proprieties</p> <p>Six Physical Medicine and Rehabilitation centers in France</p>	<p><b>Validity study:</b> N = 201 participants with SCI 157M, 44F Mean (SD) age 48 (14) years. Level of injury: Quadriplegia (n = 83), paraplegia (n = 118). Time since injury: &lt; 1 year (n = 52), 1-10 years (n = 58), &gt; 10 years (n = 88). AIS: AIS A (n = 114), AIS B (n = 17), AIS C (n = 29), AIS D (n = 38), AIS E (n = 1). Etiology: Medical (n = 53), traumatic (n = 148).</p> <p><b>Reliability study:</b> N = 56 participants with SCI 47M, 9F Mean (SD) age 44 (14) years. Level of injury:</p>	<p><b>Construct validity:</b> Results evidenced significant correlations with the MSES-Fr and other related psychological constructs (self-esteem, mood, quality of life=i).</p>	<p><b>Internal consistency:</b> Cronbach a = 0.87.</p> <p><b>Test-retest reliability:</b> The ICC was 0.74 (CI 95%: 0.60-0.84) for the total score of the MSES-Fr. The ICC was good for the 3 dimensions of the scale:</p> <ul style="list-style-type: none"> <li>- Interpersonal self-efficacy: 0.72 (CI 95%: 0.56-0.82).</li> <li>- Instrumental self-efficacy: 0.73 (CI 95%: 0.58-0.84).</li> <li>- Participation self-efficacy: 0.64 (CI 95%: 0.45-0.77).</li> </ul>	<p><b>Reproducibility analysis by item:</b> According to Kappa scores, the results are substantial for 3 items, moderate for 6 items and fair for 6 items. Only one item "I can accomplish most things I set out to do" exhibited an insignificant degree of concordance between the test and re-test situation.</p>

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	Quadriplegia (n = 22), paraplegia (n = 34). Time since injury: < 1 year (n = 47), 1-10 years (n = 9), > 10 years (n = 0). AIS: AIS A (n = 20), AIS B (n = 10), AIS C (n = 14), AIS D (n = 12). Etiology: Medical (n = 18), traumatic (n = 36).			