Table 21. Robot-aided Ankle Rehabilitation

Author Year Country Research Design Score Total Sample Size	Methods	Outcome
Calabró et al. (2021); Italy Case control (pre-post for the experimental group and retrospective for the control [matched group]) Level 3 N=20	**Population:** • Experimental group (n=10): Participants with SCI and at least a palpable or visible contraction of ankle plantar and dorsal flexor muscle groups, and without severe ankle instability; 6 males and 4 females; mean (± SD) age 39 (± 13) years; level of injury C5 (n=2), C6 (n=1), C7 (n=1), T6 (n=1), T7 (n=3), and T10 (n=1); AIS C (n=5) and AIS D (n=5); and mean (± SD) time since injury 8 (± 4) months. • Control group (n=10): Participants who previously underwent conventional ankle rehabilitation were retrospectively matched: 5 males and 5 females; mean (± SD) age 39 (± 7) years; level of injury C5 (n=1), C6 (n=2), T1 (n=1), T2 (n=2), T5 (n=2), T6 (n=1), and T9 (n=1); AIS C (n=4) and AIS D (n=6); and mean (± SD) time since injury 9 (± 3) months. **Treatment:** All persons underwent an intensive treatment (6 days weekly) consisting of FES of lower limb muscles (a daily 30-min session), conventional physiotherapy (two 1-h sessions daily), and occupational therapy (a 1-h session, three times weekly) for 4 weeks. Additionally: • The experimental group received robot-aided ankle rehabilitation using Hunova device for a one-hour daily session. • The control group underwent an equal amount of conventional ankle rehabilitation. **Outcome Measures:** SCIM-III; 10MWT; 6MWT; and TUG were assessed at baseline (PRE) and after the trial completion (POST).	1. None of the participants reported any side effects during the rehabilitative sessions. 2. There were more significant improvements in experimental group than control group for: a. 10MWT: Experimental group from 0.43 ± 0.11 to 0.51 ± 0.09 m/s, p=0.006; control group from 0.4 ± 0.13 to 0.45 ± 0.12, p=0.01; group-comparison p=0.006. b. 6MWT: Experimental group from 231 ± 13 to 274 ± 15 m, p<0.001; control group from 236 ± 13 to 262 ± 15 m, p=0.003; group-comparison p=0.01. c. TUG: Experimental group from 70 ± 18 to 45 ± 15 s, p=0.002; control group from 68 ± 21 to 48 ± 18 s, p=0.01; group-comparison p=0.001. d. SCIM: Experimental group from 53 ± 7 to 38 ± 11, p<0.001; control group from 53 ± 5 to 45 ± 8, p<0.001; group-comparison p<0.001. 3. Patients belonging to the experimental group showed better stability in static and dynamic balance instrumental testing (Hunova) than the control group concerning both

		center of pressure root mean square and velocity.