

Table 6. Assistive-device Interventions

Author Year Country Research Design Score Total Sample Size	Methods	Outcome
Free-standing Exoskeleton		
<p>Postol et al. 2021 Australia Pre-post N=3</p>	<p>Objective: To evaluate the feasibility of therapy with a free-standing exoskeleton in people with SCI, and to determine the potential health-related benefits of this intervention.</p> <p>Population: 3 participants with SCI and severe mobility impairment and reliant on wheelchair, mobility aid, or the assistance of others for standing activities 1M, 2F Mean age 36 years Etiology: Traumatic (n = 2), non-traumatic (n = 1) Level of injury: C5 (n = 1), C6 (n = 1), L3 (n = 1) AIS: AIS A (n =1), AIS B (n = 1), AIS C (n = 1)</p> <p>Treatment: Participants received exercise therapy sessions in a free-standing lower limb robotic exoskeleton (REX, Rex Bionics). Each session lasted 30 min, were performed twice a week, and for 12 weeks.</p> <p>Outcome Measures: FAS was measured upon enrolment (week 0), prior to the commencement of the intervention (week 12), mid-way through the intervention phase (week 18), at the end of the 12-week intervention (week 24), and then again 12 weeks after</p>	<ol style="list-style-type: none"> 1. Only three of 41 potential participants being eligible and completing this study, 2. Changes in fatigue were inconsistent between and within P1 and P2. 3. Trends towards improvement over time in fatigue were evident for P3 (scores at week: 0 = 31, 12 = 29, 18 = 26, 24 = 23, 36 = 21).

	the intervention had been completed (week 36).	
Mobility Service Dogs		
<p>Vincent et al. 2019 Canada Pre-post N=24</p>	<p>Objective: To assess the effects of a mobility service dog on pain, fatigue, wheelchair-related functional tasks, participation and satisfaction among manual wheelchair users over a nine-month period.</p> <p>Population: 17 (SCI, n = 14; spastic diplegia, n = 1; traumatic leg amputation, n = 1; cerebral palsy, n = 1) manual wheelchair users 9M, 8F Mean (SD) age 41.9 (15.3) years Level of injury (participants with SCI): Paraplegia (n = 10), tetraplegia (n = 4)</p> <p>Treatment: Each participant was partnered with a mobility service dog for nine months.</p> <p>Outcome Measures: RPE Scale and the vitality subscale of the SF-36 were assessed at baseline and three times more until the last one which was set at the end of the intervention (9 months).</p>	<ol style="list-style-type: none"> 1. Significant and favorable decreases ($p = 0.005$) in the RPE were observed at three months (-5.0 ± 1.4 to 3.8 ± 1.5) and nine months after the intervention (-3.3 ± 1.9). 2. Participants reported having more pep ($p = 0.039$) but no difference to be less worn out ($p = 0.068$) and have more energy ($p = 0.066$). 3. Significant changes in vitality were perceived three months after the intervention (more pep: $p = 0.008$; more energy: $p = 0.008$) and were no longer present at six months (more pep: $p = 0.454$; more energy: $p = 0.963$) and at nine months (more pep: $p = 0.305$; more energy: $p = 0.281$). 4. Moderate to strong effect sizes (Glass delta) were confirmed for fatigue despite a relatively small sample size: <ol style="list-style-type: none"> a. RPE scale: T1 = -0.85; T2 = -0.71; T3 = -1.21 b. Vitality (SF-36) – Did you feel full of pep? T1 = 0.74; T2 = -; T3 = - c. Vitality (SF-36) – Did you have a lot of energy? T1 = 0.79; T2 = -; T3 = - d. Vitality (SF-36) – Did you feel worn out? T1 = -0.69; T2 = -0.93; T3 = -0.79

Segway Personal Transporter

<p>Boutilier et al. 2012 Canada Pre-post N=8</p>	<p>Objective: To determine whether a dynamic standing program using the Segway Personal Transporter results in any measurable physiological effects in participants with SCI using both qualitative and quantitative measures of spasticity, pain and fatigue.</p> <p>Population: 8 participants with SCI, with the ability to stand with or without external support, and having a history of pain and spasticity 7M, 1F Mean (SD) age 44.13 (8.90) years Level of injury: C5 (n = 4), C6 (n = 1), T5 (n = 1), T6 (n = 1), T11 (n = 1) AIS: AIS A (n = 1), AIS B (n = 1), AIS C (n = 3), AIS C/D (n = 2), AIS D (n = 1) Mean (SD) time since injury 13.75 (9.29) years.</p> <p>Treatment: Participants performed a 4-week dynamic standing program using a Segway (navigating around different places [indoor/outdoor] with some obstacles). Sessions lasted 30 min and were performed three times per week.</p> <p>Outcome Measures: FSS was measured at baseline, at the sixth session (Mid test), and twelfth session (Final test).</p>	<p>1. For fatigue, the difference between initial and final visits was not significant, however, the fatigue scores did improve from a mean of 4.2 (\pm 0.47) at initial visit to a final level of 3.7 (\pm 0.54).</p>
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