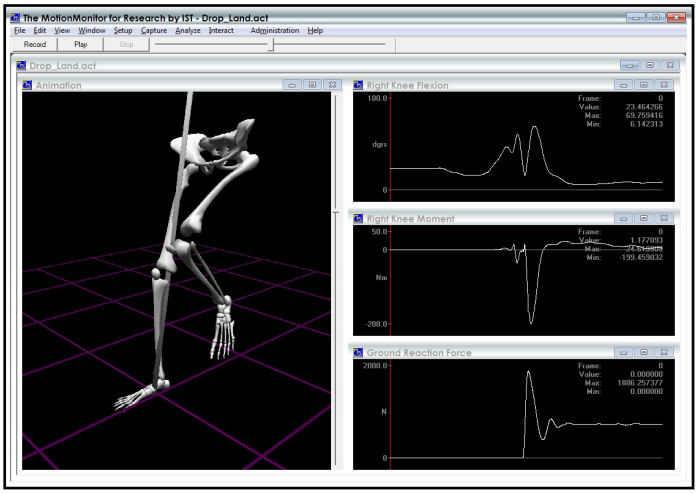
University of North Carolina – Chapel Hill

The Sports Medicine Research Laboratory (SMRL) at the University of North Carolina – Chapel Hill is devoted to identifying risk factors and the prevention of sports related injuries. The SMRL's research examines joint kinematics and kinetics, both in the lab and out in the field.

The SMRL at UNC – Chapel Hill has been performing research using The MotionMonitor Acquisition, Analysis and Visualization software for over 10 years. Their lab is equipped with both electromagnetic and passive optical motion capture systems as well as EMG and force plates, which allows them to perform a wide variety of research, from foot and ankle studies to full body analysis examining a pitcher's motion. One of the labs major research goals is to identify injury risk factors and then implement and validate preventative strategies and exercises. A prime example of this is the large prospective cohort study, JUMP-ACL (Joint Undertaking to Monitor and Prevent ACL Injury), which has been ongoing since 2005.

ACL injuries are a devastating knee injury that often times involve no physical contact with another person and regularly require surgery to repair. To date, the actual mechanism of ACL injury and an explanation for their high prevalence remains unclear. JUMP-ACL was specifically designed to examine neuromuscular risk factors involved in ACL injury. This study is interesting for many reasons, but its size alone makes it particularly unique for its type. "We used our MotionMonitor systems to collect biomechanical data on over 6,000 subjects performing jump-landing and squatting type tasks in the field" said Dr. Darin Padua, director of the SMRL. These subjects are then followed prospectively throughout their academy careers for ACL injury. JUMP-ACL has collected data on female and male cadets and midshipmen at the US Naval Academy, US Air Force Academy and the US Military Academy at West Point.



The MotionMonitor systems that the SMRL took into the field were designed not only for their portability, but also to ensure a quick experimental and subject setup. These factors were very important when developing this project, because as Padua stated, "We would regularly collect data from over 100 subjects on a daily basis." Not only this, but Padua said "the quality of data was also extremely important, so we had a check-list of quality control procedures in place, which The MotionMonitor software was a part of. The setup routines within The MotionMonitor allowed us to ensure that each investigator was collecting data in a consistent manner. Additionally, having the ability to immediately playback the previous recording allowed us to verify that we had good data for every trial before proceeding to the next step in the protocol."