# Research Summary – SF-36 – Quality of Life

| **Author YearResearch Design****Setting (country)** | **Demographics and Injury Characteristics of Sample** | **Validity** | **Reliability** | **Responsiveness Interpretability** |
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| [Conti et al.](https://pubmed.ncbi.nlm.nih.gov/30068985/) 2019Validation cross-sectional study to assess the psychometric properties of the CBI-SCIOutpatient clinics of the Città della Salute e della Scienza Hospital of Turin, IRRCS Fondazione Santa Lucia of Rome, CannizzaroHospital of Catania and Careggi Hospital of Florence | N = 176 caregivers of people with SCI30M, 146FMean (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—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
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| [Tramonti et al.](https://pubmed.ncbi.nlm.nih.gov/24343055/) 2014Cross sectionalItaly | N= 40 (12F, 28M)Age: 54.25 ±12.96Time since SCI (years): 8.27 ± 7.74AIS A-C: 27AIS 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.](https://pubmed.ncbi.nlm.nih.gov/22487956/) 2012Cross-sectional study 5 years after discharge from inpatient rehabilitationEight Dutch rehabilitation centres with specialized SCI units. | 145 subjects (104 male, 41 female)mean age: 45.4±13.7Incomplete paraplegia: 27Complete paraplegia: 65Incomplete tetraplegia: 16Complete tetraplegia: 37 | Divergent Validity – Spearman correlation 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 =0.531Neuroticism: ρ = -0.546SF-vitality: ρ = 0.528SF-general health: ρ=0.367 | **Internal consistency:**Cronbach’s α of the 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). | **Floor/ceiling effect:**For the mental health domain of the SF-36 (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. |
| [Ataoglu et al.](https://pubmed.ncbi.nlm.nih.gov/22547044/) 2013Cross sectionalInpatient rehab center | N= 140 (36F, 104M)Age: 36.2 ±13.5Time since SCI (months): 25.2 ± 43.9AIS A: 79AIS B-E: 61 | 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) |  |  |
| [Horner-Johnson et al.](https://pubmed.ncbi.nlm.nih.gov/20382289/) 2010Cross-sectional surveyGeneral community | 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 | 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 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 -0.29Role-physical: -0.15 to -0.02 & 0.03 to 0.19Bodily Pain: 0.11 to 0.14General Health: -0.03 to -0.05 & 0.18 to 0.24Vitality: 0.23 to 0.48\*consisted of above 5 domainsDifferential item functioning of SF-36 domain items controlling for mental Z score\* and demographics:Vitality: 0.03 & -0.06 to -0.19Social functioning: -0.10 to -.013Role-emotional: 0.05 to 0.07 & -0.08Mental Health: 0.07 to 0.39\*consisted of above 4 domains |  | **Interpretability:**N=206 (54 SCI only, 34 male, mean age 46.31±10.7)

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| **SF-36 Subscales:** | **Mean (SD) score:** |
| Physical functioning | 23.68 (11.98) |
| Role physical | 38.67 (11.55) |
| Bodily pain | 42.40 (11.22) |
| General health | 47.71 (8.97) |
| Vitality | 48.14 (11.74) |
| Social functioning | 44.12 (11.85) |
| Role emotional | 45.30 (11.41) |
| Mental health | 50.27 (9.35) |

