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Last updated: February 23rd, 2024

Research Summary – The Spinal Cord Independence Measure IV (SCIM-IV) – Self-Care and Daily Living

Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Catz et al. 2023 Multi-center (Rash study) cohort study to validate the scores of the three subscales of SCIM IV Nineteen SCL units in 11 countries (Brazil, Canada, China, Denmark, India, Israel, Italy, Norway, Portugal, Turkey, and the United Kingdom)	N = 648 participants with SCL 476M, 172F Mean (SD) age at admission to rehabilitation 49 (17) years Etiology: Traumatic (n = 387) and non-traumatic (n = 260) - Spinal stenosis (n = 73) - Disc protrusion (n = 30) - Benign tumor (n = 44) - Myelopathy of unknown origin (n = 27) - Vascular impairment (n = 21) - Multiple sclerosis (n = 2)	**Rasch properties of SCIM IV vs. SCIM III:** SCIM IV thresholds match those of SCIM III, assessed in the present study (r=0.887–0.995).		**Patient ability ceiling and floor effects:** At admission, the ceiling effect was 11%, 5%, and 2%, for the self-care, respiration and sphincter management, and mobility subscales, respectively. Floor effect was 8.54%, 0.16%, and 16.75%, respectively. The corresponding values at discharge were 17%, 11%, and 5%, and 3.04%, 0.16%, and 3.38%.

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	- Congenital spine anomaly (n = 3) - Decompression sickness (n = 3) - Syringomyelia (n = 6) - Other (n = 51) Level of SCL: C1-C4 (n = 132), C5-C8 (n = 149), T1-T12 (n = 244), L1-L5 (n = 121) AIS grade: A (n = 206), B (n = 65), C (n = 136), D (n = 240) Mean (SD) length of stay in inpatient rehabilitation 110 (154) days Mean (SD) time from SCL to SCIM 2 (6) years			
Catz et al. 2022 Partly blinded comparison with the criterion	N = 648 476M, 172F Mean (SD) age 49 (17) years Cause of injury: Trauma (n = 387)	SCIM IV and SCIM III scores were highly correlated (r=0.91-0.96, P<.001), and their mean values were very close. The	Total agreement between the paired examiners ranged 74.6%-91.6% at admission to rehabilitation, and	**Responsiveness:** For most comparisons, the responsiveness (or sensitivity to change in performance

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
standard SCIM III, and between examiners and examinations to examine the fourth version of the SCIM for reliability and validity A multicultural cohort from 19 spinal cord injury units in 11 countries	Level of injury: Tetraplegia (n = 281) AIS level: A (n = 206) Mean (SD) duration of injury 27 (75) months	coefficients of the correlation were similar for the assessments conducted by either the same rater (r=0.887- 0.981 for the total SCIM score), or by different raters (r=0.923-0.934).	81.1%-95.3% at discharge. Kappa coefficients ranged 0.63-0.80 at admission and 0.74-0.91 at discharge. Pearson correlation coefficients of the paired examiners for SCIM IV subscales and for total SCIM IV scores were above 0.90. ICC values were above 0.90 for the total SCIM IV score and for all SCIM IV subscales. Cronbach's alpha values ranged 0.63-0.93 for the subscales.	between admission and discharge) of the total SCIM IV score was not significantly different from that of SCIM III. In the assessment by one of the examiners, however, total SCIM IV score improved during rehabilitation by 10 points or more in 293 (54%) of the patients, compared with 332 patients (62%) in the case of SCIM III (P<.0001).

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Research Summary – The Spinal Cord Independence Measure III (SCIM-III) – Self-Care and Daily Living

Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Lili et al. 2023 Observational cross-sectional study to determine which aspects of independence in activities of daily living are correlated with upper extremity functioning in individuals with SCI Outpatient clinic at Sahlgrenska University Hospital in Gothenburg, Sweden	N = 25 participants with SCI Mean (range) age: 58.4 (44.6-72.2) years 18 males, 7 females Aetiology: Traumatic (n = 20), non-traumatic (n = 5) Level of injury: Cervical (n = 17), thoracic (n = 8) ASIA: A-B (n = 14), C-D (n = 11) Mean (SD) time since injury: 17.5 (15.4) years	**Correlation analysis (Spearman coefficients) between SCIM-III total and:** - Grip strength: 0.38 - Upper Extremity Motor Score: 0.21 - Upper Extremity Sensory Score: 0.02 - Action Research Arm Test: 0.29 - Box and Block Test: 0.33		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Khamnon et al. 2022 Cross-sectional study to investigate rater reliability of the SCIM III among rehabilitation professionals, along with the concurrent validity of the tool as compared to standard measures covering wheelchair users and ambulatory individuals with SCI A tertiary rehabilitation	N = 7 rehabilitation professional raters. **Individuals with SCI:** N = 82 39 wheelchair users: - Mean (SD) age 43.6 (13.8) years - Mean post injury time 82.3 (68.6) months - 28M, 54F - Cause of injury: Traumatic (n = 26), non-traumatic (n = 13) - Level of injury: Cervical (n = 3), upper thoracic (n = 12), lower thoracic (n = 16), lumbar (n = 8), cauda equina (n = -) 43 ambulatory individuals:	**Correlation between the SCIM III and standard measures:** For WU individuals, the total SCIM scores were significantly correlated with all standard measures ($p < 0.05$): - Hand grip test: r = 0.528. - mFRT: r = 0.440. - T-shirt test: r = -0.343. - 1-minute seated push-up test: r = 0.455. In addition, their scores of the respiratory and sphincter management subscales were significantly related to the hand grip test (HG), modified functional reach test	**Intra-rater reliability** The data indicated that the SCIM III had excellent intra-rater reliability for both novice and experience rehabilitation professional raters, when analyzed for the overall items (ICC > 0.90) and separately for each subscale (kappa values > 0.80). **Inter-rater reliability** In addition, the SCIM III scores of all novice and experienced raters showed excellent inter-rater reliability when compared with the scores identified by the expert (ICCs for overall items >0.90;	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
center and communities	- Mean (SD) age 52.5 (11.8) years - Mean post injury time 83.0 (89.9) months - 28M, 54F - Cause of injury: Traumatic (n = 19), non-traumatic (n = 24) - Level of injury: Cervical (n = 7), upper thoracic (n = 2), lower thoracic (n = 4), lumbar (n = 24), cauda equina (n = 6) **Reliability study:** N = 30 participants 15 wheelchair users, 15 ambulatory individuals - Mean (SD) age 52.0 (15.0) years	(mFRT) and 1-minute seated push-up test (1MinSPUT; r_S = 0.395–0.436; $p < 0.05$). Furthermore, the mobility subscale of these individuals was significantly associated with HG and t-shirt outcomes (r_S = 0.342 and 0.379, respectively; $p < 0.05$). For AM individuals, their scores on the SCIM III showed clear correlation with some standard measures: - Hand grip test: r = 0.290; p > 0.05 - FTSST: r = -0.232; p > 0.05 - FRT: r = 0.389; p > 0.05 - TUG: r = -0.542; p < 0.05.	kappa values for each subscale > 0.80) except the scores given by a novice nurse for the bladder and bowel management items (kappa values = 0.68 and 0.62, respectively).	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
	- Mean post injury time 96.8 (74.4) months - 18M, 12F - Cause of injury: Traumatic (n = 16), non-traumatic (n = 14) - Level of injury: Cervical (n = 10), upper thoracic (n = 4), lower thoracic (n = 8), lumbar (n = 5), cauda equina (n = 3)	- 6MWT: r = 0.680; $p < 0.05$. - 10MWT – preferred speed: r = 0.700; $p < 0.05$. - 10MWT – fastest speed: r = 0.527; $p < 0.05$. Moreover, their mobility scores on the SCIM III showed clear correlation with all standard measures except the HG test (r_S = 0.392–0.779; $p \leq 0.001$).		
Itzkovich et al. 2018 Interview/observation Loewenstein Rehabilitation Hospital, Israel	N=35 (19M, 16F) Mean age: 62±15 years 4 traumatic, 31 non-traumatic 19 tetraplegic, 16 paraplegic AIS: 3A, 12C, 20D		**Test-retest, Inter-rater, Intra-rater:** Patients assessed during the last week before discharge **Kappa Coefficient:** 0.11-0.80	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
			Self-care: Feeding = 0.489 Bathing upper body = 0.202 Bathing lower body = 0.599 Dressing upper body = 0.264 Dressing lower body = 0.272 Grooming = 0.431 *Respiration and sphincter management:* Sphincter management – bladder = 0.434 Sphincter management – bowel = 0.387 Use of toilet = 0.294 *Mobility*	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
			Mobility in bed and sore prevention = 0.111 Transfers bed/wheelchair = 0.800 Transfers wheelchair/toilet/tub = 0.489 Mobility indoors = 0.579 Mobility moderate distances = 0.535 Mobility outdoors = 0.142 Stair management = 0.540 Transfers wheelchair/car = 0.548 Transfers ground/wheelchair = 0.771 **ICC coefficient:** Self-care=0.845	

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
			Respiration/Sphincter=0.637 Mobility=0.916 Total SCIM=0.880	
Mulcahey et al. 2018 Multi-center, repeated measures Seven facilities in North America	N=127 (69M, 58F) Mean age: 10.8 years Age range: 2-17 years AIS: 46A, 11B, 18C, 17D, 35 Unknown Time since injury: 4.8 years (3months-17 years)	Moderate-strong correlation between SCIM-III and FIM r=0.77-0.92	**Test-retest, intra-rater, inter-rater:** Time frame not specified ICC= >0.84 with majority > 0.90 Strong correlation between SCIM and FIM Instrument total: r=0.92 (p<0.0001) Self-care subscale: r=0.92 (p<0.0001) Bladder/bowel subscale: r=0.89 (p<0.0001) Good correlation between	**Floor/ceiling effect:** Ceiling effects were present in the *SC subscale* for: the oldest age group (16-17yrs) (24%) neurological level (NL) L1-S4/5 (35.5%) *In-room mobility subscale:* Age 6–12 years (45.7%) Age 13–15 years (30.43%) Age 16–17 years (60%) paraplegia (42.4%) tetraplegia (37.1%) Incomplete injuries (50%) T2-T12 (38%) NL L1-S4/5 (100%)

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
			SCIM in-room mobility and FIM transfer subscales: r=0.81 (p<0.0001) SCIM indoor/outdoor mobility and FIM walk/stairs subscales: r=0.81 (p<0.0001)	
Joseph et al. 2016 Qualitative mapping of SCIM-III items to ICF model	N=2 professionals (health professionals and academics)	Mapping all 19 questions to ICF categories resulted in matches to 20 2nd level ICF categories and 32 3rd level categories. 16/20 2nd level categories and 25/32 3rd level categories were in "Activity and Participation" domain. The SCIM-III covered 3/11 impairments and 9/9 "Activity and Participation" categories in the Brief ICF Core Set for SCI.		

