

## **MAST Guide To Buying Used Equipment**

### **I. Buying Skis**

#### **Type of Ski: Slalom Race Ski**

Today, ski manufacturers make skis for specific skiing situations and groups: powder, moguls, jumps, beginners, mountain cruising, racers, etc. MAST skiers will be racing slalom and are best served by a slalom race ski. (The other types of racing skis are for different racing events: giant slalom skis for giant slalom; super g skis for super g; downhill skis for downhill.) If this is your first year and you already have a pair of recreational skis, you certainly can use those. However, if you like the sport and want to continue to improve and maximize your potential, you will eventually want to purchase slalom race skis. They are specifically designed to redirect the skier's momentum quickly and efficiently while "holding an edge" against the snow under extreme forces. Recreational skis will simply not be able to hold you in a turn as your ability to make more efficient turns improves.

#### **Junior Race Skis VS "Tweeners" Skis VS Adult (FIS) Race Skis**

It is important to determine whether you need a junior race ski, a "tweener" ski or an adult race ski. For most brands, a junior ski is designed differently from its adult counterpart and uses different materials in its construction. Adult skis are sturdier, heavier, and harder to flex than junior skis. However, adult skis come in a variety of flexes, from soft to stiff. A less experienced, lightweight skier will find it difficult to turn efficiently on an adult race ski. On the other hand, a heavier and more aggressive skier will "overpower" a junior ski: the ski will wash out in the turn and possibly break if too much force is applied. Several brands make a "tweener" race ski. These generally run about 150cm in length and are built a bit more sturdily than the junior ski but are not as stiff as the adult (FIS) ski.

As a *general* rule, if you are less than 115 pounds, you will probably want to be on a junior race ski. Also, if you are in junior high and just beginning your race career, a junior ski is probably right for you unless you are larger in size. Some more aggressive athletes may need to be on a "tweener" ski or an adult ski even though they are lighter in weight, so check with a coach if you are not sure. Generally, if you are between 115 pounds and 130 pounds, you would benefit from being on a "tweener" ski. And if you are over 130-135 pounds, you will probably want to be on an adult race ski, as will most varsity level athletes. Heavier athletes who are just starting out in the sport or are less experienced should look for a "softer" flexing ski. A salesperson at a ski shop can point you to the softer ski brands.

#### **Ski Length**

Weight and ability level, more than height, determine the proper length of ski to purchase. Nonetheless, height is a factor. With that in mind, here are some guidelines. No females should be on a ski longer than 155cm. No males should be on a ski longer than 165cm. You will sometimes hear people refer to the adult skis as Women's FIS or Men's FIS. Women who ski in FIS sanctioned races (Federation of

International Skiing), must compete on skis that are 155cm in length or greater. The men must compete on skis that are 165cm in length. Junior race skis are 150cm and less in length. Tweener skis are generally 150cm. A few brands make junior skis that are 155cm in length. This would be the proper length for someone who is very lightweight and tall.

To determine the length you need, hold the ski vertically with the tail resting on the ground. If the ski tip is over your head, it is probably too long. If the tip is at or below your chin, it is probably too short. Somewhere between your chin and forehead is a good rule of thumb. I prefer that the tip fall between your chin and the tip of your nose for slalom skis. If you are young and you are sure you are going to grow more sometime soon and you absolutely need to get two or three years out of your skis, you can go with a slightly longer ski (to eyebrows/forehead. As a reference point, standing nearly 5'7" tall (on a good day), Coach Mark's 165cm skis come to top of his very prominent, yet distinguished nose. But he weighs somewhere between 150 and 200 pounds. All muscle of course.

