

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.



You can learn to control a robotic prosthetic arm with your thoughts.

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:

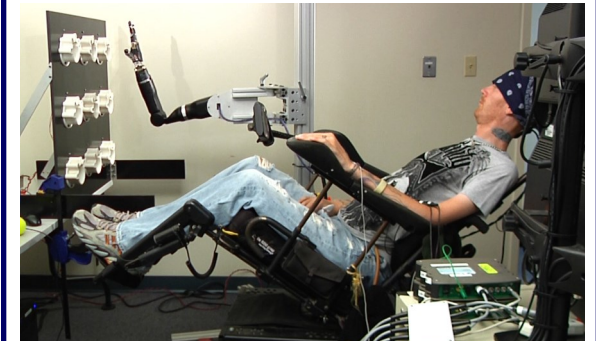
Debbie Harrington, **412.383.1355**

BRAIN-COMPUTER INTERFACE (BCI) RESEARCH

Join our BCI research team



UNIVERSITY OF PITTSBURGH
DEPARTMENT OF PHYSICAL
MEDICINE & REHABILITATION



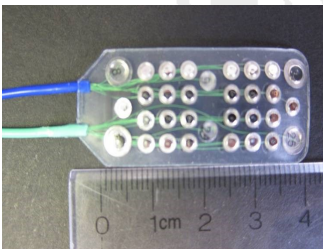
Developing brain-controlled assistive technology for individuals with upper limb disabilities.

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

BRAIN-COMPUTER INTERFACE RESEARCH

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.



The ECoG sensor will be placed on your brain surface and wires will be tunneled to a site on your chest.

The goal of this study is to demonstrate successful control of computer cursors and assistive technologies such as a robotic arm using brain signals recorded with ECoG.

On-line Info about this Research

YouTube Video, "Paralyzed man moves robotic arm with his thoughts"

www.youtube.com/watch?v=yff20TIHv34

Popular Mechanics, "10 World Changing Innovators for 2012"

www.popularmechanics.com/technology/engineering/news/10-world-changing-innovators-for-2012?click=pp#slide-7

UPMC / Brain-Computer Interface

www.upmc.com/bci

University of Pittsburgh / Human Rehabilitation & Neural Engineering Laboratory

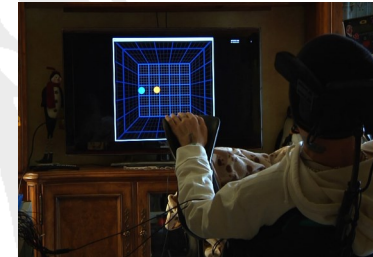
hrnel.pitt.edu

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.



UNIVERSITY OF PITTSBURGH
DEPARTMENT OF PHYSICAL
MEDICINE & REHABILITATION
Human Rehabilitation and Neural
Engineering Lab (hRNEL)

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

Phone: **412-383-1355**

Email: **harringtond2@upmc.edu**