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Kalsi-Ryan et al. 2016 Multicenter, observational, longitudinal, cohort study 5 centers (7 sites) in Ontario, Canada	N=53 (48M, 5F) Mean (SD) age 49.6 (15.6) All acute SCI, 0-10 days post-injury AIS-A/B/C/D: 11/5/16/21 51 cervical, 2 thoracic			**Responsiveness:** Mean Difference, Std Error, Std Response Mean and Effect Sizes (Mean diff; SE; SRM; ES) at different post-injury intervals: SCIM Self-care: 1 month -> 3 month: 3.52; 0.40; 1.28; 0.59 1 month -> 6 month: 5.91; 0.55; 1.63; 0.99 1 month -> 12 month: 6.50; 0.39; 2.71; 1.10 Breakdown by motor completeness and other time intervals available in article
Velstra et al. 2016 Prospective longitudinal	N = 61, 45 male Mean age 47, SD = 19 Acute (16-40 days after injury) tetraplegia at recruitment	Backward multiple binary logistic regression reveals that combinations of select predictors have similar		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
multicenter study 5 European SCI centers; Recruitment between 2009 ~ 2012	58/61 traumatic SCI AIS at 1 month: A=16, B=10, C=7, D=28	predictive accuracy as that of 10 predictors: Combination of ElbowFlex, WristExt, EDC & FPL predicting SCIM-Self-care at 6 months: Sensitivity = 81.8% (61.5-92.7%), Specificity = 89.2% (75.7-97.2%) All 10* bilateral muscle predictors predicting SCIM-Self-care at 6 months: Sensitivity = 86.4% (66.7-95.3%), Specificity = 89.2% (75.3-95.7%) Combination of WristExt, FDP, Delto & FPL predicting SCIM-Mobility at 6 months: Sensitivity = 96% (80.5-99.3%), Specificity = 91.2% (77.0-96.7%)		

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		All 10* bilateral strength predictors predicting SCIM-Mobility at 6 months: Sensitivity = 92% (75.0-97.8%), Specificity = 91.2% (77.0-96.7%) UEMS = Upper extremity motor score GRASSP-MMT = GRASSP Manual muscle testing *Predictors included: ElbowFlex = Elbow flexors (UEMS) WristExt = Wrist extensors (UEMS) Triceps = Elbow extensors (UEMS) FDP = Long finger flexors (UEMS) AbdDigV = Small finger abductors (UEMS)		

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		Delto = M. anterior deltoid (GRASSP-MMT) EDC = M. extensor digitorum communis (GRASSP-MMT) OPP = M. opponens pollicis (GRASSP-MMT) FPL = M. flexor pollicis longus (GRASSP-MMT) DI1 = M. first dorsal interosseus (GRASSP-MMT)		
Marino et al. 2015 Repeated measures studying the CUE-Test Outpatient rehab center	N=50, (36M) Mean age 48.1, SD=18.2, range 17~81 Neurological levels of injury: C2~T6 AIS-A/B = 20/50 AIS-C/D = 30/50	Spearman's correlation between CUE-T total score: And SCIM total: 0.617 And SCIM self-care: 0.695 And SCIM mobility: 0.550		

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Velstra et al. 2015 Prospective longitudinal multicenter study 5 European SCI centers; Recruitment between Jan 2009 ~ Jun 2011	N = 74, 51 male Mean age 49, SD=18 SCI patients <= 10 days post-injury at enrollment AIS classification at 1 month: A=18, B=12, C=10, D=34 69/74 traumatic SCI	Spearman Correlations (all p<0.0001): At 1 month postinjury: GRASSP-MMT* subscale & SCIM Self-care (SCIM-SS)= 0.78 GRASSP-SWM subscale & SCIM-SS = 0.63 GRASSP-QtG subscale & SCIM-SS = 0.85 At 3 month postinjury: GRASSP-MMT* subscale & SCIM-SS = 0.85 GRASSP-SWM subscale & SCIM-SS = 0.68		**Responsiveness:** SCIM self-care subscale SRMs for select periods in first year of injury: In all patients: 0.42-1.28 In AIS-A/B patients: 0.55-1.26 In AIS-C/D patients: 0.31-1.33 Breakdown by motor completeness and other time intervals available in article

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		GRASSP-QtG subscale & SCIM-SS = 0.90 At 6 month postinjury: GRASSP-MMT* subscale & SCIM-SS = 0.83 GRASSP-SWM subscale & SCIM-SS = 0.63 GRASSP-QtG subscale & SCIM-SS = 0.86 At 12 month postinjury: GRASSP-MMT* subscale & SCIM-SS = 0.82 GRASSP-SWM subscale & SCIM-SS = 0.56		

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		GRASSP-QtG subscale & SCIM-SS = 0.82 ROC analysis (Area Under Curve & 95% Confidence Interval): Between 1-3 month postinjury: Improvement in SCIM-SS: 0.80 (0.70~0.90) (p<0.001) Between 3-6 month postinjury: Improvement in SCIM-SS: 0.75 (0.60~0.90) (p<0.01) Between 6-12 month postinjury: Improvement in SCIM-SS: 0.72 (0.59~0.86) (p<0.01)		

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		*GRASSP-MMT is based on Daniels and Worthington's (1995) Manual Muscle Testing (MMT)		
Tramonti et al. 2014 Cross sectional Italy	N= 40 (12F, 28M) Mean age 54.25, SD=12.96 Mean time since injury = 8.27yrs, SD=7.74 28/40 paraplegia, 18/40 traumatic AIS A-C: 27 AIS D: 13	SF-36 physical functioning positively correlates with SCIM-III: Spearman's ρ = 0.72 (P<0.01, 1-β=0.99)		
Velstra et al. 2014 Prospective longitudinal multicenter study 5 European SCI centers;	N = 61, 45 male Mean age 46, SD = 19 Acute (16-40 days after injury) tetraplegia 56/61 traumatic SCI AIS at 1 month: A=16, B=9, C=7, D=29	Spearman ρ (all p<0.001): Between GRASSP-MMT* subtest & SCIM-Self-care subscale: At 6 month: r=0.821 At 12 month: r=0.820 Between GRASSP-SWM subtest & SCIM-Self-care subscale:		

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Recruitment between Jan 2009 ~ May 2011		At 6 month: r=0.781 At 12 month: r=0.643 *GRASSP-MMT is based on Daniels and Worthington's (1995) Manual Muscle Testing (MMT)		
Scivoletto et al. 2013 Retrospective chart review, distribution-based	N=255, 199 male Mean age 41.9, SD=18.4 Mean time from lesion 51.6days, SD=36.8 157 paraplegic, 171 traumatic 97 AIS-A, 40 AIS-B, 52 AIS-C, 66 AIS-D			**Responsiveness:** ES - based estimate of small change in total score: 3.9 ES – based estimate of substantial change in total score: 9.75 *Subscale breakdown available in article **Interpretability:** Total score: MID (minimal important difference) = 4.20 SEM = 2.96 SRD95/MDC95 = 8.20

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				4 points for small significant improvement 10 for substantial improvement Self-care subscale: MCID = 1.15 SEM = 0.95 SRD95/MDC95 = 2.64 2 points for small significant improvement 3 for substantial improvement Respiration and sphincter management subscale: MID = 1.82 SEM = 2.19 SRD95/MDC95 = 6.07 2 points for small significant improvement

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				5 for substantial improvement Mobility (room and toilet) subscale: MID = 0.61 SEM = 0.57 SRD95/MDC95 = 1.59 1 point for small significant improvement 2 points for substantial improvement Mobility (indoors and outdoors on even surface) subscale: MCID = 1.21 SEM = 0.71 SRD95/MDC95 = 1.96 1 point for small significant improvement

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				2 points for substantial improvement
Anderson et al. 2011 Multi-center, prospective, cohort study Inpatient rehabilitation hospitals in the US	N= 390 (294M, 96F) Mean age at injury= 45.3 ± 17.9y SCI 270 Traumatic 120 Non-traumatic 187 Tetraplegia 203 Paraplegia AIS A = 135 AIS B = 54 AIS C = 80 AIS D = 121	Pearson correlation between SCIM III & FIM (2 raters): 0.80 (P<0.001)	**Internal Consistency: Self-care** Admission a-values: Rater 1 = 0.945, Rater 2 = 0.950 Discharge a-values: Rater 1 = 0.930, Rater 2 = 0.930 **Respiration and sphincter management** Admission a-values: Rater 1 = 0.617, Rater 2 = 0.615 Discharge a-values: Rater 1 = 0.740, Rater 2 = 0.730 **Mobility in room and toilet** Admission a-values:	**Responsiveness:** SCIM III Total at Admission: Rater 1 = 29.8 ±17.7 Rater 2 = 29.6 ±16.9 r=0.91, P<.0001 SCIM III Total at Discharge: Rater 1 = 50.6 ±21.7 Rater 2 = 50.5 ±22.1 r=0.96, P<.0001 McNemar's test for measuring subscale responsiveness: Self-care: χ^2 = 17.86-22.35 (P<0.0001) Respiration and sphincter: χ^2 = 76.5-81.8 (P<0.0001) Mobility in the room: χ^2 = 57.36-58.91

