Walking on an uneven surface: the effect of common peroneal stimulation on Gait parameters and relationship between perceived and measured benefits in a sample of participants with a drop-foot

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Objectives
To examine the effect of using a common peroneal stimulator on an even and an uneven surface, and to compare measures with perceived response to stimulation.

Method
Participants had a drop-foot caused by a stroke (n=13) or Multiple Sclerosis (MS) (n=7) and had used a common peroneal stimulator for > three months prior to the study. Walking speed and Physiological Cost Index (PCI) were recorded under four conditions: with and without stimulation over an even and an uneven surface. Participants also completed a questionnaire.

Results
A statistically significant increase in walking speed and decrease in PCI was identified when the stimulator was used. There was a trend to greater improvement on the uneven compared to the even surface. A correlation between perceived benefit of stimulation and a measured decrease in PCI was detected.

Conclusion
Stimulation may be particularly beneficial for the more difficult task of walking on an uneven surface. Perceived benefit was related to a reduction in effort of walking not increased speed.

Key words: Stroke, Multiple Sclerosis, Common peroneal stimulation, Drop-foot, Gait