### **Buying Used Skis**

1. Edges should have plenty of side edge left so that you can sharpen the skis. If the metal edge on the side of the ski is flush with the "sidewall" of the ski, keep looking. In addition, you want to make sure the edge is securely attached to the sidewall of the ski. On occasion, the edge can become separated in small sections from the sidewall of the ski, so be sure to inspect the edges for any separation. If it exists, don't buy. And make sure the edges are not rusted. This would indicate that the previous owner did not care for the skis well.
2. Check the condition of the bases. Usually, skis sold at swaps are taped together. Ask an attendant if you can inspect the bases. Look to see if the bases have any gouges. Tiny ones are acceptable. Deep ones are not. The tops of the skis do not need to be perfect, but the cleaner the top skin, the more likely the skis were cared for tenderly.
3. Inspect the bindings. Are the heels chipped? If so, it might indicate that the previous skier used the edge of his opposite ski to "click out" of his bindings. If he did this, he may not have cared for his skis very well. Also, make sure that your boots will fit into the bindings as they are mounted. If you have a size 12 boot and the previous owner wore a size 8, the bindings may not be adjustable to fit your larger boot. In such a case, you will need a ski shop to remount the bindings on the skis, which adds an expense that perhaps makes the transaction less economical. Remember, race equipment is expensive, even used. Expect to pay at least \$300-\$500 for good adult race skis with bindings. New, it could be two to three times that amount. Junior race skis are generally a little over half the cost of an adult ski.

## **II. Buying Boots**

### **Types of Boots: Race Boots, Junior VS Adult**

Boots are the most important piece of equipment you will purchase. This is where you should not skimp in terms of both time and money. Just like ski manufacturers, boots are made for all types of skiers and their many ways of enjoying the sport:

beginners, advanced, back-country, freestyle, high performance, racing. Although it is not as essential for MAST athletes to ski in a race boot, it will more likely serve your needs over the long term than any other style of boot. Again, manufacturers make both junior and adult versions. And like skis, junior race boots are not just miniaturized adult boots. They are designed differently for a lighter weight, less aggressive skier. Check with a good ski shop about whether you are a candidate for a junior race boot. If so, you will save some money. Here are some things to consider when choosing the right boot for you.

### **Getting The Right Fit:**

Fit is not the same as comfort. You do not want boots to be painful, but you do need to know that they will not feel like slippers when you first put them on. If they do, you are most likely sized too large and will “swim around” in your boots when you get on the hill and try to execute a turn. So, expect some pressure points when you first put them on. A good ski shop can modify the boots to relieve these pressure points. In the end, your boots need to be comfortable enough to ski in for long periods of time. Note: most top-level racers buckle their boots TIGHT for their runs in a course. Once to the bottom of a course, they will hurry to unbuckle their boots for the ride up the chair. You do not need to go to this extreme, unless you are aiming to compete at these higher levels. But you should know that pressure points will build during a period of skiing and that you may need to occasionally unbuckle your boots, readjust a sock, or reposition the boot tongue to relieve those pressure points. Different brands work for different people, and what your friend or sibling has may or may not work for you. Take the time to try different types of boots to see which ones fit your feet best.

### **Determining The Correct Size:**

Your boot size will not match your shoe size and under no circumstance, should your boot size be larger than your shoe size. In fact, your boot size will most likely be a size smaller. The first thing you need to do when sizing a boot is to determine the boot shell size.

1. Remove the liner from the boot.
  2. Place your foot (wearing only one ski sock) in the shell.
  - 3 Move your foot forward in the shell until your toes just touch the front of the boot. You do not need to buckle the shell.
  4. Now, check the spacing between your heel and the back of the shell. If you can get one finger in that space, but not two, you have a “race fit.” If you can fit two fingers in the space, you have a recreational fit. If you can get three fingers in, you will want to try on a smaller sized shell.
  5. If the space is adequate, place the liner back in the boot and put on both boots.
- Recommendation: you want to “shell size” both feet. In some people, one foot is a full size larger than the other. In such a case, you will probably need to go with the size that fits the larger foot, unless the shop is confident that they can “stretch/modify” the smaller shell size to fit the larger foot. Note that boots are sized with different numbers—i.e., 26.5, 27.0. Sometimes you can see a shell size on the bottom of the boot sole: 294, 304, 314. Note these sizes when trying on boots.

**Selecting The Correct Flex:** Race boots are manufactured with a flex number: i.e., 90, 110, 130, 150. The higher the number, the stiffer the boot. However, the flex numbers are not standardized across brands. Consequently, a 130 flex in Brand A may be similar to the stiffness of a 150flex in Brand B. So you have to try them on and compare different flex numbers both within brands and between brands to know which one is right for you. The more boots you try on, the more you will learn about how differently boots flex.