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| [Lee et al.](https://pubmed.ncbi.nlm.nih.gov/18560375/) 2009SF-36 scores collected at baseline and on completion of a randomized controlled trialNew South Wales, Australia | N=305, 83% maleMean age 44Mean time since SCI onset: 14 years100% had SCI and neurogenic bladder55% with tetraplegia49% 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: 1.09Physical Component Summary: 0.36Mental Component Summary: -0.16SRM (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)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: Walking more than a mile (3g): 96% Walking several hundred yards (3h): 94% Walking one hundred yards (3i): 93% |
| [Anton et al.](https://pubmed.ncbi.nlm.nih.gov/18295634/) 20082-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=48Male=31Female=17Mean age=40.4Mean time since injury=14.9 yearsMajor cause of injury=motor vehicle collision=27Motor complete SCI=48Tetraplegia=26AIS grade A injuries=30 | Pearson correlationCorrelation between SF-36 and the Fatigue Severity Scale which measures different constructs from the SF-36:r=-0.48 |  |  |
| [Lin et al.](https://pubmed.ncbi.nlm.nih.gov/17075363/) 2007Cross-sectionalSubjects from a Taiwan nationwide SCI registry | N=187 (151 men)Mean Age = 50.3 yearsMean time since injury = 7.4 years48 incomplete tetraplegia28 complete tetraplegia73 incomplete paraplegia38 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)All P-values<.0001The 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\*\*Employment status, self-care ability (all domains P≤0.05) | **Internal consistency:**Physical Functioning: α= 0.98Role Physical: α= 0.94Bodily Pain: α= 0.79General Health: α= 0.82Vitality: α= 0.76Social Functioning: α= 0.72Role Emotional: α= 0.89Mental Health: α= 0.78Good internal consistency.**Test-retest, inter-rater, intra-rater:**10 subjects were contacted for re-assessment by same initial interviewer within 2 weeks. Test-retest (intra-rater) reliability:Physical Functioning: ICC= 0.71Role Physical: ICC= 0.89Bodily Pain: ICC= 0.87General Health: ICC= 0.85Vitality: ICC= 0.93Social Functioning: ICC= 0.93 Role Emotional: ICC= 0.99Mental Health: ICC= 0.7710 subjects were contacted for re-assessment by different initial interviewer within 2 weeks. Test-retest (inter-rater) reliability:Physical Functioning: ICC= 0.67Role Physical: ICC= 0.90Bodily Pain: ICC= 0.70General Health: ICC= 0.41 Vitality: ICC= 0.86Social Functioning: ICC= 0.52Role Emotional: ICC= 0.98Mental Health: ICC= 0.57 | **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: 0.92Role Physical: 0.60Bodily Pain: 0.01General Health: 0.00Vitality: 0.16Social Functioning: 0.30Role Emotional: 0.21Mental 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 & 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 50.3See table 1. |
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| **SF-36 Subscales:** | **Mean (SD) score:** | **SEM** | **MDC** |
| Physical functioning | 61.2 (39.8) | 21.4 | 59.4 |
| Role physical | 62.7 (44.4) | 14.7 | 40.8 |
| Bodily pain | 67.5 (20.6) | 7.4 | 20.6 |
| General health | 52.5 (20.3) | 7.9 | 21.8 |
| Vitality | 57.0 (17.3) | 4.6 | 12.7 |
| Social functioning | 71.8 (22.2) | 5.9 | 16.3 |
| Role emotional | 71.8 (40.9) | 4.1 | 11.3 |
| Mental health | 63.5 (15.5) | 7.4 | 20.6 |

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| [Miller et al.](https://pubmed.ncbi.nlm.nih.gov/17909558/) 2008Methodological 2 week re-test studyTertiary care centre in Vancouver, BC | N = 47 individuals, Male = 30Female = 17Mean age = 40.6Subject 19 years and older who had their SCI for 1 or more years.AIS A = 29AIS B = 18 | **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\*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\*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.](https://pubmed.ncbi.nlm.nih.gov/16516823/) 2006Cross-sectionalUS Northwest home survey questionnaire | N = 127Male = 92Female = 35Age range = 21 to 88High tetraplegia = 18Low tetraplegia = 40High paraplegia = 14Paraplegia = 42Low paraplegia = 11Missing 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\*Recreation, social and family activities = -0.57\*\*P<0.01All 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: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<0.01All coefficients are significant and negatively associated with the BPI. |  |  |
| [Forchheimer et al.](https://pubmed.ncbi.nlm.nih.gov/15100631/) 2004Cross-sectionalMajor university hospital in the Midwest | N=215 (78.5% men)Mean age=38.8 ± 14.5 yearsSCI participants were 1 to 13 years post injury | The Physical Component Score (PCS) and Mental Component Score (MCS) were not related to each other, as expected, with Pearson’s r = -0.075. | **Internal consistency:**Average level: α=0.82Range: α = 0.76 (Bodily Pain scale) to 0.90 (Physical Functioning and General Health scales) | **Interpretability:**SF-36 norm-based scale and component scoresN=215, 78.5% male, mean age 38.8±14.5

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| **SF-36 Subscales:** | **Mean (SD) score:** |
| Physical functioning | 26.6 (11.5) |
| Role physical | 40.7 (10.9) |
| Bodily pain | 42.2 (12.4) |
| General health | 44.4 (11.8) |
| Vitality | 46.8 (9.6) |
| Social functioning | 43.0 (13.3) |
| Role emotional | 49.0 (10.6) |
| Mental health | 48.3 (11.0) |
| Physical component summary | 33.5 (10.1) |
| Mental component summary | 53.5 (11.6) |

