# Research Summary – Satisfaction with Life Scale (SWLS, Deiner Scale) – Quality of Life

| **Author Year Research Design**  **Setting (country)** | **Demographics and Injury Characteristics of Sample** | **Validity** | **Reliability** | **Responsiveness Interpretability** |
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| [Amtmann et al.](https://pubmed.ncbi.nlm.nih.gov/29214853/) 2019  Study to examine measurement invariance across the groups, unidimensionality, local independence, reliability from a classical test and item response theory (IRT) framework, and fit to a unidimensional IRT model.  USA | 17897 participants with SCI, TBI, or burn injury, participating in the Model Systems.  Total sample: N = 17897 13448M, 4449F Mean (SD) age 38.85 (17.58) years  Sample with SCI: N = 8566 6766M, 1800F Mean (SD) age 38.94 (16.44) Paraplegia incomplete (n = 1640) Paraplegia complete (n = 2082) Paraplegia minimal deficit (n = 27) Tetraplegia incomplete (n = 3082) Tetraplegia complete (n = 1310) Tetraplegia minimal deficit (n = 43) Tetraplegia normal neurologic (n = 6) Unknown (n =376)  All data for the current study were collected at 1 year following injury onset. |  | The classical test theory analysis supported adequate reliability (α = .85) of the SWL scale. Item 5, “If I could live my life over, I would change almost nothing,” did not contribute positively to the overall reliability, with α increasing to .86 with the item’s removal. Item- total correlations ranged from 0.52 (Item 5) to 0.75 (Item 3). | The results support unidimensionality and local independence of the SWLS |
| [Post et al.](https://pubmed.ncbi.nlm.nih.gov/22484088/) 2012  Cross-sectional study 5 years after discharge from inpatient rehab  8 rehab centres with specialized SCI units | 145 SCI participants (104 men, 41 women)  mean age: 45.4±13.7  27 incomplete paraplegia  65 complete paraplegia  16 incomplete tetraplegia  37 complete tetraplegia  116 traumatic SCI, 29 non-traumatic | (ns = P>.05)  Correlation between the SWLS and scales measuring different constructs:  FIM-Motor: 0.14 (ns)  Level of injury: 0.21 (P<.05)  Completeness of injury: 0.15 (ns)  Cause of injury: 0.02 (ns)  Age: -0.19 (P<.05)  Sex: 0.02 (ns)  Education: 0.05 (ns)  Spearman’s correlations:  Correlation between the SWLS and scales measuring the same construct as the SWLS:  Life Satisfaction Questionnaire (LISAT-9) vs. SWLS: 0.60 (ns) SWLS vs. MHI-5 (mental health subscale of SF-36): 0.48 (P<.01) SWLS vs. SIP-SOC (social dimension of SIP-68): -0.41 (P<.01) | **Internal consistency:** Cronbach’s alpha for the whole scale = 0.83  Corrected item-to-total correlations for the questions ranged from 0.47 to 0.74 |  |
| [Hitzig et al.](https://pubmed.ncbi.nlm.nih.gov/22200389/) 2012  Cross-sectional telephone survey  Rehabilitation institute | N=618  (M=501; F=117)  Mean age = 49.2y (18-92)  Mean YPI = 16.3y (1-60)  Community-dwelling SCI patients who were at least 1 year postinjury.  Incomplete tetraplegia = 203  Complete tetraplegia = 102  Incomplete paraplegia = 156  Complete paraplegia = 157 | To evaluate the construct validity of the Reintegration to Normal Living Index (RNL) compared with the SWLS, a 3 factor CFA model was fit to the combined items of both scales.  A 1-factor CFA of items of both scales yielded poor fit (RMSEA = 0.173, CFI = 0.822, TLI = 0.908).  The 3-factor model was an appropriate fit (RMSEA = 0.067, CFI = 0.963, TLI = 0.986).  Interfactor correlations showed a stronger relationship between the scores of the 2 factors of the RNL Index than between each factor and the SWLS. Hence, the 3-factor CFA supports our hypothesis that the SWLS and RNL Index assess distinct, although related, constructs. |  | **Interpretability:** Mean SWLS score = 21.4±7.4 |