Too many racers ski on boots that are too stiff. Consequently, they have trouble getting pressure to the front of the ski when initiating a turn. So, if your feet fit in the boots without excruciating pain or numbness, try flexing your boots at the ankle. Keep your boots flat on the ground while pushing your shins as far forward into the front of the boot cuff as you can. Some ski shops have a pair of bindings mounted on a stabilized pair of skis that allow you to simulate the locked in feeling of skiing. Play with buckle tightness and make sure that the power strap on the boot is as tight as you can get it. Does the boot flex forward? If not, the boots are probably too stiff. If boots don't flex in the warm confines of a ski shop, they will not flex in the cold of winter. Don't buy a boot that you can't flex in the warmth of an indoor space. Ski shops can modify boots to make them softer, but that type of fix is best done if the boots become too stiff once taken out into the cold. Could a boot be too soft? Yes. Boots that are too soft will transfer the energy from your muscles to the ski less efficiently, rendering the skis less responsive to your muscular and skeletal movements. If you can "crush" the boot, try a boot with a higher flex rating. It is fairly easy to make a boot softer, but very difficult to make it stiffer.

#### **Check Heel Snugness:**

Your heel needs to stay firmly in the heel pocket of the boot when you flex. If it rises, try tightening the boot. If it still rises, you will either need to have the ski shop modify the boot or look for a different boot. Wearing a second pair of socks is not a fix.

#### **Check Calf Snugness:**

The cuff of the boot should fit snugly around your calf muscle so that when you press your shin forward into the front of the boot, the back of the boot moves forward as well. When you push your shin forward and flex at the ankle, you are essentially creating a lever that transfers the energy from your muscles to the front of the ski. That energy makes the ski bend into an arc and when you balance on the ski's edge, you will follow the path of that arc. If your lower leg and the boot cuff work as one unit, that energy is transferred more efficiently and powerfully. Some folks have very thin calf muscles, which can diminish the "levering effect" of your flexing movements. When flexing the boot, check whether a gap appears between the back of your calf and the inside of the back of the boot. If one appears, borrow a ski area brochure (most ski areas have a display rack stocked with ski area brochures) and place it between the shell and liner directly behind the calf muscle. This *may* be enough of a fix to tighten up the fit of the cuff around your lower leg. Another option is to purchase an additional BOOSTER STRAP to use with the

booster strap that comes attached to your boot. You can also ask the salesperson what the shop can do to create a tighter fit for you.

**Check Weight Distribution:** With your boots buckled, stand evenly on both feet. Flex up and down with your knees and ankles and settle into a moderately flexed stance. Now, note the weight distribution through the bottoms of your feet. Which part of your foot receives more of your weight: heel, toes, ball, arch? Now flex forward. When you flex, does the pressure point on the bottom of the foot change? If your natural, lightly flexed stance puts you on your toes or heels, the boot will need some modification by a good ski shop. They can either modify the boot itself or they will modify the “ramp angle” of the boot on the ski. The point is this: you need to be able to feel your weight move somewhat naturally to the ball of the foot when you flex the boot cuff forward. If you are stuck on your heel or arch, it will be difficult for you to get enough pressure to the front of the ski to initiate your turn. The “ski brochure” fix described above can help move the weight distribution point forward as well. Conversely, if flexing moves you forcefully to your toes, you may have some very sore toes by the end of a day of skiing and this will need to be corrected by the ski shop as well.

#### **You Should Shop Around:**

Every time you enter a ski shop, talk to a salesperson, and try on boots, you will learn something new and gain a deeper insight into the best boot FOR YOU. If there is ever a time to rely on the expertise of a ski shop, it is when purchasing a boot. Be sure that you retain the services of the shop’s most experienced boot fitters. If the salesperson does not generally follow the guidelines stated above, you are not getting good service. Try on different brands. Walk around in them. Flex them. Jump up and down in them. Wear them for at least 20 minutes-- with buckles tight, buckles loose. Make observations, not only about price, but also about size, fit, flex, pressure points, weight distribution. Write down these observations. Ask a lot of questions and compare answers between one shop and another. If you are being rushed to make a purchase, walk away. Finally, ask whether the shop can modify the fit of a boot if it turns out that you have painful pressure points once you start skiing. Your boots will last you two or three years, provided your feet don’t grow too much. You want to purchase the best boot for your ability level and foot shape.

