

Table 1. Overview of pre-post studies included that assessed the effect of exercise on pain in adults with SCI and neuropathic pain at or below lesion level

Study (year) country	Inclusion criteria	Characteristics	Intervention	Follow up loss to follow up	Reported outcome measures	Considerations
Norrbrink (2012) Sweden	-Paraplegia > 2 years -18 to 70 years old -No contraindications for exercise	N= 7 (with NP) Age: 30 to 67 y %male: 86 TSI: 7-29 y Thoracic/lumbar SCI: 6/1	Double-poling ergometer training 10 weeks 3 times/week ~ 50 min Each session included: <ul style="list-style-type: none"> • Warm up • 4 times 6 to 7 min intervals <ul style="list-style-type: none"> .1 15 s to 3 min exercise .2 15 s to 1 min rest • Cool down Exercise was modified to reach the predetermined level of intensity: 70-100% peak heart rate reached during a maximal oxygen uptake test	Immediately after completion of the training program No loss to follow up.	Pain (NRS 0-10)	Three participants were on analgesic drugs at baseline (opioids, N=2; nonsteroidal anti-inflammatory drugs, n=1) and one at the end of study (opioids). All participants performed the 30 training sessions.
Todd (2021) Canada	-SCI>12 months - upper body exercise possible -NP below SCI level >3 months -adherence to SCI specific guidelines for exercise	N = 8 Age: 37.9 ± 10 y %male: 87 Tetra-/paraplegia(n): 4/4 TSI: 17.8±8.9 y Aetiology: traumatic (n=8)	30-min arm-crank exercise at 60% of max power output	Post and 90 min post-exercise. 2/10 (20%) 1 due to a pressure sore, 1 not able to draw blood from	Neuropathic pain (NPS)	Screening through advertisements emailed to individuals interested in participating in research No characteristics available for pts lost to follow up. Subcategories of n=4. Three participants were consuming cannabis at the time of study participation; however, no participants were taking pharmaceuticals at the time of study participation.
Sato (2017) Japan	- SCI>1year - NP>1year - wheelchair user in daily life	N=11 %male: 91 Age: 43±11.1 y Cervical/thoracic/lumbar SCI; 3/5/3	15-min wheelchair propulsion at maximum possible speed	Post exercise, 5-min and 10 min post-exercise 1/11 (increased pain)	Neuropathic pain (NRS 0-10)	one individual reported pain in the shoulder (unclear if this was NP). NP experienced at- or below level.

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						Two participants reported using analgesic medicines (pregabalin).
Van de Winckel (2023) United States	- complete or incomplete SCI ≥3months -Neuropathic pain NPRS >3/10 -	N=18 Age: 59.6±11.5 %male = 67 NRS = 4.8±2.7 TSI = 15.2±11.2 Aetiology traumatic/non-traumatic (n): 13/5 Cervical/thoracic/lumbar SCI: 8/7/3	12-week Remote Qigong practice. Movement as much as possible, combined with kinaesthetic imagery. After a 6-hour online introductory class, participants were asked to practice at least 3x/week for 12 weeks using a 41 min online video.	6 weeks 1 year 3/21 (14%) (2 = Acute medical reasons unrelated to study, 1 = no interest in continuing Qigong) N=6/18 (33%) loss at 1 year	Neuropathic pain (NRS 0-10) Quality of life (WHOQOL-BREF)	Participants were asked to imagine certain movements and feelings if they were unable to perform them. High loss to follow up after intervention. Unclear if and how much movement participants performed.

Abbreviations: SCI - spinal cord injury; SF-MPQ - short-form McGill Pain Questionnaire; TSI - time since injury; NP-neuropathic pain; NPS – neuropathic pain scale; NPRS – Numeric pain rating scale; WHOQOL-BREF - World Health Organization Quality of Life Instruments