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			Rater 1 = 0.868, Rater 2 = 0.960 Discharge a-values: Rater 1 = 0.900, Rater 2 = 0.850 **Mobility indoors and outdoors** Admissions a-values: Rater 1 = 0.949, Rater 2 = 0.950 Discharge a-values: Rater 1 = 0.890, Rater 2 = 0.900 **SCIM III Total** Admissions a-values: Rater 1 = 0.850, Rater 2 = 0.850 Discharge a-values: Rater 1 = 0.890, Rater 2 = 0.880 **Test-retest, Intra-rater, Inter-rater:** At admission:	(P<0.0001) Mobility indoors/outdoors: χ^2 = 13.68-19.93 (P<0.0001) Changes detected by SCIM III (yes/no) agree with FIM (yes/no) in all subscales in responding to functional change (P<.0001). For the respiration and sphincter management subscale, the SCIM III was more responsive to change than the FIM (P<.0001). Other subscales were not discussed in the study. **Interpretability:** Mean (SD) SCIM-III

<table>
<tr><th>Author Year
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Interpretability</th></tr>
<tr><td></td><td></td><td></td><td>Total agreement between raters = 65-99%
Cohen's k-coefficients= 0.56-0.85 (P<.001)
SCIM total r=0.91 (P<.001)

At discharge:
Total agreement between raters = 67-94%
Cohen's k-coefficients= 0.60-0.81 (P<.001)
SCIM total r=0.96 (P<.001)</td><td>scores from within a week of admission and discharge to and from a rehabilitation center
See table 1.</td></tr>
<tr><td></td><td colspan="4">Table 1.
<table>
<tr><th>Subscale:</th><th>Admission
Mean (SD) score:</th><th>Discharge
Mean (SD) score:</th></tr>
<tr><td>Self-care – 1st rater</td><td>7.2 (5.3)</td><td>11.4 (5.6)</td></tr>
<tr><td>Self-care – 2nd rater</td><td>7.2 (5.5)</td><td>11.4 (5.7)</td></tr>
<tr><td>Respiration and sphincter- 1st rater</td><td>15.8 (8.8)</td><td>25.5 (10.1)</td></tr>
<tr><td>Respiration and sphincter – 2nd rater</td><td>15.9 (8.8)</td><td>15.3 (10.2)</td></tr>
</table></td></tr>
</table>

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
	Mobility in the room – 1st rater: 3 (3); 5.8 (3.7) Mobility in the room – 2nd rater: 3 (2.9); 5.9 (3.5) Mobility indoors/outdoors-1st rater: 3.7 (4); 7.8 (5.8) Mobility indoors/outdoors- 2nd rater: 3.5 (3.4); 7.0 (5.9) SCIM total – 1st rater: 29.8 (17.7); 50.6 (21.7) SCIM total – 2nd rater: 29.6 (16.9); 50.5 (22.1)			
Bluvshtein et al. 2011 Multi-center international prospective cohort study 13 spinal cord units in 6 countries from North America, Europe and the Middle-East	N= 261 M/F = 5:2 (no actual numbers given) Mean age=40.1±17.1y Traumatic SCL 55% Tetraplegia 45% Paraplegia AIS A = 49.2% AIS B = 13.5% AIS C = 19.6% AIS D = 17.7%	A significant correlation as found between SCIM III and FIM scores. Pearson's coefficients for the two raters, whose SCIM scores were examined for correlation with the FIM scores, were 0.839 (P<.001, n=231) and 0.835 (P<.001, n=228), respectively.	**Internal Consistency: Cronbach's coefficient a** **Self-care** Rater 1 (n=256) = 0.883 Rater 2 (n=251) = 0.878 **Respiration and sphincter management** Rater 1 (n=256) = 0.657	**Responsiveness:** Responsiveness of SCIM III to changes in function between admission to rehabilitation and discharge was better than that of FIM. In all subscales, SCIM III identified more changes in function than FIM. The difference in responsiveness between SCIM III and

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			Rater 2 (n=251) = 0.679 **Mobility in room and toilet** Rater 1 (n=256) = 0.700 Rater 2 (n=251) = 0.732 **Mobility indoors and outdoors** Rater 1 (n=233) = 0.873 Rater 2 (n=230) = 0.860 **SCIM III Total** Rater 1 (n=256) = 0.835 Rater 2 (n=251) = 0.833 **Test-retest, Intra-rater, Inter-rater:** Total agreement	FIM was statistically significant (P<.001) for both raters in: - Respiration and sphincter management - Mobility indoors and outdoors The difference in responsiveness between SCIM III and FIM was significant only for one of the raters (P<.02) in: - Self-care The difference between the two scales was not statistically significant in: Mobility in the room and toilet **Interpretability:** Mean (SD) SCIM-III scores See table 1.

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<table>
<tr><th>Author Year Research Design Setting (country)</th><th>Demographics and Injury Characteristics of Sample</th><th>Validity</th><th>Reliability</th><th>Responsiveness Interpretability</th></tr>
<tr><td></td><td></td><td></td><td>between the paired raters ranged between 79.1-98.7%

k coefficients ranged between 0.649 – 0.858 (P<.001 for all tasks)</td><td></td></tr>
<tr><td></td><td colspan="4">Table 1.
<table><tr><th>Subscale:</th><th>Mean (SD) score:</th></tr><tr><td>Self-care – 1st rater</td><td>6.47 (5.53)</td></tr><tr><td>Self-care – 2nd rater</td><td>6.41 (5.37)</td></tr><tr><td>Respiration and sphincter- 1st rater</td><td>16.04 (9.54)</td></tr><tr><td>Respiration and sphincter – 2nd rater</td><td>15.92 (9.48)</td></tr><tr><td>Mobility in the room – 1st rater</td><td>2.45 (3.32)</td></tr><tr><td>Mobility in the room – 2nd rater</td><td>2.41 (3.23)</td></tr><tr><td>Mobility indoors/outdoors-1st rater</td><td>3.84 (5.57)</td></tr><tr><td>Mobility indoors/outdoors- 2nd rater</td><td>3.84 (5.44)</td></tr><tr><td>SCIM total – 1st rater</td><td>28.80 (20.94)</td></tr><tr><td>SCIM total – 2nd rater</td><td>28.58 (20.59)</td></tr></table></td></tr>
</table>

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Ackerman et al. 2010 Prospective cohort Shepherd Center, Atlanta, GA, USA	N=114 (92M, 22F) Individuals with SCI discharged from a day program (DP) between March 2007 and June 2008. The DP participants were included if they had an SCI, were within ≤12 months from the date of injury, American Spinal Injury association Impairment Scale (AIS) A or B and completed the recommended length of stay. AIS A: 91 AIS B: 23 *Level of impairment* C1-4: 13			**Floor/ceiling effect:** Ceiling effects (≥50% of participants scoring maximum at admission) were observed in: - Feeding & grooming (T1-12) - Respiration (C5-8, T1-12) - Bed mobility (T7-12) Floor effects (≥50% of participants scoring minimum at discharge) were observed in: - Feeding & grooming (C1-4) - Bathing upper & lower body (C1-5) - Dressing upper body (C1-4) - Dressing lower body (C1-5)

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
	C5: 16 C6: 18 C7-8: 12 T1-6: 38 T7-12: 17			- Use of toilet (C1-6) - Bed mobility (C1-5) - Transfer Bed-Wheelchair (C1-5) - Transfer Wheelchair-Toilet-Tub (C1-5) - Stair Management (All subgroups except T7-12) - Transfer Wheelchair-Car (C1-5) - Transfer Wheelchair-Ground (All subgroups) **Interpretability:** SCIM-III median total scores and change by AIS motor neurological level from admission to discharge from an

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<table>
<tr><th>Author Year Research Design Setting (country)</th><th>Demographics and Injury Characteristics of Sample</th><th>Validity</th><th>Reliability</th><th>Responsiveness Interpretability</th></tr>
<tr><td></td><td></td><td></td><td></td><td>outpatient day program
See table 1.</td></tr>
<tr><td></td><td colspan="4">Table 1.
<table>
<tr><th>Lowest motor neurological level</th><th>N</th><th>Length of stay (days)</th><th>Admission total SCIM-III</th><th>Discharge total SCIM-III</th><th>SCIM-III change</th></tr>
<tr><td>C1-4</td><td>13</td><td>11</td><td>19.0</td><td>19.0</td><td>0.0</td></tr>
<tr><td>C5</td><td>16</td><td>18.5</td><td>21.5</td><td>23.5</td><td>3.0</td></tr>
<tr><td>C6</td><td>18</td><td>25</td><td>25.5</td><td>34.5</td><td>9.0</td></tr>
<tr><td>C7-8</td><td>12</td><td>23</td><td>39.5</td><td>50.0</td><td>7.0</td></tr>
<tr><td>T1-6</td><td>38</td><td>15</td><td>53.5</td><td>63.0</td><td>5.5</td></tr>
<tr><td>T7-12</td><td>17</td><td>13</td><td>61.0</td><td>66.0</td><td>6.0</td></tr>
<tr><td>All subgroups</td><td>114</td><td>17</td><td>42.0</td><td>50.0</td><td>5.0</td></tr>
</table></td></tr>
<tr><td>Glass et al. 2009

