

THE EFFECTS OF FUNCTIONAL ELECTRICAL STIMULATION CYCLE ON NON-HEMIPLEGIC QUADRICEPS IN STROKE PATIENTS (PILOT STUDY)

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Objective: To investigate the effect of functional electrical stimulation (FES) cycle on strengthening of non-hemiplegic limb and gait performance in stroke patients.

Methods: Fourteen hemiplegic patients after stroke were recruited. They underwent FES cycle for 30 minutes (five times every week for 4 weeks) with conventional therapeutic exercise. Primary outcome was isokinetic/isometric torque in non-hemiplegic limb. Secondary outcomes were gait performance measured with walking velocity (10 meter walk test; 10 MWT) and timed up and go test (TUG), motor function with Motricity Index (MI) and Modified Motor Assessment Scale (MMAS), strength of paralyzed limb with Medical Research Council (MRC), spasticity with Modified Ashworth Scale (MAS), functional ambulation ability with Functional Ambulation Category (FAC) and activities of daily living with Modified Barthel Index (MBI). They were recorded at before and 1 month after training.

Results: Isometric torque of quadriceps of non-hemiplegic limb and MRC grade of hamstring of hemiplegic limb were significantly improved after training. TUG, FAC and MBI were also significantly improved after treatment. 10 MWT, MI, MMAS, spasticity and muscle power of quadriceps and isokinetic torque of hamstring and quadriceps did not show significant difference after training. There were no adverse events during experiment.

Conclusion: FES cycling improved muscle strength of quadriceps of non-hemiplegic limb and gait performance. FES cycling may be helpful for improvement of gait in stroke patient. However, randomized control study is necessary to confirm the therapeutic effect of FES cycle.