**Reviewer ID:** Christie Chan, John Zhu, Jeremy Mak, Kyle Diab, Risa Fox

**Type of Outcome Measure:** Multidimensional Pain Inventory – SCI (MPI-SCI)  
**Total articles:** 4

<table>
<thead>
<tr>
<th>Author ID Year</th>
<th>Study Design</th>
<th>Setting</th>
<th>Population (sample size, age) and Group</th>
</tr>
</thead>
</table>
| Cruz-Almeida et al. 2009 | Face-to-face interview              | VA Medical Center and Miami Project to Cure Paralysis, Miami, FL, USA   | N = 180 with traumatic SCI and experiences chronic pain  
155 men, 25 women  
mean age = 41.6 ± 13.4  
Time since injury = 9.5 ± 8.9 |
| Soler et al. 2013    | Postal surveys; Validation of Spanish MPI-SCI (MPI-SCI-S) | Guttmann Institute, Barcelona, Spain                                   | N=126, 78M 48F  
Mean age 49.0±13.8  
Mean time since injury 11.8±10.8 yrs  
AIS-A/B/C = 78/20/28  
43 traumatic, 83 nontraumatic  
Chronic pain (>1yr) & SCI (>2yr) & pain rating of >=3 on Numerical Rating Scale |
| Widerstrom-Noga et al. 2002 | Postal Survey                  | General Community                                                        | N = 120 with pain, 24 with no pain  
Mean age = 42.1 ± 12.1 with pain; 34.5 ± 7.6 with no pain  
Men: 94 with pain, 16 with no pain  
Time since injury = 9.8 ±5.2 with pain, 9.0 ±4.1 with no pain |
| Widerstrom-Noga et al. 2006 | Interview                      | Veteran affairs medical centre & university-based institute             | 161 SCI participants (138 men, 23 women)  
mean age: 43.5±13.4  
mean years post-injury: 10.9±7.8  
Neurological level of injury:  
76 cervical  
84 below cervical  
1 not determined  
Completeness of injury:  
93 complete  
50 incomplete  
18 not determined |

1. **RELIABILITY**

<table>
<thead>
<tr>
<th>Author ID Year</th>
<th>Internal Consistency</th>
<th>Test-retest, Inter-rater, Intra-rater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soler et al. 2013</td>
<td>Cronbach alpha of subscales: mean = 0.81; 0.66–0.94</td>
<td></td>
</tr>
</tbody>
</table>
| Widerstrom-Noga et al. 2006 | Cronbach’s alpha for MPI-SCI subscales:  
Pain severity: 0.76  
Life interference: 0.90  
Life control: 0.61 | ICC’s for MPI-SCI subscales:  
Pain severity: 0.69  
Life interference: 0.81  
Life control: 0.26  
Affective distress: 0.71 |
### 2. VALIDITY

<table>
<thead>
<tr>
<th>Author ID</th>
<th>Validity</th>
</tr>
</thead>
</table>
| Cruz-Almeida et al. 2009 | Life Interference subscale appears to test limitations related to pain rather than other functional impairments related to SCI or average pain intensity as evidenced by the following findings:  
  - Excellent correlation with the Pain Disabilities Index \( r = 0.61 \)  
  - Adequate correlation with the Pain Interference with Daily Activities subscale \( r = 0.58 \) and the Beck Depression Inventory \( r = 0.39 \)  
  - Poor correlation with the Functional Independence Measure \( r = -0.17 \) and the General Activity subscale \( r = -0.13 \)  
  - Poor correlation with Average Pain Intensity on Numeric Rating Scale \( r = 0.29 \) |
| Soler et al. 2013 | Pearson’s r btwn:  
  MPI-SCI life interference subscale and BPI: 0.75, P<0.000  
  MPI-SCI affective distress subscale and BDI: 0.48, P<0.000  
  MPI-SCI general activity subscale and FIM: 0.35, P<0.05  
  MPI-SCI pain interference with activities subscale and BPI: 0.50, P<0.000 |
| Widerstrom-Noga et al. 2002 | Content Validity:  
  During development of the MPI-SCI, confirmatory and exploratory factor analyses were performed for each subscale of the Multidimensional Pain Inventory. As a result, six items were removed. An additional question per item of the General Activity subscale was added to determine whether in decrease in activity was due to pain.  
  Face Validity:  
  10 people with chronic pain and SCI reviewed the SCI-specific questions during development of the MPI-SCI. All 10 people reported a clear understanding of the questions with no modification to the wording required. |
| Widerstrom-Noga et al. 2006 | All MPI-SCI subscales were compared with an instrument evaluating the same constructs by using Pearson correlations.  
  All subscales, except the perceived responses from significant other subscales, were significantly correlated with the related construct. For example, the pain severity subscale was highly \( r = 0.61 \) and significantly \( P<0.000 \) correlated with the Numeric Rating Scale (NRS) for pain intensity. Similarly, life interference was strongly \( r = 0.61 \) and significantly \( P<0.000 \) correlated with the Pain Disability Index (PDI). Although support was significantly \( r = 0.23, P<0.05 \) correlated with the appraisal subscale of Interpersonal Support Evaluation List (ISEL), the perceived responses by significant others subscales (negative, solicitous, and distracting responses) were not significantly correlated with the ISEL.  
  MPI-SCI subscales were compared with instruments evaluating different constructs using Pearson correlations. All MPI-SCI subscales, except life control (compared with Chance Health Locus of Control subscale (CHLC)), were compared with the Internal Health Locus of Control (IHL), a construct hypothesized to correlate only moderately or minimally with the MPI-SCI subscales. The correlation coefficients obtained suggest that the MPI-SCI subscales had minimal to no relation with the Multidimensional Health Locus of Control Scale (MHLC), confirming the discriminant validity of the subscales |
As expected, people with tetraplegia (n=76) and paraplegia (n=84) significantly ($t=3.714$, $P<.000$) differed with respect to level of general activity on the MPI-SCI.

3. RESPONSIVENESS

<table>
<thead>
<tr>
<th>Author ID</th>
<th>Responsiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widerstrom-Noga et al. 2006</td>
<td>As expected, people with tetraplegia (n=76) and paraplegia (n=84) significantly ($t=3.714$, $P&lt;.000$) differed with respect to level of general activity on the MPI-SCI. Persons with tetraplegia scored lower (34.3±16.4) than those with paraplegia (45.0±19.4). The magnitude of the effect (effect size) was moderate (0.6).</td>
</tr>
</tbody>
</table>

4. FLOOR/CEILING EFFECT – no data available

5. INTERPRETABILITY – no data available