

Author Year Country Research Design Score Total Sample Size	Methods	Outcome
Amatachaya et al. 2021 Thailand RCT PEDro = 6 Level 1 N = 54	Population: 54 ambulatory persons with SCI, with the ability of independent walking over at least 17 m with or without assistive devices (or a FIM-L score of 5-7); 36 males and 18 females; mean ($\pm$ SD) age 51.7 ($\pm$ 15.4) years; paraplegia (n = 34) and tetraplegia (n = 20); AIS C (n = 15) and D (n = 39); and mean ($\pm$ SD) time since injury 88.3 ($\pm$ 79.6) months. Treatment: Participants were randomly stratified into: - Participants in the control group (n = 26) performed an overground walking training (OWT) over a hard flat, and smooth surface. - Participants in the experimental group (n = 28) performed a walking training on a walking track (10m long) with different surfaces (walking track with different surfaces consisted of artificial pebbled, grass, and soft areas). Training program was performed for 30 min/d, 5 d/wk over 4 weeks; and participants walked at their usual speed without fatigue. Outcomes Measures: 10MWT, FTSTS test, 6MWT, and fall data were assessed at baseline, after 2- and 4-week training, and at 6 months follow-up.	- All participants in the experimental group could safely walk on a track with different surfaces without any AEs. - Functional outcome measures: - Only the participants in the experimental group showed significant improvements after 2- and 4-week training for the 10MWT, 6MWT, and FTSTS test ($P < 0.001$). - There were no significant differences after 6 months follow-up for both training programs. - During 6-month follow-up, 5 participants (9 falls in total) in the experimental group and 12 participants (39 falls in total) in the control group experienced falls, with a relative risk of 0.39 for participants in the experimental group as compared to those in the control group.
Lotter et al. 2020 USA RCT PEDro = 6 Level 1	Population: 16 participants with motor incomplete SCI and the ability to walk overground at self-selected speeds <1.0 m/s without physical assistance but with devices and bracing below the knee as needed; 10 males and 6 females; mean age 48.5 years; injury	Task-specific training group had significant higher stepping parameters during the training; however, average number of sessions completed, was similar between groups.

N = 16	level C1-C4 (n = 6), C5-C8 (n = 4) and T1-T10 (n = 6); and mean time since injury 4.1 years. Treatment: Participants were randomized to receive up to 20 sessions of either task-specific or impairment-based training (both of 40 min sessions) over less than 6 weeks followed by the alternate training paradigm after a break of 4 weeks: • Task-specific training consisted of stepping practice in variable contexts (i.e., speed-dependent treadmill training, skill-dependent treadmill training, overground training, and stair climbing) within 1-hour sessions. • Impairment-based training consisted of nonwalking interventions, including strengthening, aerobic conditioning and practice of transfers to improve lower extremity and trunk strength and coordination. A primary intent of both strategies was to achieve high cardiovascular intensities (e.g., 70%-80% HRR and rate of perceived exertion [RPE] >14). Outcome measures: Fastest speed over short distances, peak treadmill speed, self-selected speed, 6MWT, Berg Balance Scale (BBS), FTSTS test, activity-specific balance confidence (ABC) scale, PROMIS-Mobility score, LEMS, and incidence of AEs were assessed prior to and following each training protocol.	2. Significantly greater increases in fastest overground and treadmill walking speeds, and 6MWT were observed following task-specific vs. impairment-based training; with moderate associations between differences in amount of practice and outcomes. 3. There were no differences for self-selected speed, FTSTS test, or LEMS in either group. 4. Changes in peak recumbent stepping power favored impairment-based vs. task-specific training. 5. There were no serious AEs during the intervention; however, there were significantly greater incidence of minor AEs, including a greater number of falls, during task-specific (n = 23) vs. impairment-based training (n = 8), $P < .01$.
Brazg et al. 2017 USA RCT cross-over PEDro = 6 Level 1 N = 15	Population: 15 participants with a chronic motor incomplete SCI at neurological injury level of T10 or above; 11 males and 4 females; mean ($\pm$ SD) age 49 ($\pm$ 8.1) years; injury level high cervical (C1-C4) (n = 4), low cervical (C5-C8) (n = 6), and thoracic (T1-T10) (n = 5); AIS C or D (n = 15); and mean ($\pm$ SD) time since injury 7.7 ($\pm$ 7.9) years.	1. No significant AEs were noted. 2. The average number of sessions completed and number of steps within sessions were not significantly different between groups.