| [Geyh et al.](https://pubmed.ncbi.nlm.nih.gov/20815864/) 2010  Cross-sectional multi-centre study  Out-patients with SCI from study centers in Australia, Brazil, Canada, Israel, South Africa, and the US | N=243  Mean age=41.4 ± 13.6  % male = 79.4  % female = 20.6  Mean time since onset = 139.6±138.8 months  SCI  % paraplegia = 45.7  % tetraplegia = 54.3  Completeness of injury (AIS)  % complete (A) = 47.7  % incomplete (B-D) = 43.6  % unspecified = 8.6 |  | **Test-retest, inter-rater, intra-rater:** Person reliability index: r=0.88 | **Interpretability:** See table 1. |
| Table 1. SWLS scores for 6 countries   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Item** | **ALL (n=243)**  **Mean (SD)** | **AUS (n=40)**  **Mean (SD)** | **BRZ (n=34)**  **Mean (SD)** | **CAN (n=34)**  **Mean (SD)** | **ISR (n=71)**  **Mean (SD)** | **RSA (n=30)**  **Mean (SD)** | **USA (n=34)**  **Mean (SD)** | | SWLS 1 | 3.3 (1.9) | 2.9 (1.4) | 3.5 (1.8) | 4.1 (2.1) | 3.3 (1.8) | 2.5 (1.7) | 3.6 (2.2) | | SWLS 2 | 3.5 (1.9) | 3.4 (1.5) | 3.7 (1.7) | 4.2 (2.1) | 3.5 (1.9) | 2.7 (1.8) | 3.7 (2.2) | | SWLS 3 | 4.0 (1.9) | 4.1 (1.4) | 3.7 (2.0) | 4.4 (2.0) | 3.9 (1.9) | 3.6 (1.9) | 4.3 (2.1) | | SWLS 4 | 3.9 (1.8) | 4.0 (1.4) | 3.5 (2.0) | 4.6 (1.7) | 3.8 (1.8) | 3.0 (1.4) | 4.4 (1.8) | | SWLS 5 | 3.5 (1.9) | 2.9 (1.4) | 2.9 (1.8) | 3.0 (1.7) | 4.8 (1.9) | 2.3 (1.3) | 3.5 (2.0) | | **SWLS total** | 18.2 (7.4) | 17.2 (6.0) | 17.3 (7.5) | 20.2 (7.7) | 19.3 (7.1) | 14.1 (6.7) | 19.6 (8.5) |   AUS = Australia  BRZ = Brazil  CAN = Canada  ISR = Israel  RSA = Republic of South-Africa  USA = United States of America  Standard error of item location for the SWLS items:   |  |  | | --- | --- | | **Item** | **SE** | | SWLS 1 | 0.05 | | SWLS 2 | 0.05 | | SWLS 3 | 0.05 | | SWLS 4 | 0.06 | | SWLS 5 | 0.05 | | | | |
| [Krause et al.](https://pubmed.ncbi.nlm.nih.gov/19929126/) 2009  Follow-up survey  Hospital in the Southeastern United States | 727 SCI subjects  mean age: 47.9  70.2% male  75.8% White  53.3% cervical injury  Average years since injury = 18.2  A total of 1,385 participants were enrolled in the original study in 1997–1998. Participants were then contacted in 2007–2008 to participate in a follow-up survey. At that time, 306 were deceased, 34 could not be located, and 5 were eliminated. Responses were received by 727 participants, yielding an adjusted response rate of 69.5% percent. | Spearman Rank correlations between SWLS and:  Patient Health Questionnaire-9 (PHQ-9): -0.477  Major depressive disorder: -0.335  Older Adult Health and Mood Questionnaire (OAHMQ): -0.538  (P<.0001 for all the above) | **Internal consistency:** Cronbach’s alpha= 0.92. |  |
| [Richardson & Richards](https://psycnet.apa.org/record/2008-06402-016) 2008  Retrospective analysis  National Spinal Cord Injury Database (NSCID) | 2570 participants  1 year postinjury: 682 subjects (535 M, 147F)  mean age: 38.66±15.32  5 years postinjury:517 subjects (402M, 115F)  mean age: 40.26±14.53  15 years postinjury: 653 subjects (518M,135F)  mean age: 42.72±10.09  25 years postinjury: 718 subjects (558M, 160F)  mean age: 49.49±8.60 | With PHQ-9:  Among persons 1 year postinjury, both affective and somatic subscores showed a significant inverse correlation with satisfaction with life (*r*s=-.463, P*<.*001, and *r*s =-.346, P<.001, respectively). Significant negative correlations were also found between SWLS scores and factor subscores at 5 years postinjury (*r*s=-.415, P*<.*001 for the somatic subscore; *r*s=-.456, P*<.*001 for the affective subscore) and at 15 years postinjury (*r*s=-.404, P*<.*001, for the affective subscore; *r*s=-.248, P*<.*001, for the somatic subscore). Authors did not state if the negative correlation was expected.  Regarding the 25 years postinjury group, the affective subscale also correlated significantly, and in a negative direction, with satisfaction with life (*r*s=-.368, P*<.*001). A significant negative relationship was also found with the somatic subscale for the 25 year postinjury group (*r*s=-.255, P*<.*001). |  |  |