Multi-centre cohort study</td><td>N=86 (72M, 14F)
Mean age: 43.2±16.5y (range: 18-82y)

SCI</td><td>Pearson correlation values, r, between SCIM III and FIM scores were calculated for each of the 2 raters and were 0.798 (P<.01)</td><td>Internal Consistency:
The UK results show SCIM III total Cronbach’s alpha scores of 0.770 and</td><td>Responsiveness:
The ability to identify a 1-point change (admission to discharge) within the 4 areas of SCIM-III in</td></tr>
</table>

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Four UK regional SCI centres	Tetraplegia: 40 Paraplegia: 46 AIS A: 41 AIS B: 13 AIS C: 19 AIS D: 13 Traumatic: 69 Non-traumatic: 17	and 0.782 (P<.01), respectively.	0.780 for raters 1 and 2, respectively. However, the areas "respiration and sphincter management" (alpha=0.600 and 0.645) and "mobility in the room and toilet" (alpha=0.652 and 0.656) both show an unsatisfactory alpha level. **Test-retest, Intra-rater, Inter-rater:** Inter-rater ICC scores for the SCIM III total and the 4 sub-domain scores were 0.956 (SCIM total), 0.941 (self-care), 0.844 (respiratory and sphincter management), 0.945 (mobility "in") and 0.956 (mobility "out").	comparison with the total FIM™ score were compared using the McNemar test. SCIM-III detected more numerous changes than FIM™ in 3 of the 4 areas; *self-care, respiration and sphincter management,* and *mobility indoors and outdoors*, but not *mobility in the room and toilet.* The differences between the 2 scales' responsiveness to changes are not statistically significant. **Floor/ceiling effect:** Floor effect was evident in the item "transfer ground/wheelchair",

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			The total agreement between raters is greater than 0.80 on 15 of the 19 SCIM III tasks. For single items, kappa coefficients range from 0.491 (stair management) to 0.835 (mobility outdoors) and are all statistically significant (P<.001).	which was scored zero for 53 patients by both raters.
Rudhe et al. 2009 Cross-sectional analysis. Part of larger international multicenter GRASSP study. 2 German centers and 1 Swiss center.	N = 29 with traumatic or ischemic SCI Time since injury = 1-15 months (mean = 4.5 ± 3 months) Age= 19-81 years (mean = 50 ± 18 years) 16 males, 13 females ASIA-A/B/CD: 12/4/13	SCIM III scores correlated well with ASIA Upper Extremity Muscle Score (UEMS), Manual Muscle Testing (MMT) and hand capacity tests total scores (P<0.001): See table 1.		

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Table 1.

Spearman's correlations between SCIM-III and other measures			
SCIM III	**UEMS**	**MMT**	**Hand Capacity Tests**
Feeding	0.73	0.75	0.67
Bathing upper body	0.80	0.77	0.77
Bathing lower body	0.72	0.76	0.71
Dressing upper body	0.73	0.76	0.76
Dressing lower body	0.64	0.70	0.60
Grooming	0.88	0.89	0.80
Self-care Total	0.82	0.84	0.80
Respiration & Bladder Total	0.63	0.68	0.65
Mobility Total	0.65	0.71	0.72
Total Score	0.78	0.78	0.76

Spearman's correlations between MMT and SCIM-III Self-care items	
MMT Items	**SCIM-Self-care Items**
Shoulder Abduction	0.34-0.66
Elbow Extension	0.62-0.78
Elbow Flexion	0.08-0.40

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<table>
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<tr><td></td><td colspan="4"><table>
<tr><td>Wrist Extension</td><td>0.24-0.56</td></tr>
<tr><td>Finger Extension</td><td>0.67-0.82</td></tr>
<tr><td>Finger Flexion</td><td>0.69-0.84</td></tr>
<tr><td>Thumb Flexion</td><td>0.63-0.82</td></tr>
<tr><td>Finger Abduction</td><td>0.65-0.83</td></tr>
<tr><td>Interosseus Muscle I</td><td>0.64-0.77</td></tr>
<tr><td>Thumb Adduction</td><td>0.56-0.74</td></tr>
<tr><td>Thumb Opposition</td><td>0.55-0.72</td></tr>
</table>
Estimation of SCIM-III Self-care score using ASIA UEMS: $R^2_{adjusted}$ = 0.69
Estimation of SCIM-III Self-care score using MMT: $R^2_{adjusted}$ = 0.73</td></tr>
<tr><td>Catz et al. 2007

Multi-center prospective cohort study to examine the validity, reliability, and usefulness of SCIM III using Rasch analysis</td><td>N = 425 (309M, 116F)

Mean age = 46.93

Tetraplegia = 188
Paraplegia = 237

Inclusion criteria included: age ≥ 18 and no concomitant impairments that</td><td>Real person reliability index:
Self-care subscale = 0.88
Respiration and sphincter management subscale = 0.76
Mobility subscale = 0.91</td><td></td><td></td></tr>
</table>

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
13 spinal cord units in 6 countries from North America, Europe, and the Middle-East	might influence everyday function. Traumatic SCL participants = 261 Non-traumatic SCL participants = 164, including: Spinal stenosis = 23; benign tumor = 27, disc protrusion = 25; myelopathy unknown = 16; syringomyelia = 5; decompression sickness = 3; multiple sclerosis = 2; congenital anomaly = 2 spinal abscess = 2; metastatic disease = 2; other = 41.	Separation Index: Self-care = 2.77 Respiration and sphincter management = 1.77 Mobility = 3.15 These reflect the statistical degree of which the measurements differ: The 'real reliability index' adopted in this study is conservative and has an ideal maximum value of 1. The 'separability index' and the number of 'discernible strata' are related concepts. They reflect the degree to which measurements (levels of ability in this study) differ not only in absolute but also in		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		statistical terms. Measurements within the same 'statistical' stratum do not differ significantly (in this study, at P<.05). The higher the reliability, the higher the number of strata. If the index is >0.7 at least two strata are discernible and the hypothesis that all differences in ability measurements reflect only randomness can be rejected. At P<0.05, the measurement process distinguished 4 strata of person abilities for self-care, 3 for respiration and sphincter		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		management, and 4 for mobility. In all the three subscales, there is a satisfactory match between the location of the mean difficulty of the whole set of thresholds, their distribution below the y-axis, and the distribution of patient ability levels above the x-axis. This supports the validity of the SCIM III. “The three scales represent a valid profile of patient’s functional status. This has been shown through: a) the reliability and fit estimates, the nearly ordered category structure, and the		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		substantive absence of differential item functioning (DIF) across clinically relevant sub-groups of patients; b) the substantive match between the distribution of difficulty levels and patient abilities, which supports the practical usefulness of the instrument when applied to the SCL patients; c) the analysis of DIF between the difficulty of items in each country and the aggregated values across countries, which displays a substantive metric equivalence of the instrument across the 6 countries		

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		participating to the study." (pp.284-5)		
Itzkovich et al. 2007 Multi-center prospective cohort study to examine the third version of the Spinal Cord Independence Measure for reliability and validity 13 spinal cord units in six countries from North America, Europe and the Middle East.	N = 425 (309M, 116F) Mean age = 46.93 Tetraplegia = 188 Paraplegia = 237 Inclusion criteria included: age ≥ 18 and no concomitant impairments that might influence everyday function. Traumatic SCL participants = 261 Non-traumatic SCL participants = 164, including: Spinal stenosis = 23; benign tumor = 27, disc protrusion = 25; myelopathy unknown	Pearson correlation w/ Functional Independence Measure (FIM): 1st rater: r = 0.790 P<.01 2nd rater: r = 0.779 P<.01	**Internal Consistency:** Values of Cronbach's alpha exceeding 0.7 support reasonable internal consistency: Please see Table 2 below. **Test-retest, Intra-rater, inter-rater:** Patients assessed upon admission to rehabilitation and before discharge **Inter-rater kappa coefficients:** Task: Feeding = 0.823 Bathing upper body = 0.671	**Responsiveness:** McNemar test comparing SCIM III subscale scores to FIM tasks that match those subscales: The responsiveness of the SCIM III was better than that of the FIM in the Respiration and sphincter management and Mobility indoors and outdoors subscales. In the Self-care and Mobility in the room and toilet subscales, differences between the two scales were statistically non-significant: Self-care: 1st rater: P<.360 2nd rater: P<.533

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	= 16; syringomyelia = 5; decompression sickness = 3; multiple sclerosis = 2; congenital anomaly = 2 spinal abscess = 2; metastatic disease = 2; other = 41.		Bathing lower body = 0.643 Dressing upper body = 0.668 Dressing lower body = 0.651 Grooming = 0.731 Respiration = 0.754 Sphincter management – bladder = 0.705 Sphincter management – bowel = 0.691 Use of toilet = 0.631 Mobility in bed = 0.682 Transfers bed/wheelchair = 0.782 Transfers wheelchair/toilet/tub = 0.768 Mobility indoors = 0.778	Respiration and sphincter management: 1st rater: P<.001 2nd rater: P<.001 Mobility in the room and toilet: 1st rater: P<.341 2nd rater: P<.784 Mobility indoors and outdoors: 1st rater: P<.001 2nd rater: P<.001 **Interpretability:** SCIM subscale mean (SD) scores See table 1.

