

Workshop: FES to improve hand function

Organizer: Thierry Keller, Tecnia, Spain.

FUNCTIONAL ELECTRICAL STIMULATION (FES) uses electrical impulses to invoke motor functions through targeted nerve activation. In order to facilitate higher functional selectivity a multi-channel FES array technology has been developed. It allows activation of selective thumb, finger and wrist movements. The participant will learn from theoretical and practical insights the potential of new FES array technologies in upper extremity applications.

The hands-on workshop in the afternoon will allow participants to understand the principles of the technology in the application of FES enabled hand grasp. Participants will learn in small groups to set up and configure a multi-channel FES system. They will experience the potentials and limitations of non-invasive electrical stimulation of arm and hand muscles from a first-person perspective.

Goals:

The participant will learn from theoretical and practical insights the potential of new FES array technologies. In a group competition the participants will be able to demonstrate how selective arm and hand muscles can be activated to generate functional grasps.

This includes the following experience:

- Hands-on selection of FES stimulation parameters and positioning of 'virtual electrodes'.
- Threshold assessment of afferent and efferent stimulation.
- Become familiar with the achievable selectivity, perception and performance of transcutaneous FES arrays.