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The right fit

Tech Talk by Lou Rosenfeld

“When I buckle my boots, my feet hurt like hell. Can you fix my boots so my feet stop hurting?” This is one of the most commonly heard questions (and complaints) in ski shops around the world.

Over the years I’ve probably addressed the problem hundreds of times, varying the response mostly by my impression of someone’s state-of-mind—or my mood at the time. In the past I’ve reached down, loosened the two lower buckles (the “foot flatteners” are always the offenders) and joked, “No charge!” But typically any number of variations in the end will have us at exactly the same place, which is, “No, I can’t fix them.”

The problem is the boot selection itself, not the shape or anything else a bootfitter can alter. It’s simply that your boots are probably too large, mainly because many skiers buy boots according to the performance labels.

All manufacturers assign boot models a label such as “race” or “intermediate” etc., so naturally shops that don’t specialize in bootfitting are going to sell what a skier asks for rather than take the harder route of selling another model that may initially be less comfortable in the store before bootfitting modifications. Still, performance labels such as “race” or “intermediate” don’t really describe a boot’s performance. Instead, they describe a price point, and boots with a label that denotes higher performance are going to cost more. As well, they describe width since boots get narrower as advertised performance level increases. The good news is that once you find boots of the correct length and width your problems should go away, and the following information will help ensure you don’t go down this painful, dysfunctional, poor-skiing and money-wasting path again.

When you bought your too-large boots, the sale and purchase scenario might have gone something like this: “I’m looking for ski boots and I’m an intermediate skier.” And in reply: “We have several models for intermediates. What size is your foot?” And off you went down the path of inevitable poor fit, and even poorer ski control and overall performance, because nowhere was your foot width measured nor your foot shape assessed. This system, and our lack of understanding, is what leads us ultimately to unresponsive equipment; a system that gives a loose, floaty feeling, curled toes held tight to our boots, additional socks, cold numb feet, cramps and general protestations whenever ski boots come into view.

Buying boots under this system completely ignores foot width, which is absurd. Our foot size is not only length, but also width and even height. But before going further, there are some boot design terms and facts to understand in order to apply proper bootfitting standards in a shop.

Boot last is the mould around which the shell is formed. The shape of the boot shell is controlled by the mould, but the term “last” is also used to describe the shell-width in millimetres. For instance, a 98mm lasted boot is 98mm across the widest part of the boot forefoot (which corresponds to the ball of your foot) in a mondo size 26 or 27 boot. Twenty-six and 27 are the standard sizes around which most boots are designed. If a boot is specifically for women, it’s designed around a size 24 mondo. As size changes, most boot models increase or decrease in width from the “last” standard by 2mm per size.

Mondo is a metric foot measuring system used for ski boots that describes your size as the length of your foot in centimetres. A size 26 foot, for example, is between 26 and 26.99 cm in length. A mondo 26 boot is approximately 27.99 cm long inside to allow some toe space, and although labelled as such, boots aren’t actually made in half sizes.

Brannock foot width measuring system ranges from AAA (the narrowest), AA, A, B, C, D, E, EE and EEE. Each change in width size is 5mm. So a size 25 mondo foot is 5mm wider if you’re a “D” width rather than a “C” across the ball of the foot. In North America “C” width is considered average.

What confuses skiers is that manufacturers don’t often talk about boot last width and instead vary width based on performance labels. For example, boots called “race” by the manufacturer are always narrower than boots labelled “intermediate.” Boots described as World Cup are generally a 95 or a 92mm last and will comfortably fit a “B” or narrower foot without modification. A 104mm lasted boot is typically called a beginner boot and will comfortably fit an “E” width foot and so on. By now I hope the problem is obvious.

My feet, and probably yours as well, for instance, stubbornly resisted changing width as my skiing skills advanced. Put another way, “I’ve always needed the same width boot regardless of how well I skied. I’m a “C” width, but if I go into many stores and say I’m a beginner, I’ll walk out with an “E” width boot because the shop may not apply the width rule, and as a beginner I may resist buying a boot labelled “race” because everyone knows race boots are stiff, unyielding and painful, yes?

Actually, no, if your foot is a “C” width or narrower! They will be comfortable because they are the correct width for your foot. They will gently, delicately and oh so softly cradle the many aching bones of your foot without buckling so tightly your feet are crushed. You’ll keep all your nails and won’t need help unbuckling at lunch. You’ll ski better than ever because the boot and therefore your skis will respond immediately. You’ll be able to ski with more energy for longer since you’ll finally be able to relax all those tensed foot and leg muscles used to curl your toes to anchor your foot inside your old cavernous tanks. Other foot and leg maladies will simply evaporate since your feet will stop swimming lengths in your boots.

Your boot won’t even be too stiff because you won’t buy the stiffest racing flex that your new boot is available in, instead you’ll buy the *appropriate* flex for your skiing level and aggressiveness. That’s right, all boot models come in varying flexes and you tune the stiffness (flex) to your ability level and aggressiveness rather than the width. Ninety flex is a good flex for many women, up to about a 115 flex for good, strong female skiers; and 115 is good for many men, up to 130 for better or stronger men.

Yes, you *can* have your boot and comfort, too, by adjusting the flex to suit your ability or aggressiveness level, and ignoring manufacturers' performance-oriented labels and buying boots in the appropriate last that corresponds to your foot width.

Lou Rosenfeld is the owner of Lou's Skiing Performance Centre in Calgary. He has an MSc in mechanical engineering with specialization in biomechanics earned with research on foot orthotics and human adaptation. More at: lous.ca Complete alpine ski boot specifications and Canadian suggested retail prices [here](#).