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
			Mobility moderate distances = 0.755 Mobility outdoors = 0.705 Stair management = 0.679 Transfers wheelchair/car = 0.758 Transfers ground/wheelchair = 0.751 *All P<.001 **Pearson Correlation (r) between raters:** SCIM subscales: Self-care = 0.944 Respiration and sphincter = 0.902 Mobility in the room = 0.924 Mobility indoors/outdoors = 0.935 SCIM total = 0.955	

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<table>
<tr><th>Author Year Research Design Setting (country)</th><th>Demographics and Injury Characteristics of Sample</th><th>Validity</th><th>Reliability</th><th>Responsiveness Interpretability</th></tr>
<tr><td></td><td></td><td></td><td>*All P<.001

Inter-rater intraclass correlation coefficients (ICC)
Subscale:
Self-care = 0.971
Respiration and sphincter = 0.948
Mobility in the room = 0.961
Mobility indoors/outdoors = 0.967
SCIM total scores = 0.977</td><td></td></tr>
<tr><td></td><td colspan="4">Table 1.
<table><tr><th>Subscale:</th><th>Mean (SD) score:</th></tr><tr><td>Self-care – 1st rater</td><td>8.73 (6.11)</td></tr><tr><td>Self-care – 2nd rater</td><td>8.61 (5.88)</td></tr><tr><td>Respiration and sphincter- 1st rater</td><td>19.88 (10.77)</td></tr><tr><td>Respiration and sphincter – 2nd rater</td><td>19.65 (10.54)</td></tr><tr><td>Mobility in the room – 1st rater</td><td>3.73 (3.73)</td></tr></table></td></tr>
</table>

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability

Mobility in the room – 2nd rater	3.72 (3.67)
Mobility indoors/outdoors-1st rater	5.14 (6.36)
Mobility indoors/outdoors- 2nd rater	5.20 (6.33)
SCIM total – 1st rater	37.47 (23.90)
SCIM total – 2nd rater	37.18 (23.44)

Table 2

Summary of Cronbach's alphas by 2 raters:	1st rater	2nd rater
Self-care:	0.906	0.892
Respiration and Sphincter management:	0.701	0.704
Mobility in the room and toilet:	0.724	0.739
Mobility indoors and outdoors:	0.887	0.878
SCIM III total:	0.849	0.847

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Research Summary – The Spinal Cord Independence Measure III (SCIM-III) – Self-Care and Daily Living - Cross-cultural Validation Studies

Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Xing et al. 2021 Study on psychometric properties to investigate the validity and reliability of a Chinese version of SCIM III An inpatient rehabilitation facility in China	N = 102 64M, 38F Mean (SD) age 48.8 (15.6) years Etiology: Sports and leisure (n = 5), assaults (n = 4), motor vehicle accidents (n = 22), fall (n = 30), other traumatic (n = 5), non-traumatic (n = 36) Level of injury: Tetraplegia (n = 50), paraplegia (n = 52) AIS grade: A (n = 19), B (n = 24), C (n = 8), D (n = 51) Median (IQR) time since injury 2 (1.0-6.8) months **Reliability:** N = 67 41M, 26F	Large correlation was found between Barthel Index and SCIM III total scores (Pearson correlation coefficient=0.88, *P*<0.01)	**Inter-rater reliability:** Kappa coefficients for each SCIM III item between Raters 1 and 2 ranged between 0.70 to 1.00 (all p < 0.01). **Test-retest reliability:** The Pearson and intraclass correlation coefficients were >0.97 (P < 0.01) for each subscale and total score, with excellent consistency. See table 1. **Internal consistency:** The Cronbach α	

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<table>
<tr><th>Author Year Research Design Setting (country)</th><th>Demographics and Injury Characteristics of Sample</th><th>Validity</th><th>Reliability</th><th>Responsiveness Interpretability</th></tr>
<tr><td></td><td>Mean (SD) age 47.9 (14.4) years
Aetiology: Sports and leisure (n = 4), assaults (n = 3), motor vehicle accidents (n = 16), fall (n = 18), other traumatic (n = 1), non-traumatic (n = 25)
Level of injury: Tetraplegia (n = 33), paraplegia (n = 34)
AIS grade: A (n = 14), B (n = 16), C (n = 5), D (n = 32)
Median (IQR) time since injury 3 (1.0-6.0) months</td><td></td><td>values for the total SCIM III score were 0.85 for both raters 1 and 2. For most of the items, elimination of each of them resulted in a decreased Cronbach’s α value of the subscale. However, when the item ‘mobility in bed’ or ‘transfers ground/wheelchair’ were deleted, the Cronbach’s α of ‘mobility in the room’ subscale and ‘mobility indoors/outdoors’ subscale increased respectively.</td><td></td></tr>
<tr><td></td><td colspan="4">Table 1.
<table><tr><th>Subscale</th><th>R*</th><th>ICC (95% CI)</th></tr><tr><td>Selfcare</td><td>0.98</td><td>0.98 (0.96–0.99)</td></tr><tr><td>Respiration and sphincter</td><td>0.99</td><td>0.99 (0.98–0.99)</td></tr></table></td></tr>
</table>

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
	<table><tr><td>Mobility in the room</td><td>0.98</td><td>0.98 (0.97–0.99)</td></tr><tr><td>Mobility indoors/outdoors</td><td>0.99</td><td>0.99 (0.98–0.99)</td></tr><tr><td>SCIM III total</td><td>0.99</td><td>0.99 (0.99–1.00)</td></tr></table>			
Cho et al. 2020 Study to develop a Korean version of the SCIM III and to investigate its reliability and validity Korean National Rehabilitation Center spinal cord unit	N = 40 32M, 8F Mean (SD) age 47.32 (14.27) years AIS A (n = 14), AIS B (n = 5), AIS C (n = 8), AIS D (n = 13) Cause of lesion: Traffic accident (n = 13); falls (n = 14); operation (n = 5); and others (n = 8), such as multiple sclerosis (n = 2), decompressive operation (n = 4), tuberculosis meningitis (n = 1), and SCI metastasis (n = 1) Injury level: Paraplegia (n = 15), Tetraplegia (n = 25)	**Correlation Between the KSCIM-III and MBI:** The correlation coefficient between KSCIM-III and MBI was statistically significant (0.953, P < 0.0001). The matches items between each area of the KSCIM-III and MBI were as follows: • Feeding / Feeding: 0.973 • Bathing / bathing self: 0.962. • Dressing / dressing: 9.987.	**Interrater reliability:** The Kappa coefficients showed values of 0.710–1.000 for each item on the KSCIM-III, which indicated high reliability. The κ coefficients for the items on each subscale were as follows: selfcare, 0.710–0.853; respiration and sphincter management, 0.736–0.858; room and toilet mobility, 0.852–0.922; and indoors and	

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		• Grooming / personal hygiene: 0.964. • Sphincter management-bladder / bladder control: 0.677. • Sphincter management-bowel / bowel control: 0.581. • Use of toilet / toilet: 0.964. • Mobility – bed to wheelchair / chair/bed transfer: 0.987. • Mobility – indoors and outdoors on even surface / ambulation: 0.762. • Stair management /	outdoors mobility, 0.793–1.000. The ICC of the subscale scores 0.985–0.997, indicating high correlations that were statistically significant. **Test-Retest Reliability:** The Cohen's Kappa coefficients for test-retest reliability showed fair to substantial agreement ranging from 0.295 to 0.664 for each subscale.	

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		stair climbing: 0.942. All areas were statistically significant ($P < 0.001$).		
Berardi et al. 2019 Psychometric study to validate the Italian version of the short version of the Van Lieshout Test N=61	N=61 80% Male Mean age: 47±14.76 years AIS: 25A, 15B, 15C, 6D Level of injury number: 3 C3, 13 C4, 20 C5, 19 C6, 6 C7	**Concurrent validity:** Pearson's correlation between VLT-SV-IT and Italian version of Jebsen Taylor Hand Function Test (JTHFT) (Negative Linear correlations) Right hand: -0.94- (-0.15) Left hand: -0.82-(-0.06) Pearson correlation between VLT-SV-IT and Italian version of SCIM III =0.07		
Saberi et al. 2018	N=279 Mean age: 33.70±10.13 years	Pearson correlation values, r, between SCIM III and FIM	**Internal Consistency:**	

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Cross-sectional psychometric study Persian version of SCIM III Brain and Spinal Injury Research Center, Tehran, Iran	Male/Female ratio: 4/1 AIS: C1-C4 (AIS A, B, C):16 C5-C8 (AIS A, B, C): 55 T1-S5 (AIS A, B, C): 193 Time since injury 4.23±4.54 years	scores were calculated for each of the 2 raters and were 0.905 (P<.01) and 0.900 (P<.01), respectively.	Cronbach's alpha=0.86 **Test-retest, Inter-rater, Intra-rater:** Intraclass correlation between raters 1 and 2 within P-SCIM III subscales and total scores (time frame not specified) **Intraclass correlation (ICC, 95% CI)** Self-care 0.968 (0.960–0.975) Respiration and sphincter management 0.924 (0.904–0.939) Mobility in the room and toilet 0.953 (0.941–0.963) Mobility indoors and outdoors 0.980 (0.974–0.984)	

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			Total scores 0.977 (0.971–0.98277767)	
Michailidou et al. 2016 Cross-sectional validation study of Greek version (GR-SCIM III) Study uses self-report, but unclear if it's referencing SCIM-SR	From Greece using GR-SCIM III: N=45, 23 male Mean age 61 yrs (SD=17) Mean time since injury 12 yrs (SD=11) 67% incomplete paraplegia 60% non-traumatic SCI From elsewhere using SCIM III: N=174, 64% male Mean age 35 yrs (SD=15) Mean time since injury 12 yrs (SD=7) 50% incomplete paraplegia, 50% incomplete tetraplegia		**Internal Consistency:** Cronbach's alpha for GR-SCIM III by self-report: Overall = 0.78 Self-care subscale = 0.90 Respiration/sphincter management subscale = 0.59 Mobility in room and toilet subscale = 0.83 Mobility indoors/outdoors subscale = 0.91 Cronbach's alpha for SCIM III by self-report: Overall = 0.79 Self-care subscale = 0.92	

