To participate in this study, you must:

1. **Have limited hand function** due to cervical spinal cord injury, brachial plexus injury, cerebral palsy, brainstem stroke, muscular dystrophy, amyotrophic lateral sclerosis (ALS) or other motor neuron diseases.
2. **Be age 18-70**
3. **Be in Pittsburgh** for the duration of the research trial (you may stay at UPMC Mercy Rehabilitation Institute during the implantation period).

Additional criteria must also be met in order to participate. We will review all of the participation criteria with you prior to enrollment.

**ADDITIONAL INFORMATION**

This research study involves risks that are typically associated with any neurosurgical procedure. Please contact the research team for more information and a description of the risks involved with this study.

Your participation is completely voluntary and you may withdraw from this project at any time.

You will be compensated $20-70 for each study visit plus travel and housing if you are from out of town. We expect a total of 35 visits for all study procedures.

This research is sponsored by:

**OTHER RESEARCH STUDIES**

The Human Rehabilitation and Neural Engineering Lab is enlisting participants with or without physical disability to participate in many types of BCI research studies at the University of Pittsburgh.

If you are interested in participating in any of our research studies, please call us for more information.

Contact Research Coordinator:
Debbie Harrington, **412.383.1355**

**BRAIN-COMPUTER INTERFACE (BCI) RESEARCH**

Join our BCI research team

**UNIVERSITY OF PITTSBURGH**
DEPARTMENT OF PHYSICAL MEDICINE & REHABILITATION

Developing brain-controlled assistive technology for individuals with upper limb disabilities.

PM&R / Human Rehabilitation and Neural Engineering Lab (hRNEL)

You can learn to control a robotic prosthetic arm with your thoughts.
**Assistive technology** can enhance function for individuals with motor impairments to improve their quality of life. Through brain-computer interface (BCI) technology, brain signals can be recorded and used to control devices such as a computer or robotic limb. BCI technology has the potential to benefit individuals with physical disabilities by enabling them to complete daily living tasks and increasing their independence.

Pitt’s Human Rehabilitation and Neural Engineering Laboratory (hRNEL) is conducting a study to investigate the use of electrocorticography (ECoG) for brain-computer interface technology. ECoG records neural activity directly from the brain’s surface using an ECoG sensor.

On-line Info about this Research

YouTube Video, “Paralyzed man moves robotic arm with his thoughts”
www.youtube.com/watch?v=yff20TlHv34

Popular Mechanics, “10 World Changing Innovators for 2012”

UPMC / Brain-Computer Interface
www.upmc.com/bci

University of Pittsburgh / Human Rehabilitation & Neural Engineering Laboratory
hrnel.pitt.edu

**Study Procedures**

As part of this study, an FDA approved ECoG sensor will be surgically implanted through a temporary 5x5 cm (2x2 inch) opening in your skull.

The wires from the sensor will be tunneled to a spot in your chest where they can be connected to our computer system. You will likely spend 1-2 days in the hospital for post-surgical monitoring.

While the sensor is implanted for <30 days, our research team will conduct brain-computer interface training sessions with you for 5-6 days per week (minimum of 25 hours per week).

The goal of training is for you to learn to use your neural activity to control computer cursors, video games, and assistive technology.

After 29 days or less, the ECoG sensor will be removed. You will likely stay in the hospital for 1-2 days after surgery.

If you may be interested in participating, please contact our Research Coordinator, Debbie, at:

Phone: 412-383-1355
Email: harringtond2@upmc.edu