

<b>Author, Year Country Research Design PEDro Score Sample Size</b>	<b>Methods</b>	<b>Outcomes</b>
<p><a href="#">Dallolio et al.</a> 2008 Italy RCT PEDro score=6 N<sub>initial</sub>=137, N<sub>final</sub>=127</p>	<p><b>Population:</b> Those discharged from initial rehabilitation care; Mean age=40yr; Gender: males=107, females=20; Level of injury: tetraplegia=47, paraplegia=77, unknown=3; Median rehab stay=186.5-230 days.</p> <p><b>Intervention:</b> Usual follow-up care versus the same combined with 8 weekly telemedicine sessions followed by nine bimonthly telemedicine sessions. Telemedicine sessions consisted of patient interviews to assess signs / symptoms of various complications &amp; associated recommendations. Alternatively, sessions focused on functional issues.</p> <p><b>Outcome Measures:</b> FIM, SCIM II, healthcare utilization, status of various complications and satisfaction with care collected just before discharge and 6 months post.</p>	<ol style="list-style-type: none"> <li>1. There was no difference in FIM or SCIM II scores across all 3 sites, however, there was a significant increase in FIM gain at the largest (Italian) site for both overall FIM and FIM motor score (<math>p&lt;0.01</math>) as well as some individual SCIM II items.</li> <li>2. There was no difference between groups in prevalence of secondary complications.</li> <li>3. Persons receiving the telemedicine contacts were significantly more satisfied with their care than those receiving routine follow-up care (<math>p&lt;0.001</math>).</li> </ol>
<p><a href="#">Bloeman-Vrencken et al.</a> 2007 Netherlands Prospective Controlled Trial N<sub>initial</sub>=149, N<sub>final</sub>=62</p>	<p><b>Population:</b> Those receiving initial rehabilitation care; Mean age=37.8yr (transmural), 36.1yr (usual care); Gender: males=48, females=14; Level of injury: tetraplegia, paraplegia; Severity of injury: Complete, incomplete; Avg rehab stay=270.7 (transmural), 294.1 (usual care) d.</p> <p><b>Intervention:</b> Matched sample of those receiving transmural care (community patients served by transmural nurse liaising with other health professionals) versus 'usual follow-up care' (periodic visits to rehabilitation doctor / centre).</p> <p><b>Outcome Measures:</b> Prevalence of pressures sores, UTIs or other complications and number and duration of associated hospital re-admissions assessed over first year post-discharge.</p>	<ol style="list-style-type: none"> <li>1. No difference between groups in prevalence of pressure sores and UTIs or other complications.</li> <li>2. No difference between groups in hospital re-admissions due to secondary complications.</li> </ol>
<p><a href="#">Dunn et al.</a> 2000 USA Prospective Controlled Trial N<sub>initial</sub>=371, N<sub>final</sub>=371</p>	<p><b>Population:</b> <i>SCI-specialist follow-up care</i> (n=235): mean age=56.6yr; Gender: male=99%, female=1%; Level of injury: paraplegic=52%, tetraplegic=48%; Severity of injury: complete=46%, incomplete=54%; Time since injury=19.4 yr.</p> <p><i>No follow-up care</i> (n=136): mean age=47.9yr; Gender: male=66%, female=44%; Level of injury: paraplegic=58%, tetraplegic=42%; Severity of injury: complete=62%, incomplete=38%; Time since injury=18.2 yr.</p> <p><b>Intervention:</b> Follow-up care (routine check-ups in SCI Outpatient Clinic)</p>	<ol style="list-style-type: none"> <li>1. Those receiving regular follow-up scored higher on all 3 subscales of CYH, Health (<math>p=0.0068</math>), Independence (<math>p=0.005</math>) and Absence of Depression (<math>p&lt;0.0001</math>).</li> <li>2. Those receiving regular follow-up reported similar secondary conditions as those without routine follow-up but with reduced frequency and rated it as less severe.</li> </ol>

	<p>versus no follow-up care (presumably problem-based primary care).</p> <p><b>Outcome Measures:</b> Secondary Condition Surveillance Instrument (SCSI), Check Your Health (CYH) Questionnaire. One time survey of both groups.</p>	
<p><a href="#">Phillips et al.</a> 1999 USA Prospective Controlled Trial N<sub>initial</sub>=35, N<sub>final</sub>=35</p>	<p><b>Population:</b> <i>Telephone group (n=13):</i> mean age=29.6±6.4; Gender: male=69%, female=31%; Level of injury: not reported; Severity of injury: not reported; Time since injury: not reported.</p> <p><i>Video group (n=12):</i> mean age=33.4±13.8; Gender: male=69%, female=31%; Level of injury: not reported; Severity of injury: not reported; Time since injury: not reported.</p> <p><i>Standard care (n=10):</i> mean age=38.1±15.2; Gender: male=69%, female=31%; Level of injury: not reported; Severity of injury: not reported; Time since injury: not reported.</p> <p><b>Intervention:</b> Subjects were recruited to one of 3 groups: i) Video group: received weekly counselling sessions for 10-12wk using AT&amp;T Picasso Still-Image video unit for the first 6-8wk followed by 4-6wk of weekly telephone counselling sessions; ii) Telephone group: telephone counselling for 10wk; iii) Standard care group.</p> <p><b>Outcome measures:</b> Pressure ulcer incidence; frequency of health care utilization. All groups were surveyed every 2-3mo.</p>	<ol style="list-style-type: none"> <li>1. Ulcer incidence: video group had highest number of identified/reported pressure ulcers followed by the standard care group then the telephone group although none of these differences were statistically significant (p&gt;0.05).</li> <li>2. Health care utilization: annualized ER visits, hospitalizations and provider visits were lowest in standard care group and similar for telephone and video groups although none of these differences were statistically significant (p&gt;0.05).</li> </ol>
