

Electromechanical gait training with functional electrical stimulation: case studies in spinal cord injury

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Abstract - Four spinal cord-injured (SCI) patients, one tetraparetic, two paraparetic, and one patient with an incomplete cauda syndrome, more than 3 months postinjury, who were unable to walk at all, or with two therapists. They received 25 min of locomotor training on the GT plus FES daily for 5 weeks in addition to the regular therapy.

The patients tolerated the programme well, and therapists rated the programme less strenuous compared to manually assisted treadmill training. Gait ability improved in all four patients; three patients could walk independently on the floor with the help of technical aids, and one required the help of one therapist after therapy; gait speed and endurance more than doubled, and the gastrocnemius activity increased in the patients with a central paresis.

This combined technique allows intensive locomotor therapy in SCI subjects with reduced effort from the therapists. The patients' improved walking ability confirmed the potential of locomotor therapy in SCI subjects.