

## Our purpose

We study the types of sensations produced by electrical stimulation of the spinal cord and spinal roots and the effects of stimulation on phantom limb pain and sensations.

By 2020, it is estimated that over 2 million people in the United States will be living with limb loss. Upper extremity amputations are predominantly traumatic injuries occurring in relatively young and active individuals, and can lead to significant decreases in function for daily life.

Restoration of sensory function is crucial for an integrated prosthetic device. Our aim is that our study findings will further the development of a fully integrated functional prosthetic limb.

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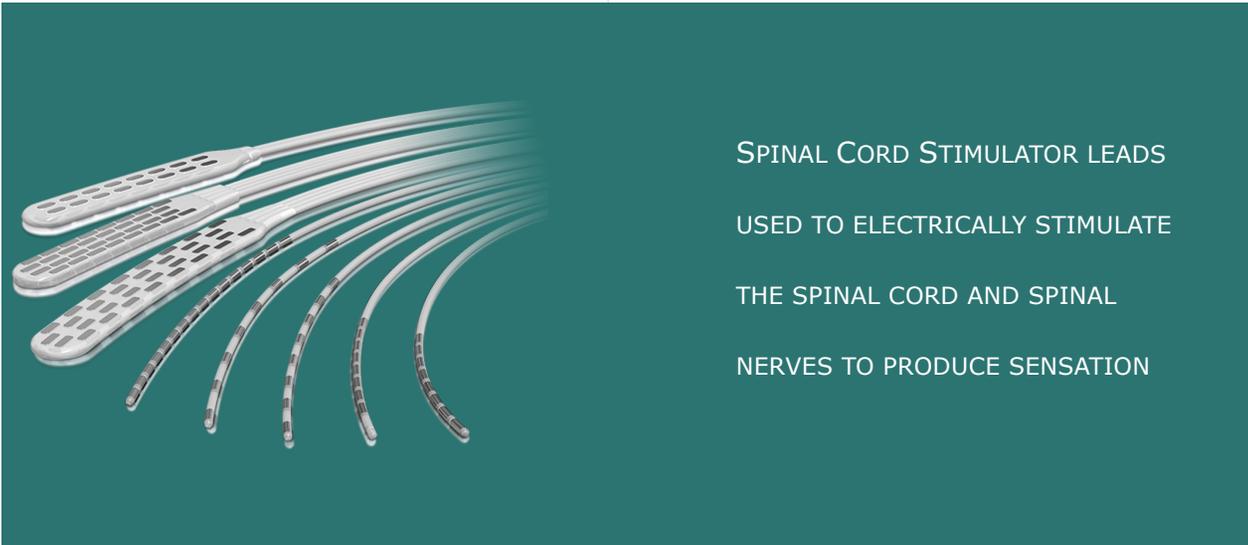
# University of Pittsburgh

## **RESEARCH**

### **For Individuals with Upper Limb Amputation**

Epidural Spinal Cord Stimulation for  
Sensory Restoration and Phantom Limb  
Pain Reduction in Upper-Limb Amputees





SPINAL CORD STIMULATOR LEADS  
USED TO ELECTRICALLY STIMULATE  
THE SPINAL CORD AND SPINAL  
NERVES TO PRODUCE SENSATION

## This Study Includes

Basic information about your history and amputation, an MRI, pain questionnaires, and a medical procedure to insert stimulation leads near your spinal cord. With leads in place, you will participate in up to 20 testing sessions in less than one month. During each session, electrical stimulation will be applied through the implanted electrodes. Tests will be performed to determine the types of sensations produced by stimulation. You will be asked to describe the sensations that you feel and any effects upon phantom limb pain and/or phantom limb sensations.

After testing is completed, a physician will remove the leads by gently pulling on them.

**We are investigating the use of spinal cord and spinal nerve stimulation to restore sensation after amputation.**

## Our Goal

The Rehabilitation and Neural Engineering Laboratory (RNEL) wants to develop a device that stimulates spinal nerves with the goal of producing sensations that feel like they are coming from the amputated limb. We will test the system to determine the types of sensations it produces and whether those sensations affect phantom limb pain.

## Risks

This study includes risks that are typically associated with a medical procedure. Please contact the research team for a description of the risks involved.

## Eligibility

To participate in this study, you must:

- Have an amputation of one or both arms
- Be at least 6 months post amputation
- Be between the ages of 18 and 70.

Contact us to review additional criteria required to participate in this study.

Participants will be compensated for their time, travel and meals during the study.

## Contact Us

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