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	79% Traumatic		Respiration/sphincter management subscale = 0.40 Mobility in room and toilet subscale = 0.77 Mobility indoors/outdoors subscale = 0.87	
Wannapakhe et al. 2016 Cross-sectional validation of Thai SCIM-III (Th-SCIM-III) A tertiary rehabilitation center in Thailand	N=31, 20M 11F Mean age (SD): AIS-AB: 35.8(11.64) AIS-C: 51.63(18.49) AIS-D: 52.63(17.28) Mean time since injury: 42.32±53.58 months Patients with SCI (18+) with subacute/chronic complete/incomplete SCI caused by trauma or nonprogressive disease	Th-SCIM-III scores >= 50 can "discriminate between subjects with motor complete and incomplete SCI". Sensitivity = 68.75% Specificity = 66.67% AUC = 0.78(95%CI: 0.62~0.95)	**Internal consistency:** Cronbach's alpha (by 3 raters): All items: 0.88-0.89 Self-care: 0.90-0.94 Respiration & sphincter: 0.50-0.59 Mobility (room & toilet): 0.69-0.72 Mobility (indoor & outdoor): 0.90 (3 identical values) **Test-retest, Intra-rater, Inter-rater:** Interrater values - ICC(95%CI):	

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	AIS-AB/C/D: 15/8/8 Complete/Incomplete: 15/16 Paraplegia/Tetraplegia: 15/16 Traumatic/Nontraumatic: 18/13 Chronic SCI: 61.3%		For motor complete SCI (N=15): Overall: 0.994(0.985-0.998) Self-care: 0.988(0.971-0.996) Respiration & Sphincter: 0.952(0.887-0.983) Mobility (room & toilet): 0.977(0.945-0.992) Mobility (indoor & outdoor): 0.983(0.960-0.994) For motor incomplete SCI (N=16): Overall: 0.994(0.986-0.998) Self-care: 0.975(0.943-0.991) Respiration & Sphincter:	

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			0.981(0.956-0.993) Mobility (room & toilet): 0.920(0.815-0.970) Mobility (indoor & outdoor): 0.996(0.992-0.999)	
de Almeida et al. 2016 Cross-sectional validation, using Brazilian SCIM-III & FIM Neurology and Rehabilitation Clinics of the Ribeirão Preto Medical School of the University of São Paulo	N=30 (10M, 20F) nontraumatic SCI individuals N=17 ambulates without assistance, N=9 used mobility aids, N=2 cannot walk independently Etiologies: N=15 familial N=5 infectious disease N=6 under investigation N=4 other myelitis	Spearman's rho between: SCIM-III and motor FIM: 0.6, p<0.01 SCIM-III Grooming and FIM self-care: 0.8, p=0.001 SCIM-III respiration & sphincter and FIM sphincter: 0.6, p=0.0005 SCIM-III mobility indoor & outdoors and FIM locomotion: 0.6, p=0.0006	**Test-retest, Intra-rater, Inter-rater:** Interrater ICC: 0.9 (2 raters) Test-retest ICC: 0.9 (7-14 day interval)	
Unalan et al. 2015	All participants: N=204, 144 male	Pearson's r with SF-36: 0.339, p<0.005	**Internal Consistency:** Cronbach's alpha:	

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Multicenter, prospective validation study of the Turkish SCIM III Rehabilitation centers of three hospitals in Turkey	Aged 18~80, mean 39.7, SD=13.7 Mean duration of injury 75.4 months, SD=85.2 165 traumatic, 66 tetraplegia, 104 complete, 104 AIS-A, 29 AIS-B, 35 AIS-3, 36 AIS-D Subgroup: N=49, 29 male Mean age 38.4, SD=14.3 Mean duration of injury 60.0 months, SD=55.3 45 traumatic, 18 tetraplegia, all complete, all AIS-A	"Excluding self-care, all the subscales were found to have significant differences compared with the AIS grades" using one-way ANOVA. (p.458) "A parallel increase in all the subscales and the total score for the AIS grade* and the SCIM-III scores were observed" (p.458) *ASIA Impairment Scale A-E Incomplete SCI patients performed significantly better on SCIM III than complete SCI patients	Total score = 0.828(rater1), 0.832(rater2) Self-care subscale = 0.916,0.911 Respiration/sphincter management subscale = 0.574,0.584 Mobility in room and toilet subscale = 0.774,0.754 Mobility indoors/outdoors subscale = 0.898,0.899 **Test-retest, Intra-rater, Inter-rater:** Test-retest values: N=49 (AIS-A, SCI duration > 1yr) Paired t-test: Total score: t = -0.115 (P=0.909, n.s.)	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
			Self-care subscale: t = 0.562 (P=0.577, n.s.) Respiration and sphincter subscale: t = -0.797 (P=0.429, n.s.) Mobility in the room subscale: t = -0.358 (P=0.722, n.s.) Mobility in/outdoors subscale: t = 1.429 (P=0.159, n.s.) Interrater values: N=204 For all items: Percent agreement 75.9%~100% Kappa 0.683~1 For total score: Pearson's r: 0.972 Paired t-test: t = 1.347	

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Riberto et al. 2014 Cross-sectional validation study of Brazilian SCIM III	N=83, 68.7% male Mean age 36.1 (SD=15.4) 52/83 paraplegic, 31/83 tetraplegic 69.5% AIS-A	Pearson's r with FIM ($p<0.05$): 0.91 for paraplegia 0.94 for tetraplegia "indicating that the gains observed by one instrument were found in the same proportion by the other" (p.442)	**Test-retest, Intra-rater, Inter-rater:** Test-retest: ICC = 0.991 Interrater: ICC = 0.918	**Floor/ceiling effect:** Brazilian SCIM III exhibits less floor & ceiling effect than FIM motor
Zarco-Periñan et al. 2013 Cross-sectional validation study of Spanish version (eSCIM III)	Validity study group: N=64, 43 male Mean age 44.79±20.50 yrs 38 traumatic injury, 26 non-traumatic 27 tetraplegia, 37 paraplegia 26 AIS-A, 11 AIS-B, 9 AIS-C, 18 AIS-D 35/64 selected for reliability study group	Spearman's rho with FIM at admission ($p<0.0001$): Overall: 0.87 Self-care subscale: 0.89 Respiration and sphincter management subscale: 0.86 Mobility in the rooms subscale: 0.87 Mobility indoors/outdoors subscale: 0.81	**Internal Consistency:** Cronbach's alpha at admission: Overall = 0.93 Self-care subscale = 0.87 Respiration/sphincter management subscale = 0.63 Mobility in room subscale = 0.93 Mobility indoors/outdoors subscale = 0.93	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		Spearman's rho with FIM at discharge ($p<0.0001$): Overall: 0.94 Self-care subscale: 0.90 Respiration and sphincter management subscale: 0.87 Mobility in the rooms subscale: 0.90 Mobility indoors/outdoors subscale: 0.85 "eSCIM III showed sensitivity to functional changes of the patients with spinal cord injury ($p<0.0001$)" (p.1647)	Cronbach's alpha at admission: Overall = 0.93 Self-care subscale = 0.92 Respiration/sphincter management subscale = 0.79 Mobility in room subscale = 0.79 Mobility indoors/outdoors subscale = 0.91 **Test-retest, Intra-rater, Inter-rater:** Interrater reliability values: K-coefficient: $K>0.90$, $p=0.0001$ for all items – high agreement ICC between 2 raters at admission: Overall: 0.97	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
			Self-care subscale: 0.91 Respiration/sphincter subscale: 0.99 Mobility in room: 0.97 Mobility indoors/outdoors: 0.70 ICC between 2 raters at discharge: Overall: 0.96 Self-care subscale: 0.95 Respiration/sphincter subscale: 0.94 Mobility in room: 0.96 Mobility indoors/outdoors: 0.96	
Invernizzi et al. 2010	N=103 (84M, 19F) Mean age: 50.33±15.35y	Pearson's r between i-SCIM III and FIM total scores:	**Internal Consistency:** Cronbach's a for the	**Floor/ceiling effect:** Mean (SD) SCIM-III scores

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Prospective cohort; test-retest validation for the development of the Italian SCIM III (i-SCIM3) Two different Italian SCI centers (Novara and Rome	Patients admitted for rehabilitative treatment in two different Italian SCI centers between January 2008 and March 2009. Inclusion criteria: (1) SCL (AIS A, B, C, or D) (2) Age>18y (3) No concomitant impairments influencing everyday function, such as brain injury or mental disease. Paraplegia: 74 Tetraplegia: 29 *AIS grades:* A: 74	Admission: r=0.96, P<.01 Discharge: r=0.91, P<.01 Pearson's r between i-SCIM III and FIM subscales scores: Admission: r≥0.80, P<.01 Discharge: r≥0.82, P<.01 For i-SCIM III subscales: Self-care: No significant difference in sensitivity* between i-SCIM III and FIM Respiration and sphincter management: FIM more sensitive than i-SCIM III Mobility in the room and toilet: FIM more sensitive than i-SCIM III	overall i-SCIM III = 0.91 for both raters For all subscales, Cronbach's a values were always >0.90, except for the subscale "Respiration and sphincter management" (a<0.70). **Test-retest, Intra-rater, Inter-rater:** Inter-rater ICC for Total i-SCIM III score: Admission=0.99 Discharge=1 For all items, total agreement was >89%. The k values were always >0.85, with the exception of the items "Stair management" and "Use of toilet," which	**Subscale:** / **Mean (SD) score:** Self-care – 1st rater: 9.69 (6.37) Self-care – 2nd rater: 9.68 (6.37) Respiration and sphincter-1st rater: 21.23 (8.27) Respiration and sphincter – 2nd rater: 21.24 (8.3) Mobility in the room – 1st rater: 4.23 (3.69) Mobility in the room – 2nd rater: 4.24 (3.69) Mobility indoors/outdoors-1st rater: 5.37 (5.46)

