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Research Summary – SF-36 – Quality of Life

Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Conti et al. 2019 Validation cross-sectional study to assess the psychometric properties of the CBI-SCI Outpatient clinics of the Città della Salute e della Scienza Hospital of Turin, IRRCS Fondazione Santa Lucia of Rome, Cannizzaro Hospital of Catania and Careggi Hospital of Florence	N = 176 caregivers of people with SCI 30M, 146F Mean (SD) age 56.2 (14.6) years	**Concurrent validity:** All Pearson correlations between CBI-SCI and all SF-36 subscales were statistically significant ($p < 0.001$): - SF-36 Subscale— Vitality: r = -045 - SF-36 Subscale— Physical functioning: r = -0.35 - SF-36 Subscale— Bodily pain: r = -0.48 - SF-36 Subscale— General health: r = -0.50 - SF-36 Subscale—		

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		Physical role functioning: r = -0.49 - SF-36 Subscale—Emotional role functioning: r = -0.45 - SF-36 Subscale—Social role functioning: r = -0.58 - SF-36 Subscale—Mental health: r = -0.52		
Tramonti et al. 2014 Cross sectional Italy	N= 40 (12F, 28M) Age: 54.25 ±12.96 Time since SCI (years): 8.27 ± 7.74 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)		
van Leeuwen et al. 2012	145 subjects (104 male, 41 female) mean age: 45.4±13.7	Divergent Validity – Spearman correlation	**Internal consistency:** Cronbach's α of the	**Floor/ceiling effect:** For the mental health domain of the SF-36

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Cross-sectional study 5 years after discharge from inpatient rehabilitation Eight Dutch rehabilitation centres with specialized SCI units.	Incomplete paraplegia: 27 Complete paraplegia: 65 Incomplete tetraplegia: 16 Complete tetraplegia: 37	of MHI-5 subscale of the SF-36 with: Functional Independence Measure: ρ=0.094 (n.s.) Sickness Impact Profile mobility range: ρ =-0.283 (P<0.01) Type of injury: ρ =-0.009 (n.s.) Completeness of injury: ρ =-0.008 (n.s.) Cause of injury: ρ =0.192 (P<0.05) Concurrent Validity – Spearman correlation of SF-36 general health domain with (all P<0.01): LISAT-9: ρ =0.531 Neuroticism: ρ = -0.546 SF-vitality: ρ = 0.528 SF-general health: ρ=0.367	Mental Health subscale (MHI-5) was higher than 0.70 (0.79) and all item–rest correlation were above 0.30 (range 0.37–0.68).	(a.k.a. Mental Health Index – 5, MHI-5), no participants scored 0 and 4.8% of the participants scored 100, indicating no floor or ceiling effects.

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<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>Ataoglu et al. 2013

Cross sectional

Inpatient rehab center</td>
<td>N= 140 (36F, 104M)
Age: 36.2 ±13.5
Time since SCI (months): 25.2 ± 43.9
AIS A: 79
AIS B-E: 61</td>
<td>The following SF-36 Domains negatively correlate with BDI:
General health: (r=-0.229, p=0.016)
Vitality (r=-0.329, p=0.000)
Social functioning (r=-0.283, p=0.003)
Mental health (r=-0.247, p=0.010)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horner-Johnson et al. 2010

Cross-sectional survey

General community</td>
<td>206 participants (54 SCI, 36 no disability, 25 loss of vision, 23 loss of hearing, 68 mental health disability) – results reported separately for each group.

