



The effect of common peroneal nerve stimulation on quadriceps spasticity in hemiplegia

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Summary

Contemporary physiotherapy for the neurologically impaired patient puts emphasis on the management of spasticity. A randomised controlled trial of the Odstock Dropped Foot Stimulator (ODFS), a common peroneal stimulator used to correct drop-foot during walking, showed a reduction in spasticity of the quadriceps muscles in a sample of 32 chronic hemiplegic subjects. Both treatment (FES) and control groups received a course of 10 physiotherapy sessions during the first 4 weeks of the trial period. The treatment group used the stimulator as part of the physiotherapy sessions and independently each day as they found useful. Both groups received the same amount of therapy contact time. The treatment group continued to use the stimulator for the 12 week period. Assessments also included measurement of walking speed and effort of walking, gait analysis and mobility and quality of life questionnaires. Results of these tests are not presented in this paper but are referred to in relation to changes in spasticity. Spasticity of the quadriceps muscles was measured using the Wartenberg pendulum test. Results showed that during the first four week period both groups had a reduction in spasticity which was statistically significant in the control group; measured by both the Relaxation index ($p=0.005$) and the area beneath the curve ($p=0.036$) and in the FES group only as the area beneath the curve ($p=0.028$) At 12 weeks reduction in spasticity in the control group was no longer statistically significant in either of these parameters whereas in the treatment group reduction measured as area beneath the curve was statistically significant ($p=0.001$). There was no statistically significant difference between the two groups. These results are discussed in relation to the subject of measurement of spasticity, the effect of physiotherapy on spasticity and observations made on changes in speed and effort of walking.