

The freeSTEP™ LE NeuroProsthesis

is a device consisting of a portable neuromuscular stimulator, a lycra-spandex sleeve with electrodes (BioSleeve™) or cuff for the lower leg, and a heel switch. It is designed to stimulate the dorsiflexor muscles during the swing phase of gait to achieve toe clearance. It is indicated in patients with moderate to severe foot drop resulting from central nervous system (CNS) disorders. The term “NeuroProsthesis” means it is a replacement for the portion of the CNS that has been lost or impaired that is responsible for voluntary control of the dorsiflexor muscles.

Foot Drop can result from partial or complete paralysis of the dorsiflexor muscles and is often compounded by spasticity of the plantarflexor muscle group. The NeuroProsthesis dorsiflexes the foot in a physiological manner and does not restrict ankle motion. Furthermore, chronic use of muscle stimulation can decrease muscle atrophy, increase local blood circulation, reduce spasticity, prevent joint contracture and increase range of motion.

Indicated in patients with foot drop secondary to upper motor neuron lesion:



- Stroke
- Cerebral Palsy
- Multiple Sclerosis
- Spinal Cord Injury
- Traumatic Brain Injury

Foot Drop is caused by paralysis of the tibialis anterior and peroneal muscles.

freeSTEP stimulates these muscles to produce active dorsiflexion of the foot during swing-phase of gait.



Bioflex offers two versions of freeSTEP: The BioSleeve stimulates over the dorsiflexor muscle group, while the Cuff stimulates common peroneal nerve.

How the LE NeuroProsthesis works during the gait cycle:

