

Daily testing of ski bindings – why every skier (and instructor) should be encouraged to do it

Admit it, when did you last test that your bindings were set correctly and specifically for you? OK - so you've had your bindings serviced recently? Well, that's a start, although I'm sad to say as a single measure it might actually offer far less protection than you might think. Rather disturbing evidence shows that even when ski equipment has been serviced and/or the bindings have been set by a professional mechanic using the current ISO settings, more than 50% of times your bindings will be set too tight for you. Seems crazy? So why is this? The fact of the matter is that the ISO settings are based on generalised assumptions and offer very little in the way of an individualised setting for every skier. Furthermore, they fail to take many factors into account that have recently been shown to be very important. In particular, they rely on an "guesstimate" of your weight – at several points on



the ISO chart you only have to be 1kg out and the binding setting can vary by up to 25%!! And if you think about it, your own physical condition varies from day to day, if not hour to hour – sometimes your leg muscles will feel raring to go and on other days hangovers and the like can substantially reduce muscle power.

Even if your binding is set at the correct value – lets say 7.5 for arguments sake – do you know for sure that the binding will release properly? Ski bindings have two values that are important – the "settings value" and the "release value". In this case, 7.5 is the settings value – because this is what the ski tech sets on the binding. The actual physical force that makes the binding release is the release value – usually expressed in Newton Metres – a unit of force. For the example 7.5, lets say this force is xNm. These values are standardised across all ski manufacturers, so that 7.5 corresponds to xNm regardless of whether your bindings were made by Salomon, Marker, Tyrolia or whoever. In an ideal world, with 7.5 set, it would always take a force of xNm or greater to make your bindings release. Sadly, this is rarely the case. Bindings are mechanical devices and as such susceptible to a wide variety of factors that can affect their function. Components inside the binding can rust and stiffen with use. The longer this goes on for without it being checked then obviously the bigger (and more serious) the problem can become. No more so than when you fall and your bindings fail to release at the critical moment. Dialling your bindings down to zero at the end of before storing them may reduce some of the strain on the mechanical components and thereby prolong their life, but obviously does not remove the need for regular servicing.



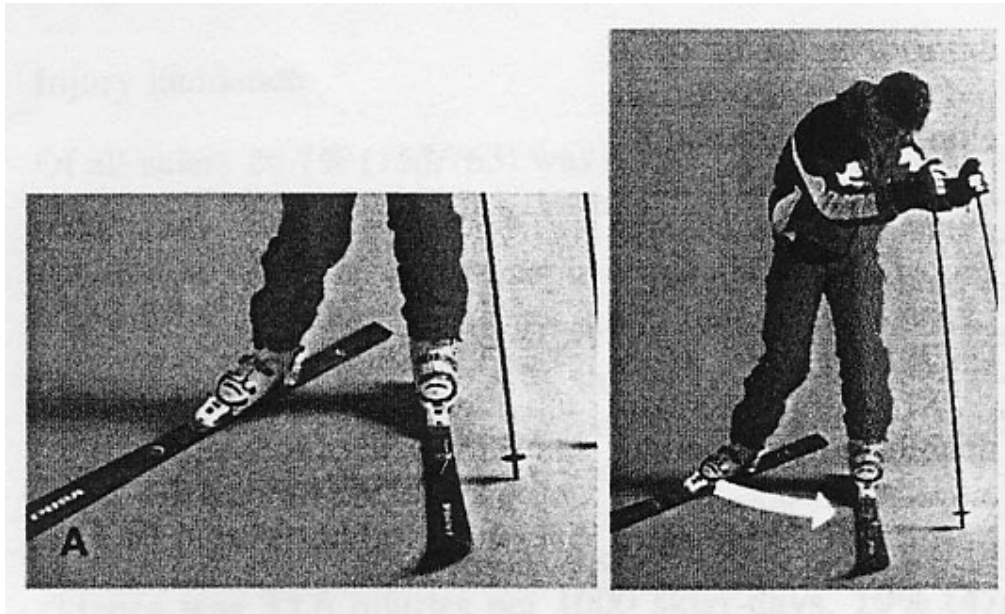
Another factor frequently misunderstood by skiers is that when we talk about the binding, we really mean the boot and binding together. If there is a problem with the sole of your boot – worn down for example through lots of walking on it – it will not sit correctly in the binding and therefore not transmit accurate information to the binding as you ski. This information is critical so that the binding "senses" (through the forces it detects) when it should release. Ski instructors are at particular risk from boot issues, as you often spend more time than the average skier walking in your boots during the course of a normal ski day.

