



Pre-Conference Session Description

Course Title: Robotic Rehabilitation: Evidenced-based Training of Balance, Posture, Mobility, and Gait

Presenters:

Sunil K. Agrawal, PhD, Chair

Joseph Dutkowsky, MD, Diane Damiano, PT, PhD, Andrew Gordon, PhD, Sunil Agrawal, PhD, Cole Galloway, PhD, PT, Deborah Gaebler-Spira, MD, David P. Roye, MD, Heakyung Kim, MD, Rosemarie Murray, PhD Student, Danielle Stramel, PhD Student

Target Audience: Physicians, surgeons, therapists, engineers, clinical and research professionals. No prerequisite knowledge of robotics is required.

Course Summary:

Robotics has evolved in the last 50 years and is widely used today in manufacturing, entertainment, and others. Improvements in technology have led to miniaturization of robotic components, their reliability and precision. Wearable technologies are now being used to collect human data in daily activities and in functional rehabilitation. This course will begin with a quick background in robotics so that all course participants become comfortable with the technology. Evidence-based presentations will demonstrate current research and clinical applications of robotics.

This course will provide a multi-disciplinary perspective on how technology and robotics can be combined with traditional rehabilitation to improve balance, posture, mobility and gait in children with motor impairments. The workshop will center around recent innovations with hard clinical evidence from published results in the areas of gait, rehabilitation, trunk and posture control, and mobility. The presentations will critically explore the successes, failures, and challenges as robotics and other technologies rapidly become an integral part of clinical rehabilitation. Question and answer times will be provided to engage each speaker and consider how this technology may be used to enhance the professional work of the attendees.

Objectives: To introduce robotics to those who are new to the field and enhance participants' knowledge of the potential of robotics to serve as research and clinical tools to enhance the lives of persons with disabilities. This will be accomplished through lectures on different applications of rehabilitation robotics and evidence-based research and clinical applications. It is also hoped that this will increase the number of professionals in the field who are comfortable and knowledgeable with this technology so that future applications and collaborations may be developed.

At the end of this Pre-Conference Session, participants will be able to discuss:

1. Define robotics conceptually from physical, technical, research and clinical dimensions.
2. Understand the multidisciplinary applications of robotics to research involving persons with disabilities.
3. Examine current clinical applications of the use of robotics to enhance functions and quality of life treatments.
4. Encourage participants to explore applications of robotics to each individual's own professional field.