The mission of the Applied Biomechanics Laboratory at the University of Washington is the academic advancement of orthopaedic biomechanics knowledge for injury prevention and clinical management applications. The evaluation of intact, injured, and pathologic musculoskeletal conditions using biomechanical engineering principles and techniques underlies our experimental and computational research endeavors. Along with exploring the mechanisms and mechanics of musculoskeletal conditions and developing improved injury prevention strategies, the laboratory actively engages in the education and training of students in performing high-quality independent biomechanical research.

Currently, the research focus of the ABL is on the characterization of the mechanical properties and failure tolerance of the developing cervical spine. Although much data exist for the adult male population, there is a paucity of information for small women and children which are needed to improve motor vehicle occupant protection and to establish neck injury safety criteria. This work is being funded by the Department of Transportation (National Highway Traffic Safety Administration), the Centers for Disease Control (National Center for Injury Prevention and Control), and the U.S. Air Force Research Laboratory (Wright-Patterson AFB). Other industry-sponsored research projects include the evaluation and development of various orthopaedic implants ranging from prosthetic intervertebral discs to new total hip replacement components.

Selected Publications


