
ORGANIZATION NEWS

Highlights From the Rehabilitation Measures Database

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Measurement Characteristics and Clinical Utility of the Spinal Cord Independence Measure-III Among Individuals With Spinal Cord Injury

Kristian P. Nitsch, MS, Kelsey L. Stipp, MS

The Spinal Cord Independence Measure—III (SCIM-III) was specifically developed for use in patients with spinal cord injuries to assess their ability to complete routine daily tasks and activities of daily living.¹ The SCIM-III is a clinician-rated instrument comprised of 19 items across 3 subscales: (1) self-care, (2) respiration and sphincter management, and (3) mobility, with items being weighted according to assumed clinical importance. The SCIM-III has shown to be a reliable and valid instrument for the functional evaluation of individuals with spinal cord injuries²⁻⁴ and has been endorsed by relevant stakeholders and outcomes assessment experts for use in clinical and research contexts.⁵⁻⁷ This measure has been shown to be responsive to functional change from admission to discharge and has demonstrated excellent concurrent validity with FIM scores.⁸ Minimal detectable change and minimal important difference scores for the SCIM-III have been established,⁹ and expected scores for various neurologic levels in spinal cord injury have been reported.¹⁰ Floor and ceiling effects have been noted across all 3 subscales; these effects have been shown to vary according to patients' American Spinal Injury Association motor neurologic grade.¹¹ The SCIM-III has been translated and validated in multiple languages,¹²⁻¹⁵ and self-report¹⁶ and youth¹⁷ versions have been developed.

Authorship


Measurement Characteristics and Clinical Utility of the Spinal Cord Independence Measure-III Among Individuals With Spinal Cord Injury was developed by Kristian P. Nitsch, MS, and Kelsey L. Stipp, MS.

Disclaimer

This Rehabilitation Measures Database summary provides a review of the psychometric properties of the SCIM-III in people with spinal cord injury, including reliability, validity, standard error of measurement, minimum detectable change, and interpretation of the results. A full review of the SCIM-III and reviews of >300 other instruments can be found at www.rehabmeasures.org. Correspondence can be addressed to rehabmeasures@ric.org.

This instrument summary is designed to facilitate the selection of outcome measures by trained clinicians. The information contained in this summary represents a sample of the peer-reviewed research available at the time of this summary's publication. The information contained in this summary does not constitute an endorsement of this instrument for clinical practice. The views expressed are those of the summary authors and do not represent those of the authors' employers, the instrument owner(s), *Archives of Physical Medicine and Rehabilitation*, the Rehabilitation Measures Database, or the U.S. Department of Education. The information contained in this summary has not been reviewed externally.

The Rehabilitation Measures Database and instrument summary tear sheets are funded by the National Institute on Disability and Rehabilitation Research, U.S. Department of Education through the Rehabilitation Research and Training Center on Improving Measurement of Medical Rehabilitation Outcomes (grant no. H133B090024).

