Apr 16th, 2:00 PM - 3:00 PM

Changes in EEG Brain Activity during Physical and Social Pain Assessment in Chronic Pain Patients Undergoing Spinal Cord Stimulation (SCS) Therapy

Nitesh Kumar
*Illinois Wesleyan University*

Randi Wilson
*Illinois Wesleyan University*

Joseph Williams, Faculty Advisor
*Illinois Wesleyan University*

David Cedeno, Faculty Advisor
*Illinois Wesleyan University*

Follow this and additional works at: [http://digitalcommons.iwu.edu/jwprc](http://digitalcommons.iwu.edu/jwprc)

Part of the [Education Commons](http://digitalcommons.iwu.edu/jwprc), and the [Psychology Commons](http://digitalcommons.iwu.edu/jwprc)

Kumar, Nitesh; Wilson, Randi; Williams, Faculty Advisor, Joseph; and Cedeno, Faculty Advisor, David, "Changes in EEG Brain Activity during Physical and Social Pain Assessment in Chronic Pain Patients Undergoing Spinal Cord Stimulation (SCS) Therapy" (2016). *John Wesley Powell Student Research Conference*. 11.


This Event is brought to you for free and open access by The Ames Library, the Andrew W. Mellon Center for Curricular and Faculty Development, the Office of the Provost and the Office of the President. It has been accepted for inclusion in Digital Commons @ IWU by the faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.
Spinal Cord Stimulation (SCS) therapy is an effective method of using electricity to treat chronic pain when other therapies, including invasive surgical interventions, have failed. In SCS, stimulating electrode arrays (called leads) are implanted epidurally inside the spinal canal above the dorsal aspect of the spinal cord through a minimally invasive, reversible surgical procedure. The application of safe levels of electrical current to the dorsal portion of the spinal cord is known to provide an analgesic effect, reducing pain in patients by 68% compared to their initial pain levels. SCS improves patients’ functional and psychological status, enables patients to return to work, and reduces patients’ reliance on opioid pain medication. While SCS has a clear therapeutic effect, the exact neural mechanism behind the analgesic effects of SCS remains poorly understood. Other studies have shown consistent changes in frontal and parietal cortex brain activity during both physical and social pain. The present study recorded electroencephalogram (EEG) brain activity to examine the neural mechanisms associated with both social and chronic physical pain in subjects currently undergoing SCS therapy. EEG is a common technique used in psychological and medical research to record the firing of brain cells (through an electrode cap placed over the scalp) during various behavioral states. This is the first study to examine changes in EEG brain patterns in SCS patients for both physical and social pain. Understanding the neural mechanism behind SCS therapy can lead to refinements in SCS procedures and potentially increase the efficacy of the treatment and, in turn, the quality of life of patients who suffer from chronic pain conditions.