

**"I sit back!"** How many of us have quietly uttered those belittling words of shame and disgrace as we hopelessly lined up for yet another lesson full of exercises designed to help us claw our way back from the "land of the shunned". If only we had the freedom to stand and proclaim "my equipment made me do it!"

Well hallelujah! I'm here to tell you that indeed there is hope in this forsaken land. Previously unmentionable factors -boot ramp angle, cuff alignment, binding position and ramp - thought to be the sole property of designers, can actually be changed by us to more properly suit our individual requirements and add grace to our feeble efforts to balance and properly align ourselves. The angle and positions built into equipment can, and often do, have profound effects on our skiing style.

#### Understanding Ramp Angle

One of the most important factors and one that is most routinely ignored or simply misunderstood is foot ramp angle. The angle of our feet (heel height relative to forefoot height) on skis is set by boot board (zeppa) under the boot liner and by the binding ramp angle (boot ramp + binding ramp = total ramp). If one of your skiing problems is sitting back or you feel a lack of stability when positioned forward the problem may be too much ramp angle. The idea that high ramp angle helps you stay forward is, for most skiers, misguided. Many ski boots have angles substantially over five degrees and some as high as seven. As boots get shorter angles go up automatically. I find that many skiers prefer angles around three degrees or less.

#### When And Why Make Adjustments?

The reason that reducing ramp is so effective is related to muscle function. As most of you know, our muscles work by actively shortening or by resisting lengthening and muscles are strongest in their fully lengthened position and over the first 30% of their shortening stroke. Increasing ramp angle extends the foot, which shortens both the gastrocnemius and soleus muscles of the calf. The result is that the muscles cannot exert enough force to prevent us from tipping forward until we have already passed through our balance point. We compensate for the instability by sitting back or by simply propping

ourselves against the front of our boots instead of actually supporting ourselves muscularly. Lowering ramp angle often resolves these issues, even for people with tight calf muscles.

Probably you have a boot with alignable cuffs that have never actually been aligned. Improper cuff alignment is a common cause of different left and right turns, caught edges, etc. One effective way of setting cuffs is to stand on a digital pressure pad and actually measure under-boot pressures. Changing cuff position will change under-boot pressure.

I use a cuff setting

that has slightly more pressure under the inner half of the boot sole when compared with the outer half. Left boot and right boot must be the same. If you don't have access to a pressure system then experimentation may be the best way.

Excessive forward lean angle when coupled with too much ramp simply exacerbates problems by reducing our overall range of leg motion and leads to cramped and exhausted quads. However, forward lean in a boot with a stiff rear spoiler coupled with the correct ramp angle gives us something to recover against when we have slipped into the back seat.

#### Check Binding Position

Lastly, we should look at the most contentious of all, binding position. Research supported by Atomic has shown that binding position can affect a racer's speed through gates, and a project supported by Nordica has shown that recreational skiers may prefer a binding position substantially (several cm's) changed from factory recommendations. When bindings are set too rearward, as



many are, it is very difficult to maintain a forward, balanced and comfortably relaxed stance. The cause is the lack of even tip and tail ski pressure when standing in a comfortable athletic position. It is necessary to move aggressively forward at the beginning of the turn in order to pressure the tips and begin the carve. Maintaining this forward stance or moving to it time after time for each turn is difficult for many skiers and finally results in a missed turn when the skier doesn't move forward in time.

There is a tool to determine an appropriate binding position for each skier's individual needs, however, it is not readily accessible across the country. If you don't have access to a Campbell Balancer, I've found that placing bindings on the ski so the ball of the foot is over the centre of the running surface is often a good basic position on any ski for any type of skiing.

Good luck with your experiments and don't despair. Changes to equipment setup may be the key to resolving long standing technique problems. Enjoy!

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