For the 54 SCI participants:
20 women (37%)
mean age: 46.31±10.7</td>
<td>In analyzing mean domain scores, people with SCI scored significantly lower than the nondisabled group on the Physical Functioning, Role–Physical, and Bodily Pain domains.
Item-by-item differential item-functioning analyses showed significant negative differential item functioning in people with SCI on all</td>
<td></td>
<td>Interpretability:
N=206 (54 SCI only, 34 male, mean age 46.31±10.7)
<table>
<tr><th>SF-36 Subscales:</th><th>Mean (SD) score:</th></tr>
<tr><td>Physical functioning</td><td>23.68 (11.98)</td></tr>
<tr><td>Role physical</td><td>38.67 (11.55)</td></tr>
<tr><td>Bodily pain</td><td>42.40 (11.22)</td></tr>
<tr><td>General health</td><td>47.71 (8.97)</td></tr>
</table>
</td>
</tr>
</table>

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		10 physical functioning items. In contrast, all vitality items showed significant positive differential functioning for people with SCI when controlling for total physical health scores. Differential item functioning of SF-36 domain items controlling for physical Z score* and demographics: Physical functioning: -0.87 to -0.29 Role-physical: -0.15 to -0.02 & 0.03 to 0.19 Bodily Pain: 0.11 to 0.14 General Health: -0.03 to -0.05 & 0.18 to 0.24 Vitality: 0.23 to 0.48 *consisted of above 5 domains		<table><tr><td>Vitality</td><td>48.14 (11.74)</td></tr><tr><td>Social functioning</td><td>44.12 (11.85)</td></tr><tr><td>Role emotional</td><td>45.30 (11.41)</td></tr><tr><td>Mental health</td><td>50.27 (9.35)</td></tr></table>

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		Differential item functioning of SF-36 domain items controlling for mental Z score* and demographics: Vitality: 0.03 & -0.06 to -0.19 Social functioning: -0.10 to -.013 Role-emotional: 0.05 to 0.07 & -0.08 Mental Health: 0.07 to 0.39 *consisted of above 4 domains		
Lee et al. 2009 SF-36 scores collected at baseline and on completion of a randomized controlled trial New South Wales, Australia	N=305, 83% male Mean age 44 Mean time since SCI onset: 14 years 100% had SCI and neurogenic bladder 55% with tetraplegia 49% with complete SCI		**Internal consistency:** Cronbach's α for Physical Function domain: 0.83	**Responsiveness:** Comparing paraplegic to tetraplegic patients using the SF-36: Effect Sizes: Physical Functioning domain: 1.09 Physical Component Summary: 0.36

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
				Mental Component Summary: -0.16 SRM (mean change, s.d.) for paraplegia patients: Physical Functioning domain: 0.77 (9.26,12.07) Physical Component Summary: 0.62 (5.52, 8.98) Mental Component Summary: 0.87 (10.25, 11.83) SRM (mean change, s.d.) for tetraplegia patients: Physical Functioning domain: 0.11 (1.62, 14.34) Physical Component Summary: 0.55 (4.76, 8.67)

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
				Mental Component Summary: 0.62 (9.21, 14.97) Overall SRM (mean change, s.d.): Physical Functioning domain: 0.36 (5.00, 13.87) Physical Component Summary: 0.58 (5.10, 8.78) Mental Component Summary: 0.71 (9.67, 13.67) **Floor/ceiling effect:** Floor effect in physical functioning domain: Patients who chose rating of 1 for all of domain items (3a-3j): 29% Individual items:

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				Walking more than a mile (3g): 96% Walking several hundred yards (3h): 94% Walking one hundred yards (3i): 93%
Anton et al. 2008 2-week methodologic study to assess the internal consistency, reliability and construct validity of the FSS. A tertiary spinal cord rehab facility in Vancouver, Canada.	N=48 Male=31 Female=17 Mean age=40.4 Mean time since injury=14.9 years Major cause of injury=motor vehicle collision=27 Motor complete SCI=48 Tetraplegia=26 AIS grade A injuries=30	Pearson correlation Correlation between SF-36 and the Fatigue Severity Scale which measures different constructs from the SF-36: r=-0.48		

