Small electrical currents that replace natural activation and/or modulate neural circuits

**FES speaks the language of the nervous system**

Precise targeting

**Fewer side effects, instant on and off**

Illustration by Cleveland FES Center
Functional Electrical Stimulation (FES)

Almost all body functions influenced or controlled by nervous system

FES can be used for many neural injuries & diseases

- Motor and Sensory -
- Neuromodulation -
- Activation and Inactivation -

Deep brain stimulation: Parkinson's, depression
Vagal nerve stimulation: Obesity, pulmonology
Enhancing recovery: post-stroke, post-TBI
Regaining voluntary function/improving movement control
Controlling tremor
Treating weak muscles
Preventing/treating pressure sores
Proprioception and tactile sensation
Pain mitigation
Erection and electro-ejaculation
Stepping and walking
Controlling spasticity

Epilepsy
Sight
Hearing
Breathing assistance
Cough assistance
Cardiovascular exercise
Reaching
Preventing/treating contractures
Bladder and bowel control
Grasping
Transfers
Improving circulation
Standing
Preventing/treating osteoporosis

Functional Electrical Stimulation (FES) can be used for many neural injuries & diseases.
FES Applications

Contralaterally Controlled FES | Stroke
Jayme Knutson, PhD

Hand Grasp and Release | SCI
Hunter Peckham, PhD

Arm Reaching | SCI
Robert Kirsch, PhD

Reconnecting the Hand and Arm to the Brain | SCI
Bolu Ajiboye, PhD and Robert Kirsch, PhD

Tactile Sensation | Amputation
Dustin Tyler, PhD

Restoration of Cough | SCI
Anthony DiMarco, MD and Krzysztof Kowalski, PhD
The Neural Prosthesis (NP) Webinar Series brings together researchers, scientists, clinicians and students to encourage the exchange of scientific information on global emerging neuromodulation and neurostimulation topics.