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In the past decade, biomechanics has made great strides on a number of fronts including advances in musculoskeletal modeling, the development of new mathematical tools such as induced acceleration analysis, and significant improvements in the ability to measure human motion. Within that decade, considerable emphasis has been placed on moving toward translational research, and biomechanics researchers routinely refer to their work as translational. Yet, with all of the sophisticated technology and all of the mathematical tools now at our disposal, the field of biomechanics has yet to achieve more than a fraction of the clinical applicability that related fields such as physiology have demonstrated for years. Outside of the area of gait analysis, widespread clinical applicability simply isn't there, and even gait analysis, the clinical flagship of our field, is still considered experimental by the insurance industry.

We are limited in our capacity to extend clinical applicability to the upper extremities in part because of our inability to obtain valid and reliable clinical measures of specific bony structures critical to the study of upper extremity mechanics. We are also plagued by inaccuracies with information basic to kinematic and kinetic analyses such as identification of segment COM locations, estimates of segment mass, inertial parameters, and joint centers. While errors associated with these parameters are less critical in gait analysis because of ground contact and the slow movement speed associated with walking, they play a major role in determining the kinetics and kinematics of faster moving body segments. We need only to look at examples from sports biomechanics to illustrate the impact of these shortcomings on our ability to provide accurate descriptions of mechanics. For example, even after applying optimization algorithms to insure correct marker positions, analysis of a skater performing a multiple revolution jump shows that momentum, which must be conserved, can fluctuate by 20% or more while the skater is in the air. This phenomenon can be attributed to errors in the parameters listed above. So the big question is, how can biomechanics be recognized as a valuable clinical tool when can't provide accurate results for many activities?

In this light, I'm hopeful that "moving forward" takes into consideration some of the basic problems that we've been dealing with for years. Before biomechanics can establish clinical applicability beyond gait analysis, we need to make sure that critical mechanical parameters needed to conduct the analyses are valid and reliable *on an individual subject basis*. We also need to insure that all structures that contribute to motion (ie. as the scapula contributes to shoulder motion) are accounted for in our analyses. Without sacrificing financial resources for studies that are creative and innovative, I'd recommend that we give some consideration to our ability to accurately measure or estimate fundamental parameters critical to producing basic valid and reliable analyses of individual subjects.