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	B: 11 C: 8 D: 10 *Lesion etiology:* Traumatic: 79 Spinal stenosis: 5 Disc protrusion: 2 Myelopathy of unknown origin: 8 Vascular impairment: 3 MS: 1 Congenital anomaly: 5	Mobility indoors/outdoors: i-SCIM III more sensitive than FIM *likelihood of detecting change	had k values of 0.79 and 0.84, respectively. Pearson correlation coefficient for all subscales and the total score was 0.99 (P<.01).	Mobility indoors/outdoors- 2nd rater: 5.32 (5.52) SCIM total – 1st rater: 40.52 (21.01)

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Research Summary – The Spinal Cord Independence Measure-Self Reported (SCIM-SR) – Self-Care and Daily Living

Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Prodinger et al. 2016 Rasch analysis SwiSCI community survey; Switzerland; administration of SCIM-SR on paper, online or by telephone interview	N = 1530 (1093M, 437F) Mean (SD) age 52.33 (3.26) Mean (SD) time since SCI = 16.84 (12.7) years 310 Incomplete tetraplegia 156 Complete tetraplegia 569 Incomplete paraplegia 483 Complete paraplegia	"The SCIM-SR violates certain assumptions of the Rasch measurement model, as shown by the local dependency and differential item functioning. However, an intermediate solution to achieve fit in 3 out of 4 spinal cord injury sub-groups was found. For the time being, therefore, it advisable to use this approach to compute Rasch-transformed SCIM-SR scores." (p149)		**Floor/ceiling effect:** No floor or ceiling effects observed. No participant received minimum score. 11.4% of incomplete paraplegic participants received maximum score (<15% threshold) 12.3% of incomplete tetraplegic participants received maximum score (<15% threshold)
Fekete et al. 2013 Cross-sectional validation study	N= 99 (26F, 73M) Age, median (IQR): 48.0 (35.0-64.0)	Self-report SCIM (SCIM-SR) Pearson's r with SCIM-III: Overall: 0.87(95%CI 0.82-0.91)		

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of self-report version (SCIM-SR) Two SCI rehabilitation facilities in Switzerland	Median post-injury time = 0.7 yrs, IQR = 0.3-18.2 Paraplegia = 53/99 Complete lesion = 42/99	Self-care subscale: 0.87(0.81-0.91) Respiration and sphincter management subscale: 0.81(0.73-0.87) Mobility subscale: 0.83(0.76-0.89) SCIM-SR ICC with SCIM-III: Overall: 0.90(95%CI 0.85-0.93) Self-care subscale: 0.86(0.79-0.90) Respiration and sphincter management subscale: 0.80(0.71-0.86) Mobility subscale: 0.83(0.76-0.89)		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		SCIM-SR Bland-Altman bias with SCIM-III: Overall: -5.14 (Limits of Agreement: -16.87~27.16) (95%CI: 2.95~7.34) Self-care subscale: 0.89 (-6.10~7.87) (0.19~1.59) Respiration and sphincter management subscale: -1.05 (-11.26~13.36) (0.18~2.28) Mobility subscale: 3.49 (-7.07~14.05) (2.44~4.54) “patients rated their functioning higher than professionals, in particular for mobility” (p.40)		

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Research Summary – The Spinal Cord Independence Measure-Self Reported (SCIM-SR) – Self-Care and Daily Living - Cross-cultural Validation Studies

Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Marquez et al. 2022 Psychometric and transverse study to evaluate the psychometric properties of the Italian version 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	No significant ($p > 0.05$) correlations emerged between MSES-IT and SCIM-SR.		
Khatri et al. 2022 Methodological study to cross-culturally adapt the Nepali version of the SCIM-SR and	N = 45 37M, 8F Mean (SD) age 29.6 (8.9) years Type of disability: Quadriplegia (n = 8), paraplegia (n = 37) AIS grade: A (n = 35), B (n = 6), C (n = 4)		**Test-retest reliability** The Nepali version of the SCIM-SR demonstrated excellent test-retest reliability for total scores and all	

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
determine its reliability Communities of Nepal and those with outpatient follow-up appointments at the Spinal Injury Rehabilitation Centre (SIRC), Nepal	Etiology: Disease (n = 2), falls (n = 23), road traffic accident (n = 14), sports injuries (n = 4), disaster (n = 2) Mean (SD) duration of injury 8.1 (4.7) years		subscales, reflecting stability on repeated measures. The ICCs of the total score, self-care subscale, respiration and sphincter management subscale, and mobility subscale were 0.968, 0.964, 0.941, and 0.966, respectively. **Internal consistency** The internal consistency reached an acceptable range for the total score and most of the subscales except for those of respiration and sphincter management. Cronbach's α coefficients for the total score, self-care subscale, and	

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
			mobility subscale were 0.801, 0.959, and 0.838, respectively. Cronbach's α coefficient was 0.506 for the respiration and sphincter management subscale.	
Tongprasert et al. 2022 Cross-sectional validation study to cross-culturally translate and evaluate the psychometric properties of the Thai version of the SCIM III Self-Report (SCIM-SR-Thai)	N = 61 43M, 18F Mean (SD) age 52.2 (15.4) years Etiology: Traumatic (n = 41), non-traumatic (n = 20) Severity of SCI: C1-4 AIS A, B, and C (n = 11); C5-8 AIS A, B, and C (n = 8); T1-S3 AIS A, B, and C (n = 18); and AIS D at any injury level (n = 24) Mean time since injury 1.0 (0.0 – 4.5) years*	The Pearson's correlation coefficients and ICC revealed strong correlation with values of 0.93, 0.94, 0.95, and 0.97 in respiration and sphincter management, self-care, mobility, and total score, respectively; between the SCIM III and the SCIM- SR-Thai scores.	For the **internal consistency**, the Cronbach's alpha values for the subscale of self-care, respiration and sphincter management, mobility, and the total score were 0.96, 0.96, 0.97, and 0.98, respectively.	**Mean (SD), median, IQR, floor effect, and ceiling effect:** Please see Table 1 below.

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<table>
<tr><th>Author Year Research Design Setting (country)</th><th>Demographics and Injury Characteristics of Sample</th><th>Validity</th><th>Reliability</th><th>Responsiveness Interpretability</th></tr>
<tr><td>Rehabilitation Ward at Maharaj Nakorn Chiang Mai Hospital, Thailand</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="4">Table 1
<table>
<tr><td></td><td colspan="2">Total score (score 0-100)</td></tr>
<tr><td>Mean (SD)</td><td>SCIM III</td><td>SCIM-SR</td></tr>
<tr><td>Mean (SD)</td><td>41.9 (20.0)</td><td>41.3 (18.8)</td></tr>
<tr><td>Median</td><td>39.0</td><td>39.0</td></tr>
<tr><td>IQR</td><td>25.0–55.5</td><td>25.0–54.5</td></tr>
<tr><td>Floor effect, n (%)</td><td>0 (0.00)</td><td>0 (0.00)</td></tr>
<tr><td>Ceiling effect, n (%)</td><td>1 (1.64)</td><td>0 (0.00)</td></tr>
</table></td></tr>
<tr><td>Wilartratsami et al. 2021

Cross-sectional reliability and validation study to translate and assess the psychometric properties of</td><td>N = 32
Mean (SD) age 44.97 (20.31) years
28M, 4F
Neurological level: C1-C4 (n = 3), C5-C8 (n = 15), upper thoracic (n = 9), lower thoracic (n = 5)
Cause: Traumatic (n = 23), nontraumatic (n =</td><td>Concurrent validity showed strong correlation for the total score (Pearson’s correlation coefficient = 0.949) and all subscale scores (Pearson’s correlation coefficient range: 0.859–0.960). The most well-correlated</td><td>Internal consistency:
The Cronbach’s alpha values for total score, self-care, respiration and sphincter management, and mobility were 0.91, 0.94, 0.75, and 0.90, respectively.</td><td>No floor or ceiling effects were shown.</td></tr>
</table>

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
the Thai version of the SCIM III—Self Report (TH-SCIM-SR) Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand	9) ASIA impairment grade: A (n = 20), B (n = 2), C (n = 3), D (n = 7), E (n = 0)	domains were self-care and mobility. The mean differences ranged from −0.063 to 1.56, which confirms the good agreement between the TH-SCIM-SR and the TH- SCIM III.	**Test–retest reliability:** The ICC of test–retest reliability for total score, self-care, respiration and sphincter management, and mobility were 0.95 0.95, 0.78, and 0.96, respectively.	
Wang et al. 2021 Cross-sectional psychometric study to translate, culturally adapt and validate the Chinese version of the SCIM III-Self Report (SCIM-SR) Four rehabilitation	N = 147 patients with SCI 120M, 27F Mean (± SD) age 40.3 (± 12.9) years Cause of injury: Trauma (n = 130) Level of SCI: Tetraplegia (n = 45), paraplegia (n = 102) AIS grade (n = 139): A (n = 72), B (n = 17), C (n = 30), D (n = 20) Median (IQR) time	**Criterion-related validity:** The ICC for the total score between the two scales was 0.935 (95% CI, 0.876–0.966). The values were 0.899 (0.808–0.946) for the self-care subscale, 0.760 (0.546–0.873) for the respiration and sphincter management subscale, and 0.942 (0.890–0.969) for the	**Internal consistency:** The Cronbach's α of the total scale was 0.908. The internal consistencies of the three subscales were different, with Cronbach's α values of 0.913 for the self-care subscale and 0.895 for the mobility subscale, but a relatively lower value (0.555) for the	

