Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

**Research Summary – Short-Form Quadriplegia Index of Function – Short-form (QIF-SF) – Self Care and Daily Living**

| Author Year Research Design Setting (country) | Demographics and Injury Characteristics of Sample | Validity | Reliability | Responsiveness Interpretability |
|---|---|---|---|---|
| Angerhöfer et al. 2023<br><br>Psychometric study to demonstrate the psychometric properties and sensitivity of the Berlin Bimanual Test for Tetraplegia (BeBiTT)<br><br>University Hospital of Tübingen, the Charité-Universitätsmedizin Berlin, and the Neurological Rehabilitation | N = 14 participants with tetraplegia<br>13M, 1F<br>Mean (SD) age 48.6 (18.5) years<br>Completeness of injury: A (n = 6), B-C (n = 8) | **Construct Validity:**<br>BeBiTT baseline scores and QIF-SF scores were positively correlated, r(14) = 0.66, p = 0.011. | | |

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

| **Author Year Research Design Setting (country)** | **Demographics and Injury Characteristics of Sample** | **Validity** | **Reliability** | **Responsiveness Interpretability** |
|---|---|---|---|---|
| Clinic Beelitz-Heilstätten (Germany) | | | | |
| Snoek et al. 2005<br><br>Survey<br><br>Two specialized spinal cord injury centers in the Netherlands | N=47 (38M, 9F)<br>Mean age (SD): 42(13)<br>Mean duration of injury (SD): 11 (9)<br><br>Mean general health (SD): 2.7 (0.8)**<br>Mean quality of life (SD): 2.8 (0.7)**<br>**scores range from 1 (perfect) to 5 (poor)<br><br>44% AIS A<br>31% AIS B<br>9% AIS C<br>16% AIS D | Correlation between QIF-SF scores and health state related to upper-extremity impairment of subjects with tetraplegia:<br>Spearman's r=0.313 (p=0.03) | | **Interpretability:**<br>For best motor level complete lesions C6 and above (n=23):<br>Mean score (SD): 9.9 (6.9)<br><br>For best motor level incomplete lesions C6 and above (n=24):<br>Mean score (SD): 19 (6.1) |
| Marino & Goin 1999<br><br>Cross-sectional design collected | N=95 (85M, 10F)<br>Mean (SD) age: 31.2 (13.2); range from 16-68 years | The short form QIF has progression of scores by motor level and motor score. Mean score increased with each motor level, | **Internal Consistency:**<br>$\alpha = 0.89$<br>Item-total correlations for the short-form QIF | **Interpretability:**<br>Mean (SD) short-form QIF scores by best motor level group:<br>See table 1. |

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

| **Author Year Research Design Setting (country)** | **Demographics and Injury Characteristics of Sample** | **Validity** | **Reliability** | **Responsiveness Interpretability** |
|---|---|---|---|---|
| at 6 months post SCI<br><br>Regional Spinal Cord Injury Center | Tetraplegia, non-ambulatory at 6 months. | except C7 & C8, which were similar (by Fisher's least significant-difference test). Mean motor scores were different for all groups except groups (21-30 & 31-40)<br><br>Upper Extremity Motor Score (UEMS) & short-form QIF ($\rho$ = 0.824)<br><br><u>Short-form QIF items & QIF score</u><br>Wash/dry hair: (r=0.784, $\rho$ = 0.758)<br>Turn supine to side in bed: (r=0.825, $\rho$ =0.844)<br>Put on lower body clothing: (r=0.794, $\rho$ =0.700)<br>Open carton/jar: (r=0.772, $\rho$ =0.730) | ranged from 0.60-0.80. | |

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

<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>Transfer from bed to chair: (r=0.879, ρ =0.845)<br>Lock wheelchair: (r=0.722, ρ =0.830)<br><br>Short-form QIF: (r=0.987, ρ =0.978)<br><br>Regression analysis of individual items to predict 37-item QIF score explained 99% of variance in total scores.</td><td></td><td></td></tr>
<tr><td></td><td colspan="4">Table 1.
<table>
<tr><th rowspan="2">Best motor level</th><th colspan="2">Total group (n=95)</th><th colspan="2">Frankel A or B (n=76)</th></tr>
<tr><th>N</th><th>Mean (SD)</th><th>N</th><th>Mean (SD)</th></tr>
<tr><td>C4/5</td><td>33</td><td>2.5 (4.4)</td><td>30</td><td>2.2 (3.9)</td></tr>
<tr><td>C6</td><td>25</td><td>7.4 (6.5)</td><td>20</td><td>6.5 (6.0)</td></tr>
<tr><td>C7</td><td>19</td><td>13.6 (6.7)</td><td>11</td><td>11.5 (6.1)</td></tr>
<tr><td>C8</td><td>7</td><td>13.1 (7.0)</td><td>6</td><td>14.7 (6.3)</td></tr>
<tr><td>T1+</td><td>11</td><td>21.0 (4.9)</td><td>9</td><td>21.0 (5.4)</td></tr>
</table></td></tr>
</table>

