

Polhemus Motion Trackers Enable Measurement of the Effectiveness of Brain Stimulation Therapy

“Polhemus tracking technology is able to produce repeatable and reliable results—which is critical in obtaining the necessary data.”

Dr. Howard Poizner

Imagine holding a cup of coffee, and just as you begin to take a sip, your hand begins to tremble uncontrollably. It's this type of simple daily task that leaves Parkinson's Disease patients feeling frustrated and asking for answers--from doctors and the research community.



Dr. Howard Poizner, a world renowned Neuroscientist, is gaining ground in Parkinson's research, and **Polhemus motion trackers** have proven to be a critical component in a research study that measures the effectiveness of Brain Stimulation Therapy.

Brain Stimulation Therapy performed on patients with **Parkinson's Disease** involves surgery in which small electrodes are implanted in the brain and controlled by a pacemaker-like device. These electrodes send electrical pulses to stimulate areas of the brain responsible for the tremors brought on by Parkinson's.

At the Institute for Neural Computation in La Jolla, California, the approach is to analyze the normal motor control and learning processes, and the nature of the breakdown in those processes in patients with selective failure of specific sensory or motor systems of the brain. (from Poizner lab web site)

<http://inc.ucsd.edu/~poizner/>.



The Poizner Lab at the Institute for Neural Computation

Working with the patients after the surgery enables Dr. Poizner to evaluate the effectiveness of Brain Stimulation Therapy. By using Polhemus **precision motion tracking technology**, Dr. Poizner is able to measure and evaluate how well the therapy is working. By connecting the light-weight and unencumbering **Polhemus sensors** to the patient's hand, for example, he is able to capture quantitative data and analyze the degree of trembling the patient experiences, down to the slightest of movements. Dr. Poizner then reports this quantitative data to the clinical side, providing critical insight into how well the therapy is working.



Polhemus Motion Tracker set up in the Poizner Lab

Polhemus' **proprietary electromagnetic technology** is ideal for this type of work because of its high level of accuracy and ability to produce repeatable results.

When selecting the **precision motion tracker** for this research project, Dr. Poizner said, "It was important that we accurately tracked in space without any line of sight occlusions... This is very high tech—as it measures the most subtle movement."

Dr. Poizner has used various **Polhemus motion tracking** products, including:



LIBERTY Motion Tracking System

- **FASTRAK**—used to digitize positions of EEG electrodes

- **LIBERTY**—both 8- and 16- sensor systems used for measuring patient reach and grasp, and other biomechanical metrics

Research in this area of **neuroscience** has been particularly challenging in the past. A method for **capturing body movement three-dimensionally** and correlating it with a patient's brain wave activity will be a significant advancement in understanding therapeutic effectiveness.

According to Dr. Poizner, "The ultimate goal was to be able to quickly and cheaply provide an assessment in a quantitative, correlated, rigorous fashion."

This study of **Measuring the Effectiveness of Brain Stimulation Therapy** was presented at the 2010 Neuroscience Show in San Diego, California. To contact Dr. Poizner directly, visit the Poizner Lab at: <http://inc.ucsd.edu/~poizner/>.

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