	Treatment: Participants were randomized to receive sessions of either a high- or low-intensity LT over 4 to 6 weeks, followed by a 4-week wash-out. Both high- and low-intensity LT consisted of up to 20 one-hour sessions at a frequency of 3 to 5 days/week over ≤ 6 weeks. The goals of sessions were to achieve 40 min of stepping practice while maintaining the desired HRs or RPEs (high-intensity training [70%-85% HR_{max}, 15 to 17 {"hard" to "very hard"}] vs. low-intensity training [50%-65% HR_{max}, 11 to 13 {below "somewhat hard"}]). Each session was composed of 4 different stepping tasks practiced over ~10 min per session, including speed-dependent treadmill training, skill-dependent treadmill training, overground training, and stair climbing. Outcome Measures: 6MWT, peak treadmill speed, walking speed over short distances at self-selected speeds and fastest-possible speeds, BBS, and LEMS were assessed prior to and following each 4- to 6-week training paradigm.	- Significant main effects of time ($P < .01$) but not time $\times$ intensity interactions were observed for 6MWT (changes following high- vs. low-intensity LT: 26 ± 27 vs. 14 ± 30 m; $P = 0.16$). - For peak treadmill speed, main effects of both time and time $\times$ intensity interactions were significant (0.18 ± 0.14 vs. 0.02 ± 0.02 m/s, $P = 0.02$ and $P < 0.01$, respectively). - No significant interaction effects of order were observed for 6MWT or peak treadmill speed ($P > 0.30$). - Significant main effects of time and time $\times$ intensity interactions were observed for fastest-possible speeds (0.12 ± 0.10 vs. 0.03 ± 0.13 m/s, $P = 0.01$), with a trend for significant time $\times$ intensity interactions for self-selected speed (0.04 ± 0.08 vs. -0.01 ± 0.07 m/s; $P = 0.02$). - No significant main or interaction effects were observed for BBS or LEMS.
Evans & Field-Fote 2024 USA Prospective controlled trial Level 2 N = 25	Population: 25 participants with chronic motor-incomplete SCI, able to stand for ≥ 5 minutes, and able to advance each leg independently ≥ 3 steps. Mean (SD) age: 48.4 (13.2) years 18M, 7F Level of injury: Cervical (n = 22), thoracic (n = 3) AIS C (n = 2), D (n = 23) Mean (SD) time since injury: 86.7 (87.2) months Sample stratification by baseline walking speed resulted in 15 participants being identified as slow walkers and 10 participants as fast walkers. Treatment: The study was carried out over 5 consecutive days (intervention	- Among the full sample, MST was associated with increases in walking speed, step length, step frequency, and a decrease in the walk ratio. - Relative change in walking speed and step frequency was higher among slow walkers ($\Delta WS = \uparrow 46\%$, $\Delta SF = \uparrow 28\%$) vs fast walkers ($\Delta WS = \uparrow 16\%$, $\Delta SF = \uparrow 8\%$). - Change in the WR differed between groups (slow: $\Delta WR = \downarrow 10\%$; fast: $\Delta WR = 0\%$). - Twenty-six percent of the variability observed in ΔWR among slow walkers could be explained by ΔSF, while

	on days 2, 3, and 4) of a motor skill training (MST) intervention. MST consisted of 6 exercises performed as a circuit (60sec/exercise) with each session comprised of 4 cycles of the circuit. Participants were encouraged to complete each exercise as quickly as possible to ensure at least a moderate exercise intensity was achieved (i.e., $\geq 40\%$ HRR). The average time to complete the MST circuit was 37 ± 6.1 minutes, including transition time between exercises. Outcome Measures: Overground walking speed (WS), step length (SL), step frequency (SF), and walk ratio (WR) were measured during the 10MWT completed each day (baseline, day 1; pre-intervention, day 2, day 3, and day 4; and 24 hours post-intervention, day 5).	ΔSL did not contribute to ΔWR. Among fast walkers, ΔSL accounted for more than twice the observed ΔWR (43%) compared to ΔSF (15%).
Liu et al. 2021 China Pre – post Level 4 N = 320	Population: 320 patients with acute and complete (AIS A) SCI; 271 males and 49 females; mean ($\pm$ SD) age 35.4 ($\pm$ 9.6) years; level of injury cervical (C4-C5 was the most frequent), thoracic (T10-T12 were the most frequent), and lumbar (L1-L2 was the most frequent); and mean ($\pm$ SD) time from injury 8.3 ($\pm$ 7.4) days. Treatment: Participants received a combination treatment involving surgical intervention and, 15 days post-surgery, weight-bearing walking training: • Surgical intervention involved intradural decompression (via durotomy), and, in some cases, intramedullary decompression (via myelotomy). • Weight-bearing walking training (3-5-6 Kunming Locomotor Training Program was performed in 3 1-h sessions, 5 days per week, for 6 months, and with protection of a tailored chest-waist cast. The program was made up of 8 progressive steps from 1) training to stand with weight support	1. The intervention was safe, as none of the patients' postoperative conditions were worsened after the intervention, compared to pre-operative conditions. 2. There were significant improvements in mean Kunming Locomotor Scale between comparisons of time points of 15 days, 3 months or 6 months ($P < 0.001$) for lumbar and thoracic injuries, while for cervical injuries, significant increase in scores was seen only from 15 days to 3 months.

