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Type of Outcome Measure: Spinal Cord Injury-Secondary Conditions Scale (SCI-SCS)			Total articles: 3
Author ID Year	Study Design	Setting	Population (sample size, age) and Group
Conti et al. 2019	Validation cross-sectional study	Multicentre study in outpatient clinics of three urban spinal units across Italy	N = 156 (126M, 30F) Mean age: 50.17 Tetraplegia: 55 Incomplete Injury (ASIA B,C,D): 97 Non-traumatic injury: 24
Arora et al. 2015	Psychometric study of the telephone and paper based SCI-SCS	Royal North Shore Hospital, Sydney, Australia	N = 40 (32M, 8F) Median age 54, IQR: 48~63 Median years since injury: 28, IQR: 14~35 AIS A/B/C: 27/11/2 Lvls of injury: C2-C4: 4 C5-C8: 22 T1-T6: 6 T7-T12: 8
Kalpakjian et al. 2007	Data used were drawn from a larger holistic study. Data were collected from participants at 5 time points <b>Time 1</b> (t1)= baseline <b>Time 2</b> (t2) = directly after a health promotion intervention <b>Time 3</b> (t3) = 4-month follow up <b>Time 4</b> (t4) = 1-year post-intervention <b>Time 5</b> (t5) = 2-year post intervention) during the course of the holistic study; subsequent follow-up was done using written surveys	United States	N = 65 Male = 46 Female = 19  Mean age = 43.8 Mean (SD) years since injury = 13.7 (11.0)  Participants at: t1 = 65 t2 = 55 t3 = 45 t4 = 42 t5 = 35  Paraplegic/incomplete = 8 Paraplegic/complete = 26 Tetraplegic/incomplete = 13 Tetraplegic/complete = 15
<b>1. RELIABILITY</b>			
Author ID	Internal Consistency	Test-retest, Inter-rater, Intra-rater	
Conti et al. 2019	Cronbach's alpha: Genitourinary and bowel = 0.72 Muscle structures and pain = 0.70 Skin, breathing, and metabolism = 0.59 Circulatory and autonomic = 0.62 Italian SCI-SCS total score = 0.73  a-coefficient of total 15 items = 0.73	ICC & Kappa Coefficient  Test-retest reliability= 0.91 (C.I. = 0.78 – 0.96)  Genitourinary and bowel = 0.90 (C.I. = 0.76 – 0.96)  Muscle structures and pain = 0.89 (C.I. = 0.72 – 0.95)  Skin, breathing, metabolism = 0.86 (C.I. = 0.65 – 0.95)	

		Circulatory and Autonomic = 0.87 (C.I. = 0.70 – 0.95)
Arora et al. 2015		<p>Test-retest btwn two telephone-based assessments:</p> <p>4-6 day ICC(95%CI) = 0.96(0.93-0.98)</p> <p>% Agreement of two assessments that are within n-points:  n=0 (identical score): 28%  n=1: 60%  n=2: 85%  n=3: 93%  n=4: 95%  n=5: 98%  n=6: 100%</p>
Kalpakjian et al. 2007	<p>Cronbach's alpha:  t1 = 0.841  t2 = 0.869  t3 = 0.809  t4 = 0.863  t5 = 0.761</p> <p>Acceptable levels of internal consistency are &gt; 0.70</p> <p>Item analysis was conducted to ensure that all items had acceptable item total correlations: <math>r \geq 0.20</math></p>	<p>t1-t2: <math>r = 0.698</math>  t1-t3: <math>r = 0.569</math>  t1-t4: <math>r = 0.629</math>  t1-t5: <math>r = 0.663</math></p> <p>t2-t3: <math>r = 0.805</math>  t2-t4: <math>r = 0.757</math>  t2-t5: <math>r = 0.716</math></p> <p>t3-t4: <math>r = 0.747</math>  t3-t5: <math>r = 0.781</math></p> <p>t4-t5: <math>r = 0.694</math></p> <p>For all <math>P &lt; .001</math></p> <p>Coefficients generally exceeded 0.60, suggesting generally acceptable reliability across time.</p>
<b>2. VALIDITY</b>		
<b>Author ID</b>	<b>Validity</b>	
Conti et al. 2019	<p>Modified Barthel Index (MBI)  p-value = 0.016  Pearson's <math>r = -0.20</math></p> <p>SF-8 Physical component (PCS)  p-value = &lt;0.001  Pearson's <math>r = -0.36</math></p> <p>SF-8 Mental component summary (MCS)  p-value = 0.014  Pearson's <math>r = -0.21</math></p> <p>Patient Health Questionnaire (PHQ-9)  p-value = &lt;0.001  Pearson's <math>r = 0.43</math></p>	

