



**Priority Statement Title:** Knowledge Sharing between Technical and Clinical Biomechanists

**Priority Statement Code:** CJ1E

**Domain:** Joint, Full-Body

### **Priority Statement**

#### **Background and Relevance**

Very valuable moment or muscle-actuated forward dynamic simulations of human movement are becoming more common. Nearly all gait simulations have been based upon global optimization, and the majority of the data sets that seed these simulations have derived from the conventional gait model. Induced acceleration analyses use a similar foundation for a multitude of other human activities. Inherent in these analyses are assumptions about expected degrees-of-freedom at normal anatomical joints. Conclusions drawn by technical partners are at times overly definitive, and suggest a lack of day-to-day clinical experience. At times, clinical partners do not have the technical background to challenge these conclusions. A need exists to build a “trans-domain bridge” between technical and clinical partners, from which enhanced translational research can emerge.

#### **Objectives**

Evaluate technically-based knowledge gaps for clinical partners.  
Foster development of educational programs for clinical partners to enhance their understanding of simulations, particularly their analytical foundation, their strengths, and their weaknesses.  
Evaluate clinically-based knowledge gaps for technical partners.  
Foster development of educational programs for technical partners to enhance their understanding of clinical treatments, particularly their medical foundation, their strengths (desired outcomes achieved), and their weaknesses.  
Support knowledge sharing through guided educational programs.

#### **Recommended Actions**

Use new or existing funding mechanisms to convene a group to evaluate technically-based knowledge gaps for clinical partners, and clinically-based knowledge gaps for technical partners; members of the group should be sought from relevant national societies (American Society of Biomechanics, Gait and Clinical Movement Analysis Society, American Physical Therapy Association, etc.).

Task the group mentioned above with the development of an implementation plan to address these gaps through educational programs.

Create funding mechanisms that emphasize knowledge sharing between technical and clinical partners in biomechanics, through these educational programs.

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