




FUNCTIONAL ELECTRICAL STIMULATION CONSIDERATIONS

FES Device	Description	Benefits	Items that May Limit Success	Other Considerations	Examples
FES Specific Systems for Foot Drop	Provides dorsiflexion using stimulation to the peroneal nerve during swing and initial contact using wireless technology with a surface electrode cuff and sensors to detect gait phases	<ul style="list-style-type: none"> ○ Activates the DF muscles during swing & may improve strength & motor control ○ May enhance recovery & participation following acute stroke ○ Responsive to walking at variable gait speeds ○ May allow barefoot walking ○ Allows variety of shoe wear ○ Optional thigh cuff for FES to quadriceps & hamstrings ○ ↑ gait speed 	<ul style="list-style-type: none"> ○ PF spasticity (\geqMAS 3) ○ Equinovarus ○ Knee buckling ○ Genu recurvatum ○ Sensory intolerance of stimulation or electrode cuff ○ Peripheral neuropathy ○ Hand function needs for independent use ○ ↓ baseline gait speed ○ ↓ balance 	<ul style="list-style-type: none"> ○ Cost of device & supplies ○ Variable insurance coverage ○ Control systems differences between available devices ○ Requires charging 	<p>Leg cuff with electrodes and accelerometer/gyroscope to detect leg position during gait</p>  <p>Image courtesy of Bioventus</p>
FES General Electrical Stimulation Device	Provides dorsiflexion using stimulation to the peroneal nerve during swing and initial contact using surface electrodes and a pressure sensitive foot switch detect swing phase	<ul style="list-style-type: none"> ○ Activates the DF muscles during swing & may improve strength & motor control ○ May enhance recovery & participation following acute stroke ○ Responsive to walking at variable gait speeds ○ ↑ gait speed 	<ul style="list-style-type: none"> ○ PF spasticity (\geqMAS 3) ○ Equinovarus ○ Knee buckling ○ Genu recurvatum ○ Sensory intolerance of stimulation ○ Peripheral neuropathy ○ ↓ baseline gait speed ○ ↓ balance 	<ul style="list-style-type: none"> ○ Electrode placement challenges ○ Inconsistent triggering of foot switch ○ Primarily for in-clinic use 	<p>Electrode setup with a small portable unit</p>  <p>Foot switch inside the shoe. FES is delivered when pressure is taken off of the switch</p> 



References

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