	<p>General anxiety disorder 7 (GAD-7)          p-value = &lt;0.001          Pearson's r = 0.30</p> <p>Tetraplegia          p-value = 0.003          Pearson's r = 0.29</p>
Arora et al. 2015	<p>Between telephone-based &amp; paper-based assessment (interval of 3-5 days):</p> <p>ICC(95%CI) = 0.90(0.83-0.95)</p> <p>% Agreement of two assessments that are within n-points:          n=0 (identical score): 18%          n=1: 60%          n=2: 80%          n=3: 80%          n=4: 88%          n=5: 93%          n=6: 95%</p>
Kalpakjian et al. 2007	<p>Content analysis was based in the selection of items from the Seekins Secondary Conditions Questionnaire to specifically target secondary conditions associated with SCI that directly and indirectly impact health and physical functioning. Items were selected based on 3 criteria: 1) that they represent conditions that are physiologic in nature; 2) that they are measureable by patient history and physical examination, reported episodes, validated scales, or medical tests or interventions; and 3) those that can be either prevented or managed with medical intervention and/or health behaviours.</p> <p>Spearman's rho between the SCI Secondary Conditions Scale and Short Form-12 (SF-12) subscales - physical functioning, general health, and pain items and a general rating of health:</p> <p>Rating of health=-0.336, P=.008</p> <p>Health limited moderate activities such as pushing a vacuum cleaner, climbing 1 flight of stairs/ramps=0.359, P=.004</p> <p>Health limited climbing several flights of stairs/ramps=0.437, P&lt;.001</p> <p>Accomplished less than would like due to health problems=0.317, P=.012</p> <p>Limited in the kind of work or other activities due to health problems=0.442, P&lt;.001</p> <p>Degree pain interfered with normal work (in and out of the home)=0.644, P&lt;.001</p> <p>How much of the time physical health (and emotional well-being) interfered with social activities=0.475, P&lt;.001</p> <p>There are significant correlations between the SCI-SCS total score and the 6 SF-12 items. Most associations were moderate and in expected directions.</p>
<b>3. RESPONSIVENESS – no data available</b>	
<b>4. FLOOR/CEILING EFFECT</b>	
<b>Author ID</b>	<b>Floor/ceiling effect</b>
Conti et al. 2019	<p>Floor and ceiling effects deemed present if 15% or more participants scored the lowest or the highest attainable values on the SCI-SCS</p> <ul style="list-style-type: none"> <li>- Skin, breathing, and metabolism (27%)</li> <li>- Circulatory and autonomic (25%)</li> </ul>

Kalpakjian et al. 2007	<p>There are ceiling effects on 3 categories of secondary conditions (&gt;20% scored in the highest category):</p> <ul style="list-style-type: none"> <li>- sexual dysfunction (26.2%)</li> <li>- chronic pain (32.3%)</li> <li>- joint and muscle pain (29.2%)</li> </ul> <p>There are floor effects on all 16 categories of secondary conditions (&gt;20% scored in the lowest category):</p> <ul style="list-style-type: none"> <li>- pressure sore (76.9%)</li> <li>- injury caused by loss of sensation (76.9%)</li> <li>- muscle spasms (41.5%)</li> <li>- contractures (67.7%)</li> <li>- heterotopic bone ossification (89.2%)</li> <li>- diabetes mellitus (87.7%)</li> <li>- bladder dysfunction (36.9%)</li> <li>- bowel dysfunction (40.0%)</li> <li>- urinary tract infections (61.5%)</li> <li>- sexual dysfunction (43.1%)</li> <li>- autonomic dysreflexia (70.8%)</li> <li>- postural hypotension (80.0%)</li> <li>- circulatory problems (50.8%)</li> <li>- respiratory problems (80.0%)</li> <li>- chronic pain (33.8%)</li> <li>- joint and muscle pain (29.2%)</li> </ul>
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**5. INTERPRETABILITY**

Author ID	Interpretability				
Kalpakjian et al. 2007	Proportion of sample reporting degree of problems with secondary conditions (time 1, n=65):				
	<b>Health problem:</b>	<b>% reporting significant or chronic problem (score = 3)</b>	<b>% reporting moderate or occasional problem (score = 2)</b>	<b>% reporting mild or infrequent problem (score = 1)</b>	<b>% reporting not a problem (score = 0)</b>
	Pressure sore(s)	3.1	1.5	18.5	76.9
	Injury caused by loss of sensation	4.6	4.6	1.8	76.9
	Muscle spasms (spasticity)	18.5	10.8	2.72	41.5
	Contractures	10.8	9.2	12.3	67.7
	Heterotopic bone ossification	0.0	4.6	6.2	89.2
	Diabetes mellitus	4.6	4.6	3.1	87.7
	Bladder dysfunction	13.8	16.9	32.3	36.9
	Bowel dysfunction	13.8	12.3	33.8	40.0
	Urinary tract infections	9.2	9.2	18.5	61.5
	Sexual dysfunction	26.2	12.3	18.5	43.1
	Autonomic dysreflexia	6.2	3.1	20.0	70.8
	Postural hypotension	4.6	4.6	10.8	80.0
	Circulatory problems	13.8	9.2	26.2	50.8
	Respiratory problems	3.1	4.6	10.8	80.0
	Chronic pain	32.3	10.8	23.1	33.8
	Joint and muscle pain	29.2	24.6	16.9	29.2

Using Time 1 data, on average, the sample reported some degree of problem with an average of 6±3 secondary

conditions.