Modify Your Equipment To Work For You!

Those who have been in the store or have read other pieces I have written, know I believe it is possible to ski at your best ONLY when your skis and boots have been properly aligned, mounted and customized to your particular needs. Of course, one of the questions I am often asked is "Don't manufacturers spend a lot of money with a highly skilled design and test staff, to make their equipment function for us at the highest level possible?" The answer is "of course they do" but designing equipment for the mass market is restrictive. Production methods, industry standard boot position marks and our own anatomical differences have ramifications which are seldom considered. This article will focus on these changes before going on, later in the series, to discuss the effects of ramp angle, mounting position and other important equipment set-up procedures.

Ramp angle (the angle of your foot in the boot) is generally between three and seven degrees and always has the heel higher than the toe. This is important in setting stance and assisting balance. The boot board or zeppa (molded, removable insert under the boot liner) sets the angle in most boots. A sample boot board from a size 27, I regularly work with, has a heel height of 38 mm., a ball-of-foot height of 10 mm, and a distance between the two points of 200 mm. The calculated angle is 5.14 degrees.

In production, board heights are unchanged, regardless of boot size. However, the distance between the two points varies, resulting in a change in the actual ramp angle. For a size 23, in the same model as mine, the boot board angle is approximately 6.4 degrees and, for a size 30, the angle will be close to 4.5 degrees. There is a two-degree, (50%) change which you can feel, as a result of production.

At this point, you may have realized that ramp angle also varies with binding choice.Many, but not all, bindings have a higher heel than toe piece. In other words, bindings have ramp angle built in and, on some new skis, so do the binding risers. Like boots, as bindings are moved closer togeth er, binding ramp angle increases and is added directly to boot ramp angle. Also, you should know that binding ramp angle simultaneously increases boot forward lean as can leg length and calf size. Many women's legs are short enough that their calf is inside the boot. The calf fills the space between the tibia and the boot rear spoiler, which pushes the leg forward, effectively increasing forward lean. Similar, unforeseen problems occur as a result of boot mounting position.

A boot/ski positioning method, adopted by the industry approximately twenty-five years ago, positions the centre of the boot sole over a factory applied mark on the ski. This system is still used by the majority of manufacturers, although each has its own method of determining mark location. Prior to the introduction of factory marking, ski techs were trained to position boots so the skier's ball-of-foot in the boot was over the centre of the ski running surface. It was felt that the centre of pressure should be over the ski centre and pressure was applied through the ball. However, this anatomically-based method was a slow process and led to some guesswork on the techs part. So, without any ski design changes, the boot centre marking system was adopted.

The problem with this system is immediately obvious. As boot length changes, the position of the ball-of-the-foot on the ski changes. As a result, any ski mounted for a size 28 boot, skis very differently for instance than when mounted for a size 25 boot.

Some people feel that new ski design has eliminated this problem. Certainly the new skis have a huge sweet spot, when compared with the old-design, straight skis. However, that does not make them or us immune to the effects of binding position or other specification changes caused by production methods and our anatomy.

So, if you really want your equipment to make you the best skier possible, keep in mind that many, subtle and not so subtle, effects on human balance and performance occur as a result of seemingly innocuous equipment changes.