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Great Lakes NeuroTechnologies' KinetiSense™ technology used in Parkinson's disease gait and balance study

Cleveland, OH – August 15, 2011 – **Great Lakes NeuroTechnologies' KinetiSense** motion sensor technology was used in a clinical study to capture and quantify the effect of Deep Brain Stimulation (DBS) on gait and balance impairment in Parkinson's disease (PD). DBS surgery is typically performed when PD medication (e.g. levodopa) no longer adequately treats PD symptoms. While in the early stages of the disease, symptoms including tremor, bradykinesia and rigidity are most predominant and effectively treated with DBS; optimizing DBS parameters for gait and balance deficits in advanced patients is less understood and more challenging.

Studies were conducted through an **NIH**-funded program in collaboration with **University Hospitals** (Cleveland, OH) to develop a patient-worn system comprised of wireless, compact motion sensors designed to automatically capture and rate gait and balance impairment severity in PD patients.

University Hospitals used **Great Lakes NeuroTechnologies'** (www.GLNeurotech.com) wireless motion capture device, **KinetiSense**, to capture body movement while PD patients performed standardized gait and balance motor tasks based on the Unified Parkinson's Disease Rating Scale (UPDRS). **KinetiSense** integrates inertial motion sensing for a wide variety of motion analysis research applications. Three orthogonal accelerometers and gyroscopes provide three dimensional motion data. The wireless accelerometers and gyroscopes in the **KinetiSense** unit can be placed on any area of the body to measure the linear acceleration and angular velocity of body-mounted sensor movements. Results demonstrated high correlation between expert clinician UPDRS ratings and objective scores automatically generated from motion data. The UPDRS tasks were repeated with deep brain stimulation turned on and off. The **KinetiSense** device successfully detected subtle changes in gait and balance in response to stimulation. The lead study coordinator at **Great Lakes NeuroTechnologies**, Thomas Mera, MS, stated,

> *"A standardized platform for repeatable, automated testing to assess gait and balance in response to DBS settings should optimize patient outcomes and provide a novel research tool for new DBS protocols targeted to gait and balance. This will also provide rural communities with improved access to these innovative tools."*

About Great Lakes NeuroTechnologies
Great Lakes NeuroTechnologies is committed to pioneering innovative biomedical technologies to serve research, education, and medical communities, improving access to medical technology for diverse populations, and positively impacting quality of life for people around the world.

About Great Lakes NeuroTechnologies KinetiSense™
KinetiSense is a compact wireless device that integrates inertial motion sensing and electromyography for a wide variety of motion analysis research applications. Three orthogonal accelerometers and gyroscopes provide three dimensional motion data while two channels of EMG record muscle activity.

About The National Institutes of Health (NIH)

NIH is the largest source of funding for medical research in the world, creating hundreds of thousands of high-quality jobs by funding thousands of scientists in universities and research institutions in every state across America and around the globe. NIH is made up of 27 Institutes and Centers, each with a specific research agenda, often focusing on particular diseases or body systems. NIH leadership plays an active role in shaping the agency's research planning, activities, and outlook. . The above work is supported by a Phase I SBIR grant (1R43AG033947-01) from the NIH National Institute on Aging.

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