Given that in isolation (and certainly in combination) all these factors can affect your binding function, it should come as no surprise to hear that up to 85% of ski bindings have been found to have release values way in excess of those intended, even if the setting value showing on the binding is correct.

To date, the only safe and proven way to ensure that your bindings are set correctly for you as an individual at any particular time is to get into the habit of performing a self-test on your binding. Practically speaking, a daily self-test is probably a sensible aim. I apologise to those of you who already do this, but for those of you who have never heard of it, the self-test could well help keep your knees in good shape for many seasons to come. It has been demonstrated by several research groups to reduce the risk of knee injuries by up to 25% and is endorsed by the International Society for Skiing Safety. The test itself is very simple and usually takes less than a minute or two to perform, especially if you are performing it regularly. The basis of the test is testing your ability to release yourself from your bindings at both the toe piece and heel.

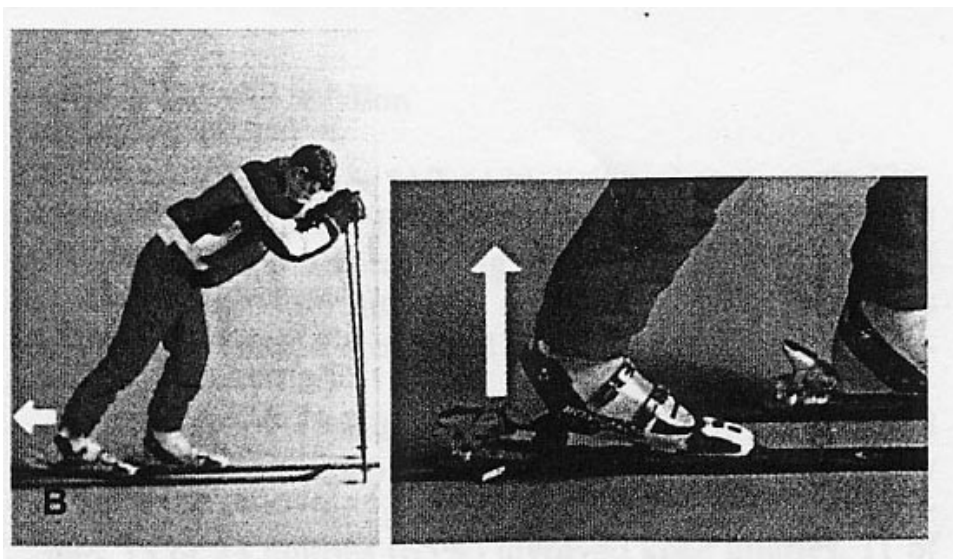
Testing your toe piece

With your ski angled so that the front inside edge is on the ground, try and twist your boot inwards so that the toe should twist out of the front of the binding. Apply the force gradually – you should not have to use excessive force.



Testing your heel piece

With your ski flat on the ground, slide your foot back until your leg is out straight. Now try and lift the heel of your boot out of the binding. Do the test slowly and gently - don't use too much force – you could strain a muscle or possibly even rupture your Achilles tendon if you're too vigorous.





If you can't release either the heel or the toe from the binding, then reduce the binding setting by 0.5 and try the release procedure again. Keep reducing the binding setting like this until you can release your boot yourself at both the heel and the toe. One might need more adjustment than the other. Once you can release both heel and toe pieces – off you go.

Finally, before you ask, there is no evidence that the self-test – when applied correctly - makes your binding too slack and liable to inadvertent release. So if you don't already, get into the habit of performing a self-test daily if you can – even weekly is better than nothing and may prevent you adding to the statistics.

Finally, for an in-depth article analysing ski bindings, inadvertent release and bindings adjustment have a look at a page from Vermont Ski Safety written by Carl Ettlinger – one of the most renowned experts in the world on the subject. Unfortunately, it was written in 1999 so does not take into account the very latest research information (which includes the new French AFNOR system that I discuss in a separate article). Nevertheless, there is some very useful discussion points. The link is....

http://www.vermontskisafety.com/faq_skiers/faq_skiers_8.html

Dr Mike Langran
Aviemore

www.ski-injury.com

mike@ski-injury.com