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

| **Author Year Research Design Setting (country)** | **Demographics and Injury Characteristics of Sample** | **Validity** | **Reliability** | **Responsiveness Interpretability** |
|---|---|---|---|---|
| Spooren et al. 2006<br><br>Longitudinal cohort study to assess responsiveness of tools to changes in arm hand skilled performance.<br><br>SCI Units in 8 rehabilitation centres in the Netherlands | N= 60 (46M, 14F)<br>Mean age = 38.9<br><br>C3-C6 = 42<br>C7-T1 = 18<br>AIS A-B = 34<br>AIS C-D = 26 | | | **Responsiveness:**<br>*t=time<br>t1-t3 = from start of rehab to discharge<br>t1-t2 = from start of rehab to 3 months later<br>t2-t3 = from 3 months after the start of rehab to discharge.<br>For the interpretation of SRM and ES, a value of 0.20 was considered small, a value between 0.50 and 0.80 was moderate and > 0.80 was large degree of responsiveness.<br><br>**Total QIF**: there was a significant difference in the QIF scores across the three measurements (Friedman, P<0.000*). There was a |

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

| Author Year Research Design Setting (country) | Demographics and Injury Characteristics of Sample | Validity | Reliability | Responsiveness Interpretability |
|---|---|---|---|---|
| | | | | significant difference between all time intervals (Wilcoxon; P<0.000)<br>*Possible error in article but it consistently says P<0.000 throughout<br>$SRM_{QIF3-1}$ = 1.43<br>$SRM_{QIF2-1}$ = 1.13<br>$SRM_{QIF3-2}$ = 0.74<br>$ES_{QIF3-1}$ = 2.18<br>$ES_{QIF2-1}$ = 1.38<br>$ES_{QIF3-2}$ = 0.40<br><br>**Groups A-B and C-D:** There was a significant difference across the three measurements for both groups (Friedman, P<.001). There were significant differences between all time intervals (Wilcoxon, P<.002)<br>**Group A-B** |

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

| Author Year Research Design Setting (country) | Demographics and Injury Characteristics of Sample | Validity | Reliability | Responsiveness Interpretability |
|---|---|---|---|---|
| | | | | $SRM_{QIF3-1}$ = 1.15<br>$SRM_{QIF2-1}$ = 0.87<br>$SRM_{QIF3-2}$ = 0.73<br>$ES_{QIF3-1}$ = 2.81<br>$ES_{QIF2-1}$ = 1.59<br>$ES_{QIF3-2}$ = 0.52<br>**Group C-D**<br>$SRM_{QIF3-1}$ = 2.03<br>$SRM_{QIF2-1}$ = 1.61<br>$SRM_{QIF3-2}$ = 0.79<br>$ES_{QIF3-1}$ = 2.04<br>$ES_{QIF2-1}$ = 1.57<br>$ES_{QIF3-2}$ = 0.35<br><br>**Groups C3-C6 and C7-T1:** There was a significant difference across the three measurements for both groups (Friedman, P<.001). There were significant differences between all time intervals (Wilcoxon, P<.003)<br>**Group C3-C6** |

Reviewer ID: Tyra Chu, Carlos L. Cano Herrera, Ben Mortenson

Last updated: February 9th, 2024

| Author Year Research Design Setting (country) | Demographics and Injury Characteristics of Sample | Validity | Reliability | Responsiveness Interpretability |
|---|---|---|---|---|
| | | | | $SRM_{QIF3-1}$ = 1.33<br>$SRM_{QIF2-1}$ = 1.03<br>$SRM_{QIF3-2}$ = 0.80<br>$ES_{QIF3-1}$ = 1.61<br>$ES_{QIF2-1}$ = 1.05<br>$ES_{QIF3-2}$ = 0.34<br>**Group C7-T1**<br>$SRM_{QIF3-1}$ = 2.08<br>$SRM_{QIF2-1}$ = 1.52<br>$SRM_{QIF3-2}$ = 0.73<br>$ES_{QIF3-1}$ = 3.26<br>$ES_{QIF2-1}$ = 2.22<br>$ES_{QIF3-2}$ = 0.60 |