Correction of Dropped Foot using the Odstock Dropped Foot stimulator (ODFS)

Clinical Outline Summary

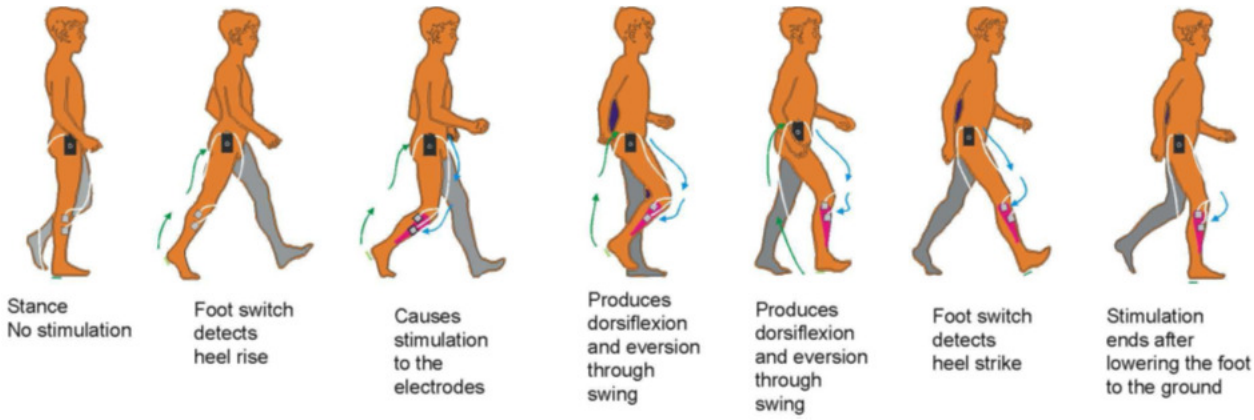
- Dropped foot is the inability to lift the foot and to advance the leg forward in a stepping motion during walking. Dropped foot is a common impairment that limits walking following damage to the brain or spinal cord (stroke, brain/spinal cord injury & MS)

- Functional Electrical Stimulation (FES) is a technique used to produce contractions in paralysed muscles by the application of small pulses of electrical current to the nerves that supply the muscles. The stimulation is controlled in such a way that the movement produced provides useful function. A Dropped Foot Stimulator is an FES orthosis that produces functional movement in the leg by the application of small pulses of electrical current to the common peroneal nerve (CPN). Stimulation of the CPN improves foot lift and leg excursion during walking.

- Dropped foot stimulators can be used to assist walking in any neurological condition resulting from an upper motor-neuron lesion (damage to the brain or spinal cord).

- Since the introduction of the technology over 20 years ago, patients with stroke, brain injury, multiple sclerosis and other neurological conditions have been shown to benefit significantly from use of the **Odstock Dropped Foot Stimulator (ODFS**) during walking (see attached reference list of published studies) .

- The **Odstock Dropped Foot Stimulator (ODFS**) stimulates the common peroneal nerve using self adhesive skin electrodes positioned on the lower leg. Stimulation is timed to the walking cycle by use of a pressure switch placed in the shoe under the heel and wired to the stimulator. Stimulation begins when the heel is lifted from the ground and ends just after heel strike. Stimulation causes the foot to lift and assists with the excursion of the leg forward in the stepping motion. Stimulation also acts to stabilize the ankle when weight is loaded on the foot on stance phase of gait. See below:

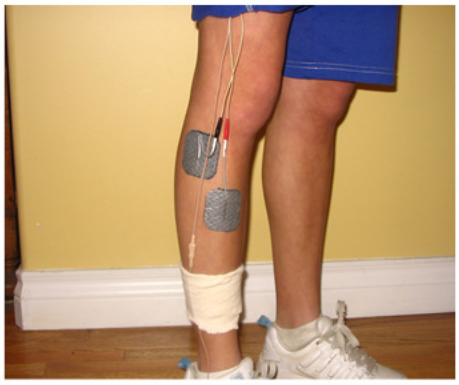


- The ODFS is designed to be a **long term orthosis** and used on a daily basis for walking activities. The device can be donned in the morning and worn all day. Stimulation can be paused at any time when the user is resting.
- Power is provided to the device by a 9 volt battery

Evidence from studies: (please see attached reference list below)

- Increased walking safety due to reduced incidence of tripping
- Increased ankle stability in stance phase of gait
- Increased walking speed
- Reduced effort of walking (less fatigue) & ability to walk longer distances
- Increased confidence and independence when walking due to reduced fear of tripping and falling
- Decreased spasticity in the affected leg & improved range of motion at the ankle

The ODFS Pace can be worn at the waist or the knee





Setting & testing walking parameters in the clinic





Development of the ODFS

- The Odstock Dropped Foot Stimulator (ODFS) was developed at the Department of Medical Physics at Salisbury District Hospital, UK in 1989
- In 2000 [14]Use of the ODFS was recommended as an intervention for neurologically impaired gait in the Royal College of Physicians “Clinical Guidelines on Stroke”.
- To date, in the UK, over 2000 patients have been fitted with an ODFS for dropped foot
- In July 2008, published guidelines by the National Institute of Clinical Excellence (NICE) recommended dropped foot stimulators as an intervention in stroke. {www.nice.org.uk/Guidelines/IPG278}.

- In November 2008, the ODFS received Health Canada approval as a medical device for the treatment of dropped foot and this device is now available to patients in Canada.

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