



Northwest 2010 BIOMECHANICS Symposium

A Biomechanical Jaunt from Carpal Bones to Concussions

J.J. Trey Crisco Ph.D.
Brown University

Abstract:

During this talk I will discuss several areas of biomechanics that I have perused during my career, as well as the positives and negatives of my multifaceted jaunt. I will begin with our efforts to develop image-based techniques that enable the accurate 3-D measurement of skeletal motion. These techniques have been applied to the study of the carpal bones, the eight small bones of the wrist, in an attempt to understand the normal mechanical function of the carpus, and the effects of various pathologies and surgical interventions. The knowledge gained from the understanding of the basic mechanics has led to new insights in wrist function, to a novel wrist implant design and to the design and development of novel toy controllers for upper extremity rehabilitation in children. I will conclude with our ongoing studies using an accelerometer system to understand the biomechanics of head impact in contact sports and concussion injury.

Bio:

Prof. Crisco is the Director of the Bioengineering Lab in the Department of Orthopaedics at the Alpert Medical School of Brown University, Providence, RI. He is the Henry Frederick Lippitt Professor of Orthopaedic Research, and Professor of Engineering. Prof. Crisco earned his B.A. in Mathematics and Fine Art from Amherst College and his Ph.D. in Engineering and Applied Science from Yale University, followed by a postdoctoral fellowship in Zurich, Switzerland. Prof. Crisco's research interests are in musculoskeletal bioengineering, where he has developed advanced imaging modalities for the study of in vivo joint mechanics, researched spine biomechanics, injury prevention in sports, and is developing toy systems for use in pediatric rehabilitation. His work has been primarily funded by the NIH and has resulted in 114 peer-reviewed publications and 186 abstracts and presentations. He serves as an editorial consultant for the *Journal of Biomechanics* and as an associate editor for the *Journal of Applied Biomechanics*. He also serves on multiple study sections for NIH and international granting organizations, and the scientific advisory committees of US Lacrosse and USA Baseball, and former Director of Research for the National Operating Committee on Standards for Athletic Equipment. Prof. Crisco is a former President of the American Society of Biomechanics. Much of his time is devoted to teaching Brown undergraduate and graduate biomedical and engineering students, as well as serving as an orthopaedic resident project advisor. He has also taught joint courses with the Engineering Division at Brown and the Industrial Design Department at RISD.