



Priority Statement Title: Identifying and answering questions that change lives: advancing clinical biomechanics research

Priority Statement Code: LF2D

Domain: Function and Outcomes, Limb/Whole Body

Priority Statement

Background and Relevance

For biomechanics research to have a direct clinical impact and improve peoples' lives, clear pathways for communication between researchers and clinicians are necessary. This is critical not only for translating findings to the bedside but also for identifying problems that have the potential to have a large impact on clinical practice. Obstacles to communication include differences in culture and professional priorities between researchers and clinicians. One manifestation of the growing divide between researchers and clinicians is the recent decision of the Orthopedic Research Society and the American Academy of Orthopaedic Surgeons to discontinue co-locating their annual meetings. Many researchers have become "tools-based" rather than "problem-based". The technology of biomechanics research has become sophisticated and complex enough that it is often difficult to communicate the technology to clinicians. Moreover, the demands of the clinical environment (patient volume expectations, documentation, etc.) can inhibit clinicians' active participation in research. This widening gulf between practitioners and researchers leads to a disconnection between the types of questions that are interesting research problems and the problems that patients and clinicians face in daily life. To foster translational and transformational research, there needs to be a focus on promoting the right research questions to biomechanists.

Objectives

1. Increase the number of patient-focused studies in biomechanics research with clinical co-investigators
2. Increase number of publications with clinicians and biomechanists as co-authors
3. Develop patient-focused biomechanical outcome measures by identifying individuals' movement-related goals: This may require direct interaction with patients to identify elements of care which patients consider important to quality care outcomes.
4. Increase the number of research studies that use clinically relevant, participation-level outcome measures.
5. Increase clinical utilization of motion analysis and associated biomechanical outcome measures by improving clinician familiarity with these.

Additional barriers to these objectives include the lack of standardization, lack of RTC-validated uses, and lack of insurance coverage.

Recommended Actions

1. Establish an infrastructure to encourage communication between researchers and clinicians. Develop ways for trainees to spend time with clinicians in order to better understand patient concerns.
2. Increase clinical involvement on funded research projects that involve patient-oriented research. For example, development of new initiatives promoting co-PI projects between clinical and biomechanical researchers
3. Establish a library of patient-centered biomechanical outcomes following the model of the NIH outcome measures work (PROMIS, Neuro-QOL, and Toolbox).
4. Increase clinical utilization of biomechanical tools
 - a. Establish standardized tests and output formats (possibly through standards committees within our professional organizations).
 - b. Develop ways to identify and overcome barriers to research labs adopting standards.
 - c. Promote RCTs and other types of studies to validate motion analysis as a clinical tool



- d. Increase the number of clinical areas in which biomechanical evaluations and interventions are reimbursed by insurance