Tutorial #3- Tuesday, May 17, 1:00pm-3:00pm

Outreach Approaches to Innovate and Apply Novel Motion Analysis Technology beyond the Lab and into the Community

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Purpose

Technological progress and cost reduction has enabled more versatile and effective applications of motion analysis. The purpose of this tutorial is to describe the technological innovation process, recent transition of motion analysis out of the lab, community partnership development, and unique preliminary results from point-of-care research studies.

Intended Audience

Physicians, physical therapists and occupational therapists will see unique methods to measure patient progress outside the lab and improve quality of care through quantitative reporting. Engineers, researchers, and assistive technologists will be exposed to medical technology innovation and selection. Both groups will benefit from the results of several motion analysis research studies conducted in community settings using advanced technology.

Prerequisite Knowledge

Adequate background information will be provided for each topic area covered. A general familiarity with motion analysis or kinesiology and the clinical need for pediatric rehabilitation will aid in understanding.

Abstract

Clinical motion analysis typically requires a laboratory with significant and permanent equipment, but new innovations have substantially reduced the cost and increased the portability of systems, thus enabling clinicians and researchers to track patient progress in the community. A unique motion analysis platform includes gait analysis, upper extremity functional assessment, and wheeled mobility evaluation components, integrating cost-effective hardware with advanced musculoskeletal modeling. A hands-on demonstration of the systems provides a firsthand look at the latest in adaptable motion analysis technologies. Results of a recent longitudinal analysis of 72 pediatric patients undergoing a 7-week intensive therapy summer camp will be presented to demonstrate system applicability in community settings. Improved perspectives on quantitative point-of-care assessments will be included.

Learning Objectives

At the completion of this presentation, attendees will be able to: (1) describe the process of innovation, selection, and application of state-of-the-art, cost-effective, and adaptable motion analysis technologies, (2) recognize opportunities for research and clinical evaluation outside the laboratory, (3) compare markerless and marker-based techniques, and (4) measure patient progress outside the lab.

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Course Content Outline Time (Minutes)	TOPIC	PRESENTER(S)
5	Welcome & Presenter Introductions	G. Harris and P. Smith
10	Motion Analysis needs at a Community Pediatric Therapy Camp	J. Rammer
10	Clinical Assessment and Treatment Planning	J. Krzak and P. Smith
10	Motion Analysis Technology Innovation	T. Cohen
10	Low-Cost, Mobile Gait Analysis System	R. Boerigter
10	Pediatric Lofstrand Crutch-Assisted Gait	M. Teich
15	Live, Hands-on demonstration of low-cost, mobile system for gait analysis	R. Boerigter and M. Teich
10	Markerless Upper Extremity Motion Analysis System	J. Rammer
10	Functional Outcomes of UE Therapy Program	R. Zarb
15	Live, Hands-on demonstration of markerless upper extremity function & wheelchair mobility assessment	J. Rammer and R. Zarb
15	Q&A Session, Closing Remarks & Contacts	G. Harris and Team