



Priority Statement Title: Crosspollination of Biomechanics and Related Disciplines

Priority Statement Code: LF3C

Domain: Cross-domain

Priority Statement



Background and Relevance

Biomechanists have traditionally been trained in a single field, and biomechanics research is often performed with limited communication or collaboration outside of the field of biomechanics. However, for biomechanics research to fulfill its purpose of ultimately benefiting patients, biomechanics researchers must collaborate with clinicians and engineers/scientists outside of their field of expertise. Collaborations are most effective when each collaborator has at least some familiarity or training in the disciplines of the other collaborators.

Objectives

The overall objective is increased crosspollination between biomechanics and other fields. In particular, we wish to create

- Biomechanists with training in clinical practice (pressures and time demands in clinical practice, clinical vocabulary, disorders, diagnostic techniques, interventions, long-term management, insurance coverage, emotional and social care, etc.)
- Biomechanists with familiarity in fields or techniques that are relevant to their research but outside of their expertise (e.g. physiology, genomics, etc.)
- Clinicians with training in biomechanics and biomechanical research (biomechanics research literature, basic biomechanical concepts and models, techniques, instrumentation, computation, hypothesis-based testing, etc.)

Recommended Actions

- Establish a center to:
 - disseminate information across disciplines
 - provide training in “common currency” techniques
 - fund cross-disciplinary training of graduate students, postdocs and researchers
 - provide training in techniques for individuals outside of the field
 - facilitate interdisciplinary collaborations
- Encourage and provide opportunities (and funding) for biomechanics graduate students to:
 - take courses in clinical fields (physical/occupational therapy, physiatry, physical medicine and rehabilitation, orthopedic surgery, etc.)



- intern in a clinical setting (e.g. rehabilitation hospital), cycling through various departments
 - be co-advised by clinicians
- Establish a mechanism (e.g. clinical postdoctoral fellowship) for individuals trained in biomechanics to obtain clinical training and vice versa.
- Encourage and provide opportunities for biomechanics researchers to:
 - obtain training in a clinical setting
 - collaborate with clinicians
 - co-advise graduate students in clinical disciplines (e.g. physical/occupational therapy, physiatry, physical medicine and rehabilitation, orthopedic surgery, etc.)
- Encourage and provide opportunities for biomechanics researchers to:
 - obtain training in a research lab or center to facilitate meaningful collaboration with related disciplines
 - collaborate with researchers in other areas relevant to physical function.
 - co-advise graduate students in science/engineering outside of biomechanics