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Lin et al. 2007 Cross-sectional Subjects from a Taiwan nationwide SCI registry	N=187 (151 men) Mean Age = 50.3 years Mean time since injury = 7.4 years 48 incomplete tetraplegia 28 complete tetraplegia 73 incomplete paraplegia 38 complete paraplegia	Correlation between SF-36 and the WHOQOL-BREF: The rho of the conceptually related domains between the WHOQOL-BREF and the SF-36 (overall QoL & general health-general health; Physical Capacity-Physical Functioning/Role physical/bodily pain; Psychological well-being-social functioning/role emotional/mental health; social relationships-social functioning) are higher than 0.4, with the exception of the WHOQOL-BREF's Psychological Well-Being and the SF-36's Role Emotional (rho = 0.37)	**Internal consistency:** Physical Functioning: α= 0.98 Role Physical: α= 0.94 Bodily Pain: α= 0.79 General Health: α= 0.82 Vitality: α= 0.76 Social Functioning: α= 0.72 Role Emotional: α= 0.89 Mental Health: α= 0.78 Good internal consistency. **Test-retest, inter-rater, intra-rater:** 10 subjects were contacted for re-assessment by same initial interviewer within 2 weeks.	**Responsiveness:** Stratified random sample by current employment status of 30 subjects, selected from those who had been employed before the SCI, were interviewed for a second time to recall their health related QoL at the time of the injury. Effect Sizes comparing employed to unemployed SCI patients using SF-36 domains: Physical Functioning: 0.92 Role Physical: 0.60 Bodily Pain: 0.01 General Health: 0.00 Vitality: 0.16 Social Functioning: 0.30

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		All P-values<.0001 The ability of the SF-36 to discriminate among subgroups with respect to age, education, marital status, employment, time since injury, level of injury, and self-care ability was tested using the Mann-Whitney U-test. Overall, the SF-36 domains* significantly discriminated between subgroups in terms of 2 characteristics**. *Physical Functioning, Role Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role Emotional, Mental Health	Test-retest (intra-rater) reliability: Physical Functioning: ICC= 0.71 Role Physical: ICC= 0.89 Bodily Pain: ICC= 0.87 General Health: ICC= 0.85 Vitality: ICC= 0.93 Social Functioning: ICC= 0.93 Role Emotional: ICC= 0.99 Mental Health: ICC= 0.77 10 subjects were contacted for re-assessment by different initial interviewer within 2 weeks.	Role Emotional: 0.21 Mental Health: 0.44 **Floor/ceiling effect:** Floor Effect: number of items in domain & percentage of patients achieving minimal score: Physical Functioning: 10 (12.2%) Role Physical: 4 (28.1%) Bodily Pain: 2 (0.9%) General Health: 5 (0.9%) Vitality: 4 (0.4%) Social Functioning: 2 (2.2%) Role Emotional: 3 (20.1%) Mental Health: 5 (0.4%) Ceiling Effect: number of items in domain &

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		**Employment status, self-care ability (all domains P≤0.05)	Test-retest (inter-rater) reliability: Physical Functioning: ICC= 0.67 Role Physical: ICC= 0.90 Bodily Pain: ICC= 0.70 General Health: ICC= 0.41 Vitality: ICC= 0.86 Social Functioning: ICC= 0.52 Role Emotional: ICC= 0.98 Mental Health: ICC= 0.57	percentage of patients achieving maximal score: Physical Functioning: 10 (29.7%) Role Physical: 4 (54.4%) Bodily Pain: 2 (0.9%) General Health: 5 (0.4%) Vitality: 4 (0.4%) Social Functioning: 2 (10.9%) Role Emotional: 3 (63.8%) Mental Health: 5 (0.4%) **Interpretability:** SF-36 scores, and clinically relevant values (SEM and MDC calculated from data in Lin et al. 2007): N=187, 330 male, mean age 50.3