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| [King & Roberts](https://pubmed.ncbi.nlm.nih.gov/12296676/) 2002Cross-sectional (sampled over 1 year)Veterans Administration Neurosurgery Clinic | N=88 Mean age: 56.8±11.2, range 29-8488% men36% 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 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) | **Internal consistency:**Cronbach’s α > 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= 0.92MCS: 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% Physical component summary (PCS): 50.7% Mental component summary (MCS): 72.5%**Interpretability:**N=88, 88% male, mean age 56.8±11.2

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| **SF-36 Subscales:** | **Mean (SD) score:** |
| Physical functioning | 31.9 (234.6) |
| Role physical | 14.8 (27.5) |
| Bodily pain | 29.4 (22.1) |
| General health | 40.0 (21.2) |
| Vitality | 30.3 (20.2) |
| Social functioning | 42.8 (25.8) |
| Role emotional | 38.6 (41.9) |
| Mental health | 54.9 (24.7) |
| Physical component summary | 27.8 (8.3) |
| Mental component summary | 40.5 (12.9) |

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| [Andresen et al.](https://pubmed.ncbi.nlm.nih.gov/10453762/) 1999Cross-sectionalMidwestern 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 – 86Thoracic – 78Lumbar - 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, -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) 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 (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 0.290 (P<.01), vitality r=0.164 (P<.05) SF-36 role emotional and mental health subscales not significantly correlated 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) |  | **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.**Interpretability:**N=183, mean age 50.5, 82 self-reported quadriplegia

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| **SF-36 Subscales:** | **Mean (SD) score:** |
| Physical functioning | 21.2 (25.14) |
| Role physical | 41.5 (40.14) |
| Bodily pain | 49.4 (31.41) |
| General health | 55.2 (26.11) |
| Vitality | 52.9 (25.19) |
| Social functioning | 66.9 (32.20) |
| Role emotional | 81.5 (34.95) |
| Mental health | 73.6 (22.00) |
| Physical component summary | 28.7 (10.26) |
| Mental component summary | 55.9 (12.36) |
| SF-12 Physical health summary | 34.5 (8.31) |
| SF-12 Mental health summary | 49.4 (12.63) |

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

| **Author YearResearch Design****Setting (country)** | **Demographics and Injury Characteristics of Sample** | **Validity** | **Reliability** | **Responsiveness Interpretability** |
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| [Ferfeli et al.](https://pubmed.ncbi.nlm.nih.gov/37877957/) 2024Observational study to adapt the Modified Barthel Index (MBI) for use in Greece and measure its reliability and validity on a Greek neuro-rehabilitation populationKAT 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) yearsN = 50 participants with SCI41M, 9FASIA 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.](https://pubmed.ncbi.nlm.nih.gov/35173155/) 2022Psychometric and transverse study to evaluate the psychometric properties of the Italian version of the MSESTwo Italian Spinal Units | N = 65 (convenience sample from 3 rehabilitation centers)41M, 24WMean (SD) age 55.4 (14.3) yearsInjury 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 | **Concurrent validity:**MSES-IT total score and subscales showed a moderate correlation (0.30 < ρ < 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.](https://pubmed.ncbi.nlm.nih.gov/34521310/) 2022Psychometric study to conduct a cross-cultural adaptation of the Russian version Work Rehabilitation Questionnaire (WORQ) and test its psychometric properties in a sample of SCIInpatientsetting of the Department of Neurosurgery of the Federal Centreof Disability Rehabilitation of Novokuznetsk, Russia | N = 304 (inpatient admissions for surgery or rehabilitation) 247M, 57FMean (SD) age 38 (11.3) yearsMean (SD) time since injury 7.2 (7.1) yearsParaplegia (n = 158), tetraplegia (n = 146)AIS A (n = 95), AIS B (n = 83), AIS C (n = 79), AIS D (n = 47) | 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 higher health-related quality of life. |  |  |
| [Golhasani-Keshtan et al.](https://pubmed.ncbi.nlm.nih.gov/23480647/) 2013Cross-sectional validation of Persian Version of CHARTJanbazan Clinic of Mashhad, northeast of Iran | N=52, 52M 0FMean age 49.3, SD=7.9, 38~80 | Pearson’s correlations:CHART Mobility & SF36 Role Physical: 0.322, p=0.020CHART Cognitive Independence & SF36 Physical Component Summary: 0.276, p=0.047CHART Social Integration & SF36 Vitality: -0.429, p=0.002CHART Social Integration & SF36 Social Functioning: 0.287, p=0.039 |  |  |