| [Johnston et al.](https://pubmed.ncbi.nlm.nih.gov/16048141/) 2005  Cross-sectional survey  New Jersey Outpatient SCI Center | N=107 (88M, 19F)  Mean age 39.1(11.16)  Median age 38.0  Mean post-injury time: 11.36(9.56) yrs  Median post-injury time: 8.71 yrs  Community-living traumatic SCI individuals  ASIA-A/B/C/D: 56.4%/20.2%/14.9%/8.5%  Neurologic Category:   * Tetraplegia complete: 38.7% * Tetraplegia incomplete: 15.1% * Paraplegia complete: 37.6%   Paraplegia incomplete: 8.6% | Pearson’s r btwn SWLS and ASIA Motor Score: -0.07 (P=0.55) |  |  |
| [Scherer & Cushman](https://pubmed.ncbi.nlm.nih.gov/11394589/) 2001  Cross-sectional  Acute medical rehabilitation unit in a general hospital | N=20  Age: 51.05±16.44, range 22-78 years  10 female, 10 male  13 paraplegia (4 complete), 7 tetraplegia (1 complete) | Spearman correlations between the Brief Symptom Inventory (BSI), SWLS and Assistive Technology Device Predisposition Assessment (ATD-PA) QOL subset  ATD-PA QOL & SWLS: ρ=0.89, (P<.01)  BSI & SWLS: ρ=-0.64, (P<.01)  Correlations between the 5 SWLS and 11 QOL subset items were positive and generally high, with the exception of QOL item 16.  Of the 55 correlation coefficients among SWLS and QOL items, 69.1% were significant: 18 at P<.01 and 20 at P<.05. |  | **Interpretability:**  See table 1. |
|  | Table 1.   |  |  | | --- | --- | | **Item** | **Mean (SD)** | | 1. In most ways my life is close to ideal | 3.40 (2.58) | | 2. The conditions of my life are excellent | 3.05 (2.04) | | 3. I am satisfied with my life | 4.05 (2.46) | | 4. So far I have gotten the important things I want in life | 4.05 (2.11) | | 5. If I could live my life over, I would change almost nothing | 3.45 (2.19) | | **SWLS total** | 10.5 (5.9) | | | | |
| [Dijkers](https://pubmed.ncbi.nlm.nih.gov/10453761/) 1999  Survey; follow-up study  National SCI database | N=2183 (1766M, 417F)  # participants in each age range:  0-19: N=412  20-29: N=802  30-39: N=444  40-49: N=268  50-59: N=142  >60: N=115  Records from the National SCI database, containing entries since 1973. | *SWLS scores were correlated to those for the Functional Independence Measure (FIM) and the Craig Handicap Assessment and Reporting Technique (CHART).*  **ANOVA and Eta².**  Both FIM subscales (motor and sociocognitive) and all four CHART subscales (physical independence, mobility, social integration and occupation) were significantly correlated to SLWS scores (P<.001).  Effect size (Eta²):  FIM  motor = 0.05  sociocognitive = 0.02  CHART  physical independence = 0.14  mobility = 0.11  social integration = 0.11  occupation = 0.14  **Stepwise Regression Analysis.**  (Beta weights and significance level indicated in brackets.)  Adding the FIM motor (0.21, P<.0001) and sociocognitive (0.10, P<.0001) variables into the regression produced an R² value of 0.14.  Adding the CHART subscales of physical independence, mobility (0.26, P<.0001), occupation (0.10, P<.001) and social integration (0.11, P<.0001) produced an R² value of 0.23. | **Internal consistency:** Principal component factor analysis revealed one factor, which explained 61.1% of the variance. Item loadings ranged from 0.64 to 0.84.  **Test-retest, inter-rater, intra-rater:** A subgroup (n=165) completed the SLWS twice, with a follow-up interval range of 93-626 days.  Test-retest correlation for the whole scale was 0.65 and for individual items was between 0.39 and 0.60 (P<.001 for all). | **Interpretability:** Summary statistics for the 5 SWLS items and SWLS total: (n=2183)  See table 1.  SEM for total SWLS (calculated from data in Dijkers et al. 1999): 4.67  MDC for total SWLS (calculated from data in Dijkers et al. 1999): 12.95 |
|  | Table 1.   |  |  | | --- | --- | | **Item** | **Mean (SD)** | | 1. In most ways my life is close to ideal | 3.76 (2.06) | | 2. The conditions of my life are excellent | 3.75 (2.01) | | 3. I am satisfied with my life | 4.34 (2.02) | | 4. So far I have gotten the important things I want in life | 4.28 (2.01) | | 5. If I could live my life over, I would change almost nothing | 3.29 (2.10) | | **SWLS total** | 19.4 (7.9) | | | | |