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<table>
<tr><th>Author Year
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Interpretability</th></tr>
<tr><td></td><td></td><td></td><td></td><td>See table 1.</td></tr>
<tr><td></td><td colspan="4">Table 1.
<table>
<tr><th>SF-36 Subscales:</th><th>Mean (SD) score:</th><th>SEM</th><th>MDC</th></tr>
<tr><td>Physical functioning</td><td>61.2 (39.8)</td><td>21.4</td><td>59.4</td></tr>
<tr><td>Role physical</td><td>62.7 (44.4)</td><td>14.7</td><td>40.8</td></tr>
<tr><td>Bodily pain</td><td>67.5 (20.6)</td><td>7.4</td><td>20.6</td></tr>
<tr><td>General health</td><td>52.5 (20.3)</td><td>7.9</td><td>21.8</td></tr>
<tr><td>Vitality</td><td>57.0 (17.3)</td><td>4.6</td><td>12.7</td></tr>
<tr><td>Social functioning</td><td>71.8 (22.2)</td><td>5.9</td><td>16.3</td></tr>
<tr><td>Role emotional</td><td>71.8 (40.9)</td><td>4.1</td><td>11.3</td></tr>
<tr><td>Mental health</td><td>63.5 (15.5)</td><td>7.4</td><td>20.6</td></tr>
</table></td></tr>
<tr><td>Miller et al. 2008

Methodological 2 week re-test study

Tertiary care centre in Vancouver, BC</td><td>N = 47 individuals,
Male = 30
Female = 17

Mean age = 40.6

Subject 19 years and older who had their SCI for 1 or more years.

AIS A = 29
AIS B = 18</td><td>Pearson’s correlation
Correlation between SF-36 and the Centre for Epidemiologic Studies Depression Scale (CESD-20) which measures a different construct (with some overlap) than the SF-36:
Mental Health: r=0.75*
Emotional role function: r=0.55*</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
		Vitality: r=0.54* Pain: r=0.27* Social role function: r=0.37* Physical function: r=0.34* Physical role function: r=0.40* General health: r=0.57* **Pearson's correlation** Correlation between SF-36 and the Centre for Epidemiologic Studies Depression Scale – 10 (CESD-10) which measures a different construct (with some overlap) than the SF-36: Mental Health: r=0.71* Emotional role function: r=0.56* Vitality: r=0.60* Pain: r=0.38*		

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		Social role function: r=0.42* Physical function: r=0.37* Physical role function: r=0.49* General health: r=0.60* *P<.05 was considered significant		
Raichle et al. 2006 Cross-sectional US Northwest home survey questionnaire	N = 127 Male = 92 Female = 35 Age range = 21 to 88 High tetraplegia = 18 Low tetraplegia = 40 High paraplegia = 14 Paraplegia = 42 Low paraplegia = 11 Missing data = 2	SF-36's Psychological functioning domain correlation (Spearman's rho) with the Graded Chronic Pain (GCP) Disability Scale: GCP composite score = -0.55* Individual items: Daily activities = -0.51* Work and housework = -0.48*		

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		Recreation, social and family activities = -0.57* *P<0.01 All coefficients were significant and positively associated with GCP. SF-36's Psychological functioning scale correlation (Spearman's rho) with the Brief Pain Inventory (BPI) Interference Scale: BPI 7-item version = -0.62* BPI 10-item version = -0.60* BPI 12-item version = -0.61* Individual items:		

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		General activity = -0.51* Mood = -0.65* Mobility = -0.44* Normal work = -0.48* Relationship with others = -0.63* Sleep = -0.30* Enjoyment of life = -0.64* Self-care = -0.41* Recreational activities = -0.49* Social activities = -0.58* Communication = -0.64* Learning new information and skills = -0.44* *P<0.01 All coefficients are significant and		

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<tr><td></td><td></td><td>negatively associated with the BPI.</td><td></td><td></td></tr>
<tr><td>Forchheimer et al. 2004

Cross-sectional

Major university hospital in the Midwest</td><td>N=215 (78.5% men)
Mean age=38.8 ± 14.5 years