	Measure Name:		Acronym:	Summary Author:																																																																			
	Spinal Cord Independence Measure-III		SCIM-III	K. Nitsch & K. Stipp																																																																			
Population Reviewed:	Administration Time:			Items:	Score:																																																																		
Spinal Cord Injury (SCI)	30–45 Minutes (Observation); 10–15 Minutes (Interview)			19	0–100																																																																		
Purpose & Administration Instructions:																																																																							
<ul style="list-style-type: none"> Developed for use in traumatic and non-traumatic spinal cord injury patients; to assess abilities to perform daily tasks and activities of daily living. Can be administered via direct observation of item tasks, clinician-patient interview, or self-report. Comprised of three subtests: 1) self-care (6 items; score range 0-20), 2) respiration & sphincter management (4 items; score range 0-40), and 3) mobility (9 items; score range 0-40). Items are weighted according to assumed clinical importance; a maximum score of 100 can be obtained, with higher SCIM-III scores representing greater levels of independence. 																																																																							
Required Equipment:		Training:		Cost of Measure:																																																																			
Pen/Pencil & Administration Form		Reading an Article/Manual		Free from Itzkovich et al., (2007) ²																																																																			
Normative Data:				Reliability:																																																																			
Subscale Name †	Mean (SD) ²	Mean (SD) ⁴	Mean (SD) ⁸	<ul style="list-style-type: none"> Excellent internal consistency for SCIM-III Total Score: Chronbach’s Alphas range from 0.84 to 0.89^{2,4,8} Excellent inter-rater reliability for SCIM-III Total Score: Intraclass Coefficients range from 0.91 to 0.98^{2,4,8} 																																																																			
Self-Care (1)*	8.7 (6.1)	7.2 (5.3)	6.5 (5.5)																																																																				
Self-Care (2)**	8.6 (5.9)	7.2 (5.5)	6.4 (5.4)																																																																				
RSM (1)	19.9 (10.8)	15.8 (8.8)	16.0 (9.5)																																																																				
RSM (2)	19.7 (10.5)	15.9 (8.8)	15.9 (9.5)																																																																				
Mobility– Room (1)	3.7 (3.7)	3.0 (3.0)	2.5 (3.3)																																																																				
Mobility– Room (2)	3.7 (3.7)	3.0 (2.9)	2.4 (3.2)																																																																				
Mobility– I/O (1)	5.1 (6.4)	3.7 (4.0)	3.8 (5.6)																																																																				
Mobility– I/O (2)	5.2 (6.3)	3.5 (3.4)	3.8 (5.4)																																																																				
SCIM-III Total (1)	37.5 (23.9)	29.8 (17.7)	28.8 (20.9)																																																																				
SCIM-III Total (2)	37.2 (23.4)	29.6 (16.9)	28.6 (20.6)																																																																				
<small>*Clinician-Observer Number One; **Clinician-Observer Number Two RSM= Respiration/Sphincter Management; Mobility-I/O= Mobility Indoor/Outdoor † All means and standard deviations have been rounded to the nearest tenth.</small>				Validity: <ul style="list-style-type: none"> Excellent concurrent validity with Functional Independence Measure scores: $r = 0.78–0.84$^{2,4,8} 																																																																			
				Floor/Ceiling Effects: <ul style="list-style-type: none"> Floor/ceiling effects were noted for select items within each of the 3 subscales; these effects varied as a function of the patients’ American Spinal Injury Association motor neurologic level.¹¹ 																																																																			
Considerations				Responsiveness & Minimal Important Differences																																																																			
<ul style="list-style-type: none"> The SCIM-III has been translated and validated in multiple languages.¹²⁻¹⁵ A self-report and youth self-report version of the SCIM-III has been developed.^{16,17} The SCIM-III has been recommended as key instrument to be use in clinical and research contexts.⁵⁻⁷ 				<table border="1"> <thead> <tr> <th>Subscale Name</th> <th>Mean (SD)</th> <th>ICC</th> <th>SEM</th> <th>MDC (95%)</th> <th>MID</th> </tr> </thead> <tbody> <tr> <td>Self Care</td> <td>5.7 (5.6)</td> <td>0.971</td> <td>0.95</td> <td>2.64</td> <td>1.15</td> </tr> <tr> <td>RSM</td> <td>13.6 (9.6)</td> <td>0.948</td> <td>2.19</td> <td>6.07</td> <td>1.82</td> </tr> <tr> <td>Mobility–Room</td> <td>1.9 (2.9)</td> <td>0.961</td> <td>0.57</td> <td>1.59</td> <td>0.61</td> </tr> <tr> <td>Mobility–I/O</td> <td>3.1 (3.9)</td> <td>0.967</td> <td>0.71</td> <td>1.96</td> <td>1.21</td> </tr> <tr> <td>SCIM-III Total</td> <td>24.4 (19.5)</td> <td>0.977</td> <td>2.96</td> <td>8.20</td> <td>4.20</td> </tr> <tr> <td>Self Care</td> <td>7.2 (5.3)</td> <td>0.971</td> <td>0.90</td> <td>2.50</td> <td>1.09</td> </tr> <tr> <td>RSM</td> <td>15.8 (8.8)</td> <td>0.948</td> <td>2.01</td> <td>5.56</td> <td>1.89</td> </tr> <tr> <td>Mobility–Room</td> <td>3.0 (3.0)</td> <td>0.961</td> <td>0.59</td> <td>1.64</td> <td>0.67</td> </tr> <tr> <td>Mobility–I/O</td> <td>3.7 (4.0)</td> <td>0.967</td> <td>0.73</td> <td>2.01</td> <td>1.00</td> </tr> <tr> <td>SCIM-III Total</td> <td>29.8 (17.7)</td> <td>0.977</td> <td>2.68</td> <td>7.44</td> <td>3.96</td> </tr> </tbody> </table>		Subscale Name	Mean (SD)	ICC	SEM	MDC (95%)	MID	Self Care	5.7 (5.6)	0.971	0.95	2.64	1.15	RSM	13.6 (9.6)	0.948	2.19	6.07	1.82	Mobility–Room	1.9 (2.9)	0.961	0.57	1.59	0.61	Mobility–I/O	3.1 (3.9)	0.967	0.71	1.96	1.21	SCIM-III Total	24.4 (19.5)	0.977	2.96	8.20	4.20	Self Care	7.2 (5.3)	0.971	0.90	2.50	1.09	RSM	15.8 (8.8)	0.948	2.01	5.56	1.89	Mobility–Room	3.0 (3.0)	0.961	0.59	1.64	0.67	Mobility–I/O	3.7 (4.0)	0.967	0.73	2.01	1.00	SCIM-III Total	29.8 (17.7)	0.977	2.68	7.44	3.96
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Cut-off Criteria:				<small>Schrollen (2013)⁹ Anderson (2011)⁴</small>																																																																			
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Excellent	$\geq .6$	$\geq .75$																																																																					
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Poor	$\leq .3$	$< .4$																																																																					
<small>RSM= Respiration/Sphincter Management; Mobility-I/O= Mobility Indoor/Outdoor SD= Standard Deviation; ICC= Intraclass Correlations; SEM= Standard Error of Measure; MDC(95%)= Minimal Detectable Change; MID= Minimal Important Difference</small>																																																																							

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