	when a trainer fixes the knees, to, 8) training to walk without any support. In addition, patients received physical and occupation therapies on a daily basis. Outcome Measures: Kunming Locomotor Scale (10-point locomotor assessment scale) was assessed at baseline, at 15 days after surgery, and at 3 and 6 months after rehabilitation.	
Senthilvelkumar et al. 2015 India RCT PEDro = 7 Level 1 N = 16	Population: 16 participants; motor incomplete tetraplegia; 0-2yrs post injury. Treatment: Participants were randomized to one of two groups: body weight-supported overground training on level ground and BWSTT. Both groups received 30 min of gait training per day, five days a week for eight weeks. In addition, both groups received regular rehabilitation which included flexibility, strength, self-care and functional training. Outcome Measures: WISCI and LEMS.	- There was not statistically significant between group differences in the WISCI [MD=0.3 points; 95% CI (-4.8 to 5.4); p=0.748]. - No statistically significant between group differences in the LEMS [MD=0.2 points; 95% CI (-3.8 to 5.1); p=0.749]. - In Group A, the mean Walking Index score increased from 2.1±0.7 to 12.1±4.6 [mean change = 10; 95%CI (6.6 to 13.4)] and in Group B, it increased from 3±2.3 to 12.7±5.8 [mean change=9.7; 95%CI (5.1 to14.3)]. - In Group A, the mean Lower Extremity Muscle Score increased from 18.8±5.3 to 28.3±6.6 [mean change=9.5; 95%CI (3.2 to15.8)] and in Group B, in increased from 19.8±6.5 to 28.6±8 [mean change=8.9; 95%CI (1.2 to 16.6)].
Pramodhyakul et al. 2016 Thailand RCT PEDro = 5 Level 2 N = 32	Population: 32 participants - 26 males and 10 females; incomplete SCI; 26 AIS D and 10 AIS C; mean age= 41.69 ± 10.90y; months post injury= 35.00 ± 24.40 months. Treatment: Participants were randomly assigned to the experimental or control groups using stage of injury, severity of SCI, and baseline walking ability as criteria for group arrangement (16 participants	The participants demonstrated significant improvement in all functional tests after the 5 days of training. The improvement in the group trained using the visuotemporal cue was significantly better than that trained without using the cue.

	per group). The participants were trained to walk over level ground at their fastest safe speed with or without a visuotemporal cue, 30 min/day, for 5 consecutive days. Outcome Measures: 10MWT, 6MWT, and FTSTS test.	
Jones et al. 2014a USA RCT PEDro = 5 Level 2 N = 38	Population: 38 participants - 27 males and 11 females; chronic, motor incomplete SCI; AIS C or D; age range= 22-63y; years post injury= >12 months. Treatment: A total of 9h/wk of ABT for 24 weeks including developmental sequencing; RT; repetitive, patterned motor activity; and task-specific LT. Algorithms were used to guide group allocation, FES utilization, and LT progression. Outcome Measures: Neurologic function (ISNCSCI), 10MWT, 6MWT, and community participation (SCIM-III, and Reintegration to Normal Living Index), metabolic function (weight, body mass index, and Quantitative Insulin Sensitivity Check).	1. ABT had a positive effect on neurologic function (ISNCSCI total motor score and LEMS). 2. ABT had a positive effect on 10MWT speed and 6MWT total distance.
Jones et al. 2014b USA Secondary analysis of results from an RCT PEDro = 5 N = 38	Population: 38 participants - 27 males and 11 females; chronic, motor incomplete SCI; AIS C or D; age range= 22-63y; years post injury= >12 months. Treatment: A total of 9h/wk of ABT for 24 weeks including developmental sequencing; RT; repetitive, patterned motor activity; and task-specific LT. Algorithms were used to guide group allocation, FES utilization, and LT progression. Outcome Measures: Walking speed and endurance (10MWT and 6MWT).	1. On the basis of the most conservative estimate, 18%, 26%, and 32% of the participants demonstrated clinically significant improvements on the 10MWT, and the 6MWT, respectively. 2. This secondary analysis identified likely responders to ABT on the basis of injury characteristics: AIS classification, time since injury, and initial walking ability. 3. Training effects were the most clinically significant in AIS grade D participants with injuries <3 years in duration.
	Effect Sizes: Forest plot of standardized mean differences (SMD ± 95%C.I.) as calculated from pre- and post-intervention data.	

