



Featured Inventors: Heather Bansbach; Thida San-Adams, MS; Timothy Sell, PhD, PT

accelMOTION

Value Proposition

For recreationally active, health conscious individuals that want to decrease injury risk, improve performance, and enhance rehabilitation efforts, we offer a wearable device controlled through a mobile platform that uses evidence-based methods to customize training to your biomechanics on the playing field unlike visiting a specialized laboratory.

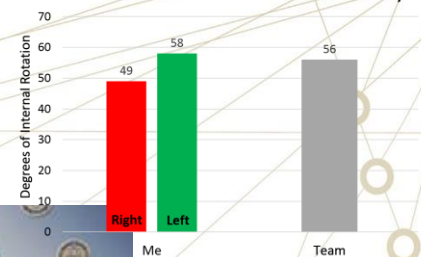
Market Opportunity

More than 65 million Americans suffer from a musculoskeletal injury annually, costing the United States approximately 900 billion dollars every year. The majority of these injuries are preventable. However, the equipment and knowledge expertise required to identify and correct risk factors is not readily available to the most of the population. There are 120 million recreationally active adults in the United States and an additional 30 million youth athletes. We are providing these individuals with a tool to get expert care and training guidance at home and on the playing field.

Competitive Landscape

The current state of the art in injury prevention involves traveling to a specialized training facility or laboratory and undergoing a battery of tests that require expensive equipment and trained personnel. Once collected, the data then requires expert analysis to translate the data into useful information for the individual. We have streamlined this process by decreasing the cost, size, effort, and expertise required to identify risk of injury and appropriate training without compromising precision or quality of these assessments. We are able to make expert recommendations based on 15 years of world class injury prevention research.

Shoulder Internal Rotation Flexibility



PROTECT • RESTORE • EXCEL

Technology

Our technology guides a user through a series of flexibility and balance measures relevant to the type of physical activities the user typically performs. The user is guided where to place the sensors and how to perform the desired task. The platform assesses quality of the measurement, and then uses an algorithm to derive injury risk associated with each assessment. Training recommendations customized to the individual are developed based on the areas that may be exposing the individual to a greater risk of injury.

Stage of Development

Our technology is in the prototype stage of development.

IP Landscape

An invention disclosure was filed through the Office of Technology Management on September 14, 2015.

Funding

\$3,000 from University of Pittsburgh Innovation Institute
Pitt Ventures 1st Gear Program

FEATURED INVENTORS:

Heather Bansbach

Heather Bansbach is a third year doctoral student in the Department of Bioengineering at the University of Pittsburgh. She is graduate student researcher at the Neuromuscular Research Laboratory. She has experience in biomechanical, neuromuscular, and musculoskeletal assessments. Ms. Bansbach is particularly interested in the role of biomechanical and postural stability factors in the prevention of musculoskeletal injuries. She is also interested in the translation of laboratory tests to clinically friendly tools. She hopes to continue with accelMOTION as part of her thesis.

Education

Ms. Bansbach earned a Bachelor of Science in Biomedical Engineering from the University of Virginia in 2013. She has been working towards her Ph.D. in Bioengineering at the University of Pittsburgh from 2013 to present and anticipates graduating in 2017.

Thida San-Adams

Thida San-Adams, M.S. is the Software Engineer at the Neuromuscular research Laboratory. She designs and manages the Neuromuscular Research Laboratory's information database used for its Department of Defense and University projects.

Education

Ms. San-Adams has received Bachelor's degrees in both Chemical Engineering and Computer Science at the University of Pittsburgh. She earned her Master's degree in Information Science at Missouri University of Science and Technology.

Timothy Sell

Timothy C. Sell, Ph.D., P.T. is a physical therapist and an Associate Professor in the Department of Sports Medicine and Nutrition at the University of Pittsburgh. He serves as the Associate Director of the Neuromuscular Research Laboratory and holds secondary appointments in the Departments of Bioengineering and Orthopaedic Surgery. During his research career, Dr. Sell has focused on the role of functional joint stability in the prevention of musculoskeletal injuries. Currently he has a four-year (ongoing) study that includes yearly assessment of injury risk and a prospective study of injury in Division I athletes across five different sports. He has conducted post-injury assessments of strength, postural stability, and kinematics of professional athletes who have suffered hip injuries in golf, hockey, baseball, and basketball. He has also assessed the effects of maturation and age on strength, balance, and landing biomechanics in youth athletes. He has extensive experience in biomechanical, postural stability, neuromuscular, and musculoskeletal assessments with a particular focus on lower extremity injuries. Dr. Sell's research has also included the development and validation of injury prevention and performance optimization programs. He has also published and presented extensively on these topics.

Education

Dr. Sell earned a Bachelor of Science in Physical Therapy in 1993 and a Master of Science in Human Movement Science in 2001, both at the University of North Carolina at Chapel Hill. He earned his Ph.D. in Rehabilitation Science in 2004 from the University of Pittsburgh.

Publications

1. Sell TC, Abt JP, Nagai T, Deluzio JB, Lovalekar M, Wirt MD, Lephart SM. The Eagle Tactical Athlete Program Reduces Musculoskeletal Injuries in the 101st Airborne Division (Air Assault). *Military Medicine*. (Accepted)
2. Heebner NR, Akins JS, Lephart SM, Sell TC. Reliability and validity of an accelerometer based measure of static and dynamic postural stability. *Gait & Posture*. (In Press)
3. Sell TC, Clark NC, Wood DE, Abt JP, Lovalekar M, Lephart SM. Single-Leg Balance Impairments Persist in Fully Operational Military Special Forces Operators with a Previous History of Low Back Pain. *Orthopaedic Journal of Sports Medicine*. 2014;2(5):1-6.
4. Sell TC, Akins JS, Opp AR, Lephart SM. Relationship between Tibial Acceleration and Proximal Anterior Tibia Shear Force Across Increasing Jump Distance. *Journal of Applied Biomechanics*. 2014;30(1):75-81.
5. Sell TC, House AJ, Huang HC, Abt JP, Lephart SM. An Examination, Correlation, and Comparison of Static and Dynamic Measures of Postural Stability in Healthy, Physically Active Adults. *Physical Therapy in Sport*. 2012;13(2):80-86.