SCI participants were 1 to 13 years post injury</td><td>The Physical Component Score (PCS) and Mental Component Score (MCS) were not related to each other, as expected, with Pearson’s r = -0.075.</td><td>Internal consistency:
Average level: α=0.82
Range: α = 0.76 (Bodily Pain scale) to 0.90 (Physical Functioning and General Health scales)</td><td>Interpretability:
SF-36 norm-based scale and component scores
N=215, 78.5% male, mean age 38.8±14.5
<table>
<tr><th>SF-36 Subscales:</th><th>Mean (SD) score:</th></tr>
<tr><td>Physical functioning</td><td>26.6 (11.5)</td></tr>
<tr><td>Role physical</td><td>40.7 (10.9)</td></tr>
<tr><td>Bodily pain</td><td>42.2 (12.4)</td></tr>
<tr><td>General health</td><td>44.4 (11.8)</td></tr>
<tr><td>Vitality</td><td>46.8 (9.6)</td></tr>
<tr><td>Social functioning</td><td>43.0 (13.3)</td></tr>
<tr><td>Role emotional</td><td>49.0 (10.6)</td></tr>
<tr><td>Mental health</td><td>48.3 (11.0)</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
				Physical component summary: 33.5 (10.1) Mental component summary: 53.5 (11.6)
King & Roberts 2002 Cross-sectional (sampled over 1 year) Veterans Administration Neurosurgery Clinic	N=88 Mean age: 56.8±11.2, range 29-84 88% men 36% had previous cervical spinal surgery.	Cuzick nonparametric test for significance of trend: SF-36 Physical Functioning was correlated to: Nurick Scale ($p<0.001$) Harsh Scale ($p<0.001$) Cooper Leg Subscale ($p<0.001$) SF-36 PCS was correlated to: Nurick Scale ($p<0.001$) Harsh Scale ($p<0.001$) Modified Japanese Orthopaedic	**Internal consistency:** Cronbach's $\alpha > 0.7$ for all 8 domain scales, the physical component summary (PCS), and the mental component summary (MCS): Domains scales: α=0.79 (general health) to 0.91 (physical functioning) PCS: α= 0.92 MCS: α= 0.92	**Floor/ceiling effect:** Percentage of patients achieving minimal score: All 8 domains: 0% Physical component summary (PCS): 13.7% Mental component summary (MCS): 14.9% Percentage of patients achieving maximal score: 7 of 8 domains: 100% Vitality domain: 80%

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<tr><td></td><td></td><td>Association (JOA) Scale – Leg Motor Component was correlated to:
SF-36 Physical Functioning, Role Functioning (Physical), General Health Perceptions, PCS (p≤0.006)
SF-36 Social Functioning (p<0.001)</td><td></td><td>Physical component summary (PCS): 50.7%
Mental component summary (MCS): 72.5%