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centers in Guangzhou, Chengdu, and Shiyan, China	since injury 7 (1-43) months	mobility subscale, indicating high consistency between the two scales. **Content validity:** The S-CVI was 0.99, and the I-CVIs of the Chinese version of the SCIM- SR ranged from 0.88 to 1.0. Those results suggest that the content of the SCIM-SR accurately reflected the patients' state of functional independence.	respiration and sphincter management subscale. **Test–retest reliability:** Regarding test–retest reliability, the Spearman coefficient for the total scale administered 2 weeks apart was 0.876. For the self-care subscale it was 0.837 with 0.736 for the respiration and sphincter management subscale, and 0.877 for the mobility subscale.	
Takeuchi et al. 2021	N = 100 76M, 24F Median (IQR) age 63 (52-70) years	**Correlation between the jSCIM III and the jSCIM-SR:**	**Internal consistency:** - Cronbach's α of the total	

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Psychometric study, cross-sectional validation study to adapt and validate the Japanese version of the SCIM self-report (jSCIM-SR) A SCI rehabilitation facility (Murayama Medical Center, Japan)	Etiology: Trauma (n = 57), non-trauma (n = 43) Vertebral level of injury: Cervical (n = 65), thoracic (n = 29), lumbar and cauda equina (n = 6) Severity of injury: Complete (n = 32), incomplete (n = 68) Median (IQR) time post-injury 5 (3-5) months	The correlation of total scores, each subscale score, and each item score between the jSCIM III and the jSCIM-SR showed coefficients above 0.7 for most of the items, indicating a strong correlation, except for items 5 (breathing), 7 (bowel), 14 (mobility outdoor), 15 (stair), 16 (transfer car), and 17 (transfer ground). For these items, the coefficients were between 0.4 and 0.7, indicating a moderate correlation.	jSCIM-SR score was above 0.88, which decreased when any of the subscales was eliminated. - Cronbach's α of the self-care jSCIM-SR score was above 0.92, which decreased when any of the items was eliminated. - Cronbach's α of the respiration and sphincter management jSCIM-SR score was below 0.7. Removal of	

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			item 5 (breathing) increased the subscales' Cronbach's α, but removal of any of the other items decreased the subscales' Cronbach's α. - Cronbach's α of the mobility jSCIM-SR score was above 0.89. Removal of item 9 (mobility bed) or 17 (transfer ground) increased the subscales' Cronbach's α, but removal of any of the other items decreased the	

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			subscales' Cronbach's α.	
Jörgensen et al. 2021 Translation and reliability study to describe data completeness, targeting and reliability of the Swedish version of the SCIM Self-Report (s-SCIM-SR) Program participants and peer mentors with SCI enrolled in the INTERnational Project for the Evaluation of "activE Rehabilitation" (interPEER)	N = 90 (n = 48 programme participants and n = 42 peer mentors) - Participants: N = 48 30M, 18F Mean (SD) age 44.5 (30) years Mean (SD) time since injury 1 (2) years Cause of injury: Traumatic (n = 37), non-traumatic (n = 10) Level of injury: Tetraplegia (n = 25), paraplegia (n = 23) Completeness of injury: Complete (n = 17), incomplete (n = 30)		**Internal consistency:** - With regard to the total group, the Cronbach's alpha coefficient for the full scale was 0.89, and > 0.8 for more of the subscales. - With regard to the program participants, the Cronbach's alpha coefficient for the full scale was 0.88, and > 0.8 for most of the subscales.	**The mean (SD) [min–max] total score** for programme participants was 61 (SD 19) [21–100], for peer mentors 68 (SD 15) [24–95] and for the total group 64 (18) [21–100]. **Data completeness:** Forty-two out of 48 (88%) participants of the AR training programs had answered all items in the s-SCIM-SR and obtained a total score. In total, 6 participants had left 1 item blank (5 participants for item 5 ("I do not need a respiratory (tracheal) tube…"); response rate 90%, and 1 participant for

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	- Peer mentors: N = 42 31M, 11F Mean (SD) age 38.5 (18) years Mean (SD) time since injury 10 (9) years Cause of injury: Traumatic (n = 37), non-traumatic (n = 5) Level of injury: Tetraplegia (n = 10), paraplegia (n = 32) Completeness of injury: Complete (n = 21), incomplete (n = 20)		- With regard to the peer mentors, the Cronbach's alpha coefficient for the full scale was 0.84, and > 0.8 for most of the subscales. **Test-retest reliability (for peer mentors exclusively):** The ICC for the full scale was 0.98 (*n* = 18), for the Self-care subscale 0.89 (*n* = 36), for the Respiration and sphincter management subscale 0.90 (*n*=20) and for the Mobility subscale 0.96 (*n*=33).	item 7(a) ("Bowel management; Do you need assistance with bowel management?"); response rate 98%. The response rates for all other items were 100%. Missing data were hence found in the subscale Respiration and sphincter management with a response rate of 88%. Twenty-seven out of 42 (64%) peer mentors answered all items in the s-SCIM-SR at T1. Most missing data were found in item 5 ("I do not need a respiratory (tracheal) tube…") with a response rate of 83%, and item 8 ("Using the toilet")

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				with a response rate of 76%. Missing data were hence found in the subscales Respiration and sphincter management and Mobility, with response rates of 67% and 93%, respectively. **Targeting:** With regard to the program participants, the subscales and the full scale spanned a large range of possible scores; the Self-care subscale ranged from 2 to 20 (full range 0–20), the Respiration and sphincter management subscale ranged from 13 to 40 (full range 0–40), the Mobility subscale ranged from

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				5 to 40 (full range 0–40) and the full scale ranged from 21 to 100 (full range 0–100). No program participant scored the lowest possible score on any subscale. Ceiling effects were noted in the Self-care subscale where 19% of the program participants scored the highest possible score. For the other subscales and the full scale, 2% of the program participants scored the highest possible score. With regard to the peer mentors, the Self-care subscale ranged from 2 to 20, the Respiration and sphincter management subscale ranged from

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				16 to 39, the Mobility subscale ranged from 3 to 40 and the full scale ranged from 24 to 95. No peer mentor scored the lowest possible score on any subscale. Ceiling effects were noted in the Self-care subscale where 52% of the peer mentors scored the highest possible score. For the Mobility subscale, 5% scored the highest possible score. **SEM and SDD:** The SEM and SDD for the full scale were 1.9 and 5.3, respectively.
Michailidou et al. 2016 Cross-sectional validation study	From Greece using GR-SCIM III: N=45, 23 male Mean age 61 yrs (SD=17)		**Internal Consistency:** Cronbach's alpha for GR-SCIM III by self-report:	

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of Greek version (GR-SCIM III) Study uses self-report, but unclear if it's referencing SCIM-SR	Mean time since injury 12 yrs (SD=11) 67% incomplete paraplegia 60% non-traumatic SCI From elsewhere using SCIM III: N=174, 64% male Mean age 35 yrs (SD=15) Mean time since injury 12 yrs (SD=7) 50% incomplete paraplegia, 50% incomplete tetraplegia 79% traumatic		Overall = 0.78 Self-care subscale = 0.90 Respiration/sphincter management subscale = 0.59 Mobility in room and toilet subscale = 0.83 Mobility indoors/outdoors subscale = 0.91 Cronbach's alpha for SCIM III by self-report: Overall = 0.79 Self-care subscale = 0.92 Respiration/sphincter management subscale = 0.40 Mobility in room and toilet subscale = 0.77 Mobility indoors/outdoors subscale = 0.87	

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Bonavita et al. 2016 Cross-sectional validation study of Italian version of SCIM-Self Report (SCIM-SR) Two spinal cord injury (SCI) rehabilitation facilities in Italy	N=116, (80M, 36F) Mean (SD) age 45.5 (17.7) Mean (SD) time since SCI: 5.7 (3.0) years AIS-A/B/C/D: 33/16/13/54 66 paraplegia, 50 tetraplegia 71 traumatic, 45 nontraumatic SCI	Between SCIM-Self Report and SCIM-III: Pearson correlation coefficients (95%CI): Self-care: 0.918 (0.884-0.943) Respiration & Sphincter: 0.806 (0.731-0.862) Mobility: 0.906 (0.867-0.934) Total: 0.934 (0.906-0.954) Intraclass coefficients (95%CI): Self-care: 0.918 (0.884-0.943) Respiration & Sphincter: 0.803 (0.727-0.859) Mobility: 0.906 (0.867-0.934) Total: 0.933 (0.905-0.953) Bland-Altman analysis (mean difference; std		

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		error; limits of agreement (LOA); % observed differences included in LOA): Self-care: 0.918; 2.61; -5.25-4.98; 92% Respiration & Sphincter: -0.09; 4.95; -9.78-9.61; 93% Mobility: 0.22; 4.63; -8.86-9.29; 94% Total: -0.01; 8.33; -16.34-16.32; 95%		
Aguilar-Rodríguez et al. 2015 Cross-sectional validation study of the Spanish self-report version (eSCIM-SR) Spinal Cord Unit at the Hospital Universitario y	N=100 (68M) Age>18, mean=55.4, SD=15.2 Complete = 33, incomplete = 67 Traumatic = 55, non-traumatic = 45	Lin's concordance correlation coefficient between SCIM-III & Spanish self-report SCIM (eSCIM-SR): Overall: 0.998 (95%CI: 0.997-0.998) Self-care subscale: 0.988 (0.982-0.992) Respiration and sphincter management subscale: 0.992(0.988-0.995)		

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Politécnico la Fe de Valencia (Feb-Apr 2014)		Mobility subscale: 0.997(0.995-0.998) Bland-Altman bias between SCIM-III & eSCIM-SR: Overall: -0.32(95% Limits of Agreement: -3.01~2.37) Self-care subscale: -0.22(-2.12~1.68) Respiration and sphincter management subscale: -0.10(-2.02~1.82) Mobility subscale: -0.03(-1.69~1.63)		