<p><a href="#">Shem et al.</a> 2017 USA Pre-Post N<sub>initial</sub>=10, N<sub>final</sub>=8</p>	<p><b>Population:</b> Mean age: 34.4yr; Gender: male=8, female=2, Level of injury: cervical=7, thoracic=3; Severity of injury: AIS A=7, B=1, C=2.</p> <p><b>Intervention:</b> Individuals with SCI participated in a telemedicine program for pain, bladder, skin management, medication changes and lab results using iPads for 6 mo. Outcome measures were assessed at baseline and at 6 mo.</p> <p><b>Outcome measures:</b> Healthcare utilization, Quality of life (QoL), Reintegration to Normal Living Index (RNLI), Life Satisfaction Index A (LSI-A), Patient Health Questionnaire (PHQ-9) and program satisfaction survey.</p>	<ol style="list-style-type: none"> <li>1. Over the course of 6 mo, 57 in person physician visits were reported. This included visits to gastroenterologists, neurologists, ophthalmologists, orthopedics, otolaryngologists, pain specialists, pulmonary specialists, urologists and wound care specialists.</li> <li>2. A total of 10 ER visits and 4 hospitalizations occurred. The majority of which were not using telemedicine that month.</li> <li>3. A total of 16 telemedicine visits occurred via FaceTime, where physicians were successfully able to address topics related to spasticity, skin management, bladder and bowel function, pain, medications, heterotopic ossification and general follow-ups.</li> <li>4. A total of 9 nurse encounters occurred over the phone or via FaceTime. Nurses were able to address topics related to skin checks, bladder irrigation, bowel training programs and changes in urine.</li> <li>5. No significant differences in QoL, RNLI, LSI-A or depression (PHQ-9) were observed from baseline to 6 mo.</li> </ol>

		6. All users reported positive experiences with the program and said they would like to continue with the program.
<a href="#">Derakhshanrad et al.</a> 2015 Iran Pre-Post N <sub>initial</sub> =134, N <sub>final</sub> =134	<p><b>Population:</b> Median age: 27yr; Gender: male=104, female=30; Level of injury: C1-4=8, C5=6, C6=8, C7-8=4, T1-6=14, T7-12=91, L1-S1=3; Severity of injury: AIS A=134.</p> <p><b>Intervention:</b> Patients with complete SCI (AIS A) completed an outpatient rehabilitation program consisting of bimonthly education programs, combined with twice-weekly OT, PT, and home nursing for a 6-month period. Outcome measures were assessed at baseline and post-treatment.</p> <p><b>Outcome measures:</b> Spinal Cord Independence Measure (SCIM III) score.</p>	1. A significant increase in median total SCIM III score was observed when baseline scores were compared with post-treatment scores ( $p<0.001$ ). 2. Increases in SCIM III scores were greater in lower cervical and thoracic cases (8.75 and 13.5). 3. No improvement was observed in self-care (feeding, bathing, dressing and grooming) or mobility (room, toilet, indoors and outdoors) for upper cervical level patients. 4. Subjects with injury below C7 had a significant gain in sphincter management scores (5-8 units). 5. Subjects with L1-S1 injury showed the greatest improvement in mobility (indoors and outdoors) and sphincter management subscales. 6. With the exception of high cervical patients, all subgroups significantly improved their SCIM III score ( $p<0.05$ ).
<a href="#">Zinman et al.</a> 2014 Canada Pre-Post N <sub>initial</sub> =21, N <sub>final</sub> =14	<p><b>Population:</b> Mean age: 46.6±10.1yr; Gender: male=10, female=11, Level of injury: paraplegia=4, tetraplegia=9, unknown=1; Severity of injury: complete=2, incomplete=11, unknown=1.</p> <p><b>Intervention:</b> Participants evaluated the effectiveness of a community reintegration outpatient (CROP) service for promoting well-being and community participation following SCI. Outcome measures were assessed at baseline, 12 wk and 3 mo.</p> <p><b>Outcome measures:</b> Mooring Self-Efficacy Scale (MSES), Impact on Participation and Autonomy (IPA), Positive Affect and Negative Affect Scale (PANAS), Coping Inventory of Stressful Situations (CISS), World Health Organization Quality of Life (WHOQOL-BREF), semi-structured qualitative interviews.</p>	1. MSES and PANAS significantly improved from baseline to 12 wk ( $p<0.05$ ), however, no significant differences were observed at 3 mo. 2. No significant differences were observed in any other outcome measures. 3. Qualitative analysis identified four major themes related to therapeutic benefit: 1) role of self, 2) knowledge acquisition, 3) skill application, and 4) group processes.
