



## **Clinical Use of the Odstock Dropped Foot Stimulator. Its Effect on the Speed and Effort of Walking.**

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**Objective:** To assess the clinical effectiveness of the Odstock Dropped Foot Stimulator by analysis of its effect on Physiological Cost Index (PCI) and speed of walking. This Functional Electrical Stimulation (FES) device stimulates the common peroneal nerve during the swing phase of gait.

**Design:** A retrospective study of patients who had used the device for four and a half months.

**Subjects:** 151 patients with a dropped foot resulting from an upper motor neurone lesion.

**Setting:** The Medical Physics and Biomedical Engineering Department of a District General Hospital specialising in the clinical application of FES and a Neurophysiotherapy Department in a separate hospital.

**Main outcome measures:** Changes in walking speed and effort of walking, as measured by PCI over a 10m course.

**Results:** There was a 92.7% compliance with treatment. Stroke patients showed a mean increase in walking speed of 27% ( $p < 0.01$ ) and reduction in PCI of 31% ( $p < 0.01$ ) with stimulation and changes of 14% ( $p < 0.01$ ) and 19% ( $p < 0.01$ ) respectively whilst not using the stimulator. Multiple sclerosis patients gained similar orthotic benefit but no "carry-over".

**Conclusions:** The measured differences in walking with and without stimulation were statistically significant in the stroke and multiple sclerosis groups. In this study use of the stimulator improved walking. Those with stroke demonstrated a short term "carry-over" effect.