#### **Tips On Buying Used Boots:**

Buying used is a viable option as long as you are careful. It is always helpful to have first gone to ski shop to get sized accurately and to determine which brands fit you best. It also helps you determine when you run into a good value on the used market. Some other additional cautions:

1. Take the liners out. Note whether the shell and liner have been modified in anyway. If so, this could leave you less room on the boot to modify for your needs.
2. Examine the soles of the boots. Are the toes and heels “rounded” as though they have been walked in on rough surfaces. If so, it may be difficult to secure them firmly in your bindings or unnecessarily create alignment issues for you when you get on snow.

3 Examine the condition of the buckles. Are any bent? Are any rivets missing? Ski shops can replace buckles, so it shouldn't be a deal killer, but you need to know whether any local ski shops carry that particular boot and you can then expect to fork out some more money, which may make the purchase less economical in the end.

### **III. Buying Poles**

#### **Type of Poles: Slalom Race Poles**

Like boots and skis, poles are specialized. There are recreational poles, powder poles, slalom race poles, speed event race poles, giant slalom race poles, adjustable poles. Most poles have a recreational purpose. You need to seek out SLALOM race poles. Slalom poles will likely be lighter than recreational poles and the baskets will be smaller. Slalom poles will allow you to mount a piece of protective equipment on the pole handles called "pole guards". Pole guards protect your hands when you "clear" the gates as you are skiing the course. You will be learning how to clear the gates so you will need pole guards. It is very difficult to mount pole guards on recreational poles which is why you will eventually need race poles.

#### **Sizing Poles**

Turn the poles upside down with the top of the pole handle resting on the ground by your side. Hold the pole under the basket of the pole in such a way that your elbow is on your side next to your rib cage. If you elbow makes a 90 degree angle, the pole length is pretty good. If the angle is smaller than 90 degrees, the pole is too long. If the angle is greater than 100 degrees, the poles are probably too short.

### **IV. Protective Equipment**

#### **Helmet**

You must wear a helmet when skiing. I would like all our racers to be in a helmet that is fully hard shell... in other words, no soft earflaps. Also, the helmet should be smooth and rounded, with no visors or other hardware sticking out. No camera mounts. You want the helmet to be able to glide on the snow when you fall. You don't want anything on the helmet that could dig into the snow and cause you to strain your neck. Or break it. There are slalom specific helmets but any race helmet will do.

#### **Helmet Sizing**

The helmet should fit your head snugly. Once you secure the straps, grab your helmet with both hands on the sides of the helmet and gently wiggle the helmet up and down and side to side. The helmet and your head should move as one unit. If the helmet swivels about the head, the helmet is too loose and you need to find a smaller one.

#### **Goggles**

Goggles are mandatory. Not only do they enhance your vision as you ski, they protect your eyes from the cold and wind. Without goggles, your eyes will water when you ski. In an ideal world, your goggles will have interchangeable lenses. I recommend having a lens for skiing at night under artificial light conditions. Night lenses will help highlight the skiing terrain. Daytime lenses will block out bright sunlight and the reflection of the sun off the snow. They should offer UV light protection.

If you own goggles, it is good to bring them with you when you purchase a helmet. Some helmets fit certain brands of goggles better than others. And if you need to purchase goggles, be sure to bring your helmet along as well to make sure they will work well together. You want the helmet and goggles to form one unit that covers your entire forehead. You don't want a "goggle gap" on your forehead or you will frostbite your forehead.

### **Shin Guards**

If you are just starting your ski racing career, you don't need shin guards on the first day. But, as you improve, you will need them. Shin guards worn over your ski pants to protect your knees and shins when you hit the gates. Ideally, athletes will contact the gate with the outside hand and the shins at the same instant. Without shin guards, you would be wailing in agony. Shin guards come in different sizes—usually adult and junior.

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