<a href="#">Lugo et al.</a> 2007 Columbia Pre-Post N <sub>initial</sub> =208, N <sub>final</sub> =42	<p><b>Population:</b> Mean age=32.6 yr; Gender: males=33, females=9; Level of injury: C=14, T1-6=14, below T6=14; Severity of injury: AIS A=26, B=4, C=5, D=6, E=1</p> <p><b>Intervention:</b> Patients received a 2-phase interdisciplinary rehabilitation program consisting of a short in-patient phase (mean=13.5 days) and an out-patient phase over 18mo.</p> <p><b>Outcome Measures:</b> Motor FIM, ASIA motor score, Complications assessed over 5 periods including admission to the end of the first month and then months 2-3, 4-6, 7-12, 13-18.</p>	1. Motor FIM scores progressively increased significantly from admission to first mo and after 1yr of rehabilitation ( $p<0.01$ ) showing most marked increase between admission and mo 2-3. 2. Patients in AIS A and B groups reached motor FIM ceiling scores in the 18th mo, while those in the C, D, E group reached ceiling in the 12th mo. 3. AIS motor scores progressively increased from admission over 18 mo, however, persons with cervical injuries had most marked increases between admission and mo 2-3. 4. Complication rates for those conditions often associated with SCI (i.e., pressure sores,

		spasticity, pain, incontinence) remained high over the study period (deemed no different than in hospital-based programmes).
<a href="#">Vesmarovich et al.</a> 1999 USA Pre-Post N <sub>initial</sub> =8, N <sub>final</sub> =8	<p><b>Population:</b> Age range=38-78 yr; Gender: male=8, female=0; Level of injury: cervical=5, thoracic=3; Severity of injury: not reported; Time since injury: not reported.</p> <p><b>Intervention:</b> Weekly telerehabilitation visits using Picasso Still-Image Videophone which simultaneously transmits video and audio over ordinary telephone lines. Participants and family members received 30-minute hands-on training session with equipment. Informal interviews with participants and families conducted to determine satisfaction.</p> <p><b>Outcome measures:</b> Number of clinic visits, status of pressure ulcers, subjective satisfaction assessment completed by patients, families and care providers.</p>	<ol style="list-style-type: none"> <li>1. Mean of 7 visits /patient (range 1-18) via in-home video consult.</li> <li>2. Seven of 12 wounds were healed over 8 patients.</li> <li>3. Telerehabilitation approach was accepted as a valid alternative to clinic visits by patients and family members – for many it was preferred.</li> <li>4. Clinicians identified several technical concerns throughout project but these were solved.</li> </ol>
<a href="#">Kim et al.</a> 2012 Korea Observational N <sub>initial</sub> =93, N <sub>final</sub> =93	<p><b>Population:</b> SCI(n=57): Mean age: not reported; Gender: male=58%, female=42%; Level of injury: not reported; Severity of injury: not reported.</p> <p><b>Health Professionals (n=36):</b> Mean age: not reported; Gender: male=93%, female=7%.</p> <p><b>Intervention:</b> No intervention. Retrospective survey evaluating interest and opinion of telerehabilitation in individuals with SCI and health professionals.</p> <p><b>Outcome measures:</b> Awareness, understanding, value, needs, and desirability of telerehabilitation.</p>	<ol style="list-style-type: none"> <li>1. Survey responses indicated interest in telerehabilitation services among individuals with SCI, as 46.6% rated telerehabilitation as very positive.</li> <li>2. There was interest in services that could be used to resolve issues on unmet medical needs of individuals with a disability related to health monitoring, sustaining health, rehabilitation interventions, and independence in activities of daily living.</li> <li>3. The most required need for service was reported as UTI (21.9%), followed by pressure ulcers, central pain management, orthostatic hypotension, depression, obesity management, paralytic ileus, osteoporosis and pneumonia.</li> <li>4. Patients reported an internet-connected service as the preferred method of telerehabilitation.</li> <li>5. Of the physicians surveyed, 69.4% were aware of telemedicine, 86.1% reported they are inexperienced with telemedicine, 47.2% preferred a video system with telemedicine and 38.9% rated the desirability of telemedicine as positive.</li> <li>6. Telerehabilitation risks were ranked in order of importance by health professionals as: (1) concerns relating to medical responsibility, (2) possibility of medical malpractice, (3) financial burden of initial equipment, (4) health insurance cost, (5) misunderstanding of roles and interests, (6) over issuing electronic prescriptions, (7) lack of telerehabilitation professionals and training programs, (8) technical issues on privacy and security.</li> <li>7. SCI rehabilitation was the most physically requested area of telerehabilitation services (23.4%).</li> </ol>