Interpretability:
N=88, 88% male, mean age 56.8±11.2
<table>
<tr><th>SF-36 Subscales:</th><th>Mean (SD) score:</th></tr>
<tr><td>Physical functioning</td><td>31.9 (234.6)</td></tr>
<tr><td>Role physical</td><td>14.8 (27.5)</td></tr>
<tr><td>Bodily pain</td><td>29.4 (22.1)</td></tr>
<tr><td>General health</td><td>40.0 (21.2)</td></tr>
<tr><td>Vitality</td><td>30.3 (20.2)</td></tr>
<tr><td>Social functioning</td><td>42.8 (25.8)</td></tr>
<tr><td>Role emotional</td><td>38.6 (41.9)</td></tr>
<tr><td>Mental health</td><td>54.9 (24.7)</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>Physical component summary</td><td>27.8 (8.3)</td></tr><tr><td>Mental component summary</td><td>40.5 (12.9)</td></tr></table>
Andresen et al. 1999 Cross-sectional Midwestern US veteran SCI program	Subjects were selected randomly from 454 patients at a regional veterans' SCI program. 183 veterans with SCI; ranging in age from 21-81 years were used. (mean=50.5) Level of Injury: Cervical – 86 Thoracic – 78 Lumbar - 8	Correlations (Pearson's r) between: BRFSS Question "poor physical health days" and: 8 SF-36 subscales: r = -0.220 - -0.685 (P<0.01) SF-36 physical component summary (PCS): r = -0.458 (P<0.01) SF-36 mental component summary (MCS): r = -0.600 (P<0.01) BRFSS Question "poor mental health days" and: 8 SF-36 subscales: r = -0.331 - -0.686 (P<0.01) for 7 domains,		**Responsiveness:** Problems with scaling with extremes with 20% of subjects or more received maximum (ceiling) or minimum (floor) values. 3 subscales (role physical, social functioning, role emotion) exhibited ceiling effects between 22.5 and 75.3% 2 subscales (physical functioning and role physical) exhibited floor effects 24.2% and 36.3%, respectively.

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<tr><td></td><td></td><td>-0.167 (P<0.05) for Physical Function
PCS: r = -0.234 (P<0.01)
MCS: r = -0.681 (P<0.01)
BRFSS Question “good days” and:
8 SF-36 subscales: r = 0.226 - 0.677 (P<0.01)
PCS: r = 0.443 (P<0.01)
MCS: r = 0.650 (P<0.01)
BRFSS Question “pain limited activity days” and:
8 SF-36 subscales: r = -0.409 - -0.622 (P<0.01) for 7 domains, -0.167 (P>0.05) for Physical Function
PCS: r = -0.354 (P<0.01)
MCS: r = -0.639 (P<0.01)</td><td></td><td>Interpretability:
N=183, mean age 50.5, 82 self-reported quadriplegia
<table>
<tr><th>SF-36 Subscales:</th><th>Mean (SD) score:</th></tr>
<tr><td>Physical functioning</td><td>21.2 (25.14)</td></tr>
<tr><td>Role physical</td><td>41.5 (40.14)</td></tr>
<tr><td>Bodily pain</td><td>49.4 (31.41)</td></tr>
<tr><td>General health</td><td>55.2 (26.11)</td></tr>
<tr><td>Vitality</td><td>52.9 (25.19)</td></tr>
<tr><td>Social functioning</td><td>66.9 (32.20)</td></tr>
<tr><td>Role emotional</td><td>81.5 (34.95)</td></tr>
<tr><td>Mental health</td><td>73.6 (22.00)</td></tr>
<tr><td>Physical component summary</td><td>28.7 (10.26)</td></tr>
<tr><td>Mental component summary</td><td>55.9 (12.36)</td></tr>
</table></td></tr>
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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
		BRFSS Question "sad, blue, depressed" and: 8 SF-36 subscales: r = -0.210 - -0.795 (P<0.01) PCS: r = -0.458 (P<0.01) MCS: r = -0.600 (P<0.01) BRFSS Question "days worried, tense anxious" and: 8 SF-36 subscales: r = -0.371 - -0.720 (P<0.01) for 7 domains, -0.190 (P<0.05) for Physical Function PCS: r = -0.239 (P<0.01) MCS: r = -0.734 (P<0.01) BRFSS Question "days without enough sleep" and: 8 SF-36 subscales: r = -0.290 - -0.446		SF-12 Physical health summary: 34.5 (8.31) SF-12 Mental health summary: 49.4 (12.63)

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		(P<0.01) for 6 domains, -0.088 - -0.219 (P>0.05) for 2 domains PCS: r = -0.217 (P<0.01) MCS: r = -0.427 (P<0.01) BRFSS Question "days full of energy" and: 8 SF-36 subscales: r = 0.266 - 0.789 (P<0.01) PCS: r = 0.489 (P<0.01) MCS: r = 0.610 (P<0.01) Quality of Well-Being scale (QWB) and SF-36: 5 of 8 SF-36 subscales r=0.251 to 0.29 (P<.01), vitality r=0.164 (P<.05) SF-36 role emotiona and mental health subscales not significantly correlated		

