

# GOING SKIING THIS WINTER?



**Antony Bush, B.Phty, Dip.MT, G.Dip.Ex.Phys, APA**

Senior Physiotherapist | Dee Why

Antony is a Sports Physiotherapist from New Zealand with over 18 years experience. He was a preferred provider for the New Zealand Academy of Sport and Lead Team Physiotherapist for the New Zealand Winter Olympic Team in 2006. He graduated from Otago University, New Zealand in 1991 and holds Post Graduate Diplomas in Manipulative Physiotherapy and in Exercise Physiology.

**Heading off skiing for the very first time this winter? Well, especially if you are female, here are a few things you need to do to keep safe because skiing carries with it an extremely high risk of knee injury.**

Did you know girls are approximately up to eight times more likely to rupture their Anterior Cruciate (ACL) knee ligaments than boys? And it's got nothing to do with driving skills. It's got a lot to do with hamstring strength and motor co-ordination and increased valgus knee angulation. But here's the thing, your knee ligaments rupture when your knee drops inwards (like when you are edging skiing) in conjunction with your body rotating in the opposite direction (like when you fall over to the opposite side).

Due to the long-wrench effect of skis (also known as the *Phantom Foot*) when your foot is held in the vice-grip of the bindings and your knee is then twisted if your binding doesn't release, skiing is one sport with a very high knee Anterior Cruciate Ligament (ACL) rupture rate. Many studies have been carried out to look at how to reduce the chances of rupturing your ACL because it is the major and most important stabiliser of your knee.

So what reduces the risks then? Firstly, DIN settings (binding release tensions) - get them thoroughly checked. The higher the DIN settings are above recommended, the harder it is for the binding to release and the easier it is to twist your knee. We can quite categorically tell you, as opposed to teeth, that braces won't help you. Neuromuscular control is the key and several studies have shown that preseason strengthening (especially hamstrings) and proprioceptive training reduces through-season non-contact knee injuries by between 60% - 89%.

A great test developed to identify people at risk of severe knee injuries is the "drop vertical jump test" which is a simple stability and strength test. It involves dropping off a box and upon landing immediately jumping up in the air as high as possible, and if your knees 'kiss' then you are in a much higher risk group.



You do really need a Physiotherapist or Personal Trainer to assess this for you.

Women also tend to be more at risk than men because they tend to land with their knees in a more straightened position rather than soaking-up landing-forces with bent knees (eccentric Quads) and hips (eccentric Gluteals). This creates greater anterior shear forces on the tibia and greater forces on the ACL.

So the moral of the story is that if you are female and heading off skiing in the next couple of months, get yourself in for a check up and some pre-ski conditioning before heading to the hills.

*Happy Skiing! - Antony.*

#### References:

Mandelbaum, B.R et al. Effectiveness of a Neuromuscular and Proprioceptive Training Program in Preventing the Incidence of Anterior Cruciate Ligament Injuries in Female Athletes. *American Journal of Sports Medicine*. 2005; Vol. 33, No. 7, p1-8.

Renstrom, P et al. Non-contact ACL Injuries in Female Athletes: An International Olympic Committee Current Concepts Statement. *British Journal of Sports Medicine*. 2008; Vol 42, p394-412.

**physioFITNESS**  
AUSTRALIA  
*we get results*