

## The University of Denver's Human Dynamics Laboratory invites you to participate in a two-year knee injury risk reduction study for professional ski instructors

### Project Background

Knee injuries, particularly anterior cruciate ligament (ACL) injuries, are common in professional ski instructors. These injuries cause progressively disabling clinical symptoms and increase the risk of additional knee injuries. In this study, two practical solutions for reducing knee injury risk in a group of 5000 alpine ski instructors will be performed over two seasons. Commencing in the winter of 2016, injury tracking and orthopaedic questionnaires will be used to evaluate the cost-benefits of preventative programs aimed at reducing knee injury risk and the development of clinical symptoms in professional alpine ski instructors.

The KneeBinding and the Opedix directional compression tights are the two injury intervention products being investigated in this study.



### Intervention Products

*KneeBinding.* KneeBinding Inc. ([www.kneebinding.com](http://www.kneebinding.com)), founded in Stowe, Vermont introduced the first ski bindings that provided two, separate lateral release mechanisms at the boot toe and heel. The addition of a lateral heel release mechanism allows the boot to properly release from the binding during a forward or backward twisting fall hence reduce knee torque and knee injury risk, particularly to the ACL.

*Directional Compression Tights.* Opedix LLC ([www.opedix.com](http://www.opedix.com)), founded in Vail, Colorado introduced the first orthopaedic base layer to enhance the control of the body's core and leg movements. The directional pattern of multiple fabric elasticities influences the biomechanics of alpine skiing and reduces the knee torque produced by the quadriceps muscles. This stabilizing effect has the potential to reduce knee injury risk and the development of clinical symptoms.

**Who can participate?**

- 1) Employed alpine ski instructors that teach alpine skiing
- 2) Uses alpine skis for employment as a ski instructor
- 4) 18 years of age or older

**What are the requirements for a ski instructor to participate?**

- 1) Complete an enrollment survey each season (<15 min)
- 2) Complete orthopaedic surveys at the start, middle and end of each season (<45 min)
- 3) Track the amount of days and hours that you ski for your employment

**How much does it cost?**

There is no cost for a ski instructor to participate in this study.

**Will I receive an intervention product?**

The number of intervention products available to each ski area is limited. Dependent upon availability, you may be randomly selected to receive one or both of the intervention products being investigated in this study.

**What are the risks of participating?**

The risks associated with the intervention products are minimal but may have risks that are unknown at this time.

**Is participation voluntary?**

Your participation is voluntary. If you choose to participate you may stop at any time without recourse from your ski area management.

**How do I enroll into this study?**

The link below will direct you to an enrollment survey that begins with a document describing the study objectives, confidentiality and risks followed by the option to enroll.

<https://www.surveymonkey.com/r/VR2016enroll>

**Who can I contact for more information regarding this study?**

**Michael J. Decker, PhD**  
Principal Investigator  
University of Denver  
michael.decker@du.edu  
512.788.1953

**Bradley S. Davidson, PhD**  
Principal Investigator  
University of Denver  
bradley.davidson@du.edu  
303.871.2133