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		MCS r=0.116 (P<.05) PCS r=0.417 (P<.01) Lawton's Instrumental Activities of Daily Living (IADL) and SF-36: 7 of 8 SF-36 subscales r=-0.454 to -0.201 (P<.01), bodily pain r=-0.159 (P<.05) MCS r=-0.262 (P<.01) PCS r=-0.357 (P<.01)		

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Research Summary – SF-36 – Quality of Life – Cross-cultural Validation Studies

Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Ferfeli et al. 2024 Observational study to adapt the Modified Barthel Index (MBI) for use in Greece and measure its reliability and validity on a Greek neuro-rehabilitation population KAT Hospital Rehabilitation Clinic and National Rehabilitation Centre in Athens, Greece	100 neuro-rehabilitation patients (in and out-patients) (50 with stroke and 50 with SCI) Mean (SD) age 60.3 (15.3) years N = 50 participants with SCI 41M, 9F ASIA A (n = 9), B (n = 5), C (n = 13), D (n = 23)	**Convergent or criterion validity:** High correlation was observed between the SF-36 physical functioning subscale score with MBI Factor 1 (r=0.522, P<0.001), MBI Factor 2 (r=0.590, P<0.001), MBI Total score (r=0.580, P<0.001), and MBI Total SCI (0.574, P<0.001).		
Marquez et al. 2022	N = 65 (convenience sample from 3	**Concurrent validity:** MSES-IT total score		

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Author Year Research Design Setting (country)	Demographics and Injury Characteristics of Sample	Validity	Reliability	Responsiveness Interpretability
Psychometric and transverse study to evaluate the psychometric properties of the Italian version of the MSES Two Italian Spinal Units	rehabilitation centers) 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) Paraplegia (n=51), tetraplegia (n=7), not answered (n=7). Mean (SD) time since injury 26 (20.3) years	and subscales showed a moderate correlation ($0.30 < \rho < 0.44$) with the following components of SF-36: Role limitations physical health; Role limitations emotional problems; Emotional well-being; General health.		
Vasilchenko et al. 2022 Psychometric study to conduct a cross-cultural adaptation of	N = 304 (inpatient admissions for surgery or rehabilitation) 247M, 57F Mean (SD) age 38 (11.3) years Mean (SD) time since injury 7.2 (7.1) years Paraplegia (n = 158),	The WORQ-R score showed a moderate negative correlation with SF-36 (0.561, $p < 0.001$) meaning individuals with higher work functioning had the		

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the Russian version Work Rehabilitation Questionnaire (WORQ) and test its psychometric properties in a sample of SCI Inpatient setting of the Department of Neurosurgery of the Federal Centre of Disability Rehabilitation of Novokuznetsk, Russia	tetraplegia (n = 146) AIS A (n = 95), AIS B (n = 83), AIS C (n = 79), AIS D (n = 47)	higher health-related quality of life.		
Golhasani-Keshtan et al. 2013 Cross-sectional validation of	N=52, 52M 0F Mean age 49.3, SD=7.9, 38~80	Pearson's correlations: CHART Mobility & SF36 Role Physical: 0.322, p=0.020 CHART Cognitive Independence & SF36 Physical Component		

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Author Year Research Design Setting (country)	**Demographics and Injury Characteristics of Sample**	**Validity**	**Reliability**	**Responsiveness Interpretability**
Persian Version of CHART Janbazan Clinic of Mashhad, northeast of Iran		Summary: 0.276, p=0.047 CHART Social Integration & SF36 Vitality: -0.429, p=0.002 CHART Social Integration & SF36 Social Functioning: 0.287, p=0.039		