# EQUIPMENT RECOMMENDATIONS

## Boots

Boots are arguably the most important piece of skiing equipment. They serve as the power steering unit for racers – they transmit energy/movements to the skis and transmit feeling to the athlete. They also serve as a leverage tool for the athlete to use over the skis. My general observation is that too many young athletes use boots that are either too stiff and too large for their feet. For a boot to efficiently function as it was designed it should fit close to the foot with its hinge point aligned with the athlete's ankle joint. The boot should also be made of material that is appropriately flexible relative to the weight, ability and skiing speed of the athlete. Athletes who appear to have difficulty adapting to terrain/snow conditions, find it difficult to carve into the top of a turn, may tend to ski off their heels and/or have a difficult time making changes to their skiing often are using a boot that just doesn't work for them.

Many times, a boot that feels nice and comfortable out of the box in a ski shop is either too big (comfort) or too stiff (easy to flex in a warm shop environment). Retail ski shops, who are generally accustomed to sizing boots for the public tend to sell what is the most comfortable to a customer rather than what may be better in terms of performance or skill development especially when it comes to younger kids. A boot that "feels" like it is the correct size can often be quite loose on the foot after it has been skied on several times and the liner has started to pack out.

Athletes should always be "shell fit" to ensure they are in the correct boot size. Shell fitting consists of removing the liner from a boot, stepping into the boot with a bare foot, sliding your foot to the front so your toes just touch and looking to see how much room is left between the heel and the back of the boot. You should have approximately 1″ of space for an athlete whose foot is still growing whereas a top level older athlete may only need 1/2″-3/4″. It's generally not a good idea to go much beyond 1″ to try and squeeze an additional year out of pair of boots or to try and make a used pair of boots work. In doing this you greatly reduce an athlete's ability to learn new skills and/or to to perform up to their ability.

Note that most of this discussion has been relative to the length of a boot. There are some unusual circumstances which may require an athlete to go in a specific boot that has a bit more width but generally race boots have a narrow shell. If needed a boot fitter can stretch both liners and boots to provide additional width in a boot but it's difficult to make a boot

shorter or longer. A boot that is too large (width and/or length) allows the foot to slide which can often promote bone spurs and/or hot spots on the foot. This is can sometimes be misdiagnosed as having a boot that it too small as it can cause discomfort – make sure you know what the real issue is.

Boot flex is important when considering a new pair of boots. Having the top of the line full blown race boot may hinder an athlete's performance. Race boots should be stiff laterally but they should be soft enough that an athlete can flex the boot forward and get some movement out of the ankle joint. Boot plastic will stiffen as it gets colder so take this into account when choosing a boot. It is relatively easy to soften a boot to promote more ankle flexion but it is impossible to make one stiffer. Athletes should never try to make up for a boot's fit by either overtightening the buckles of keeping them loose. If an athlete must crank down on the buckles to stop their foot from moving within the boot the boot is too big for them. Likewise, if an athlete must keep their upper buckles loose for them to flex their ankle then their boots are too stiff.

My last comment regarding boots is that most manufacturers make very good race boots. It's difficult to go wrong with one of the boots that are a proven design that has been around for years and years. Brands such as Rossignol, Lange and Nordica all make quality junior racing gear. Other brands may also make good junior boots but they just aren't as well known and/or are using relatively new designs. Some boots will naturally work better for some athletes than others. I believe that this quite often must do with the hinge point of the boot relative to an individual athlete's ankle joint. Keep in mind that a quality boot fitter can work wonders with a boot that just isn't working for an athlete.

**Skis**

Modern junior skis allow an athlete to turn easier and hold an edge despite their sometimes, poor technique and/or athletic ability. Engineers with the aid of new and specialized materials have created skis with more shape (sidecut) that are relatively soft in length (forgiving to turn) yet are stiff torsionally (able to hold an edge). A pair of properly sized skis (tuned of course) are somewhat of a great equalizer because they allow an athlete to make technical/tactical mistakes yet carve a turn and carry their speed through a course.

Because these newer generation of skis can generate/maintain high forces in a turn, theory has it that it that they have also led to a higher number of injuries at the upper levels (FIS) of the sport in GS and the speed events (SG&DH). To reduce the number of injuries FIS has been actively changing the regulations relative to ski length and radius. USSA has followed suit in adopting its own rules regarding length and radius for junior USSA racers. The new rules generally require GS and speed skis to be both longer and larger radius than what was used in the past. These equipment rules are the primary driver in ski selection relative to sizing as athletes need to be on "legal" equipment for the level of race that they expect to compete in.

As a lower level athlete or as the parent of a lower level athlete you may say “Why should I care what the FIS requirements are? – I don’t plan to race a FIS event this season”. The reason that you should pay some attention is that the new ski lengths/radius are forcing athletes to change both their technique and tactics from what they may have learned on today’s junior race skis. FIS skis are much less forgiving requiring a higher technical skill level and to ski them to their potential a racer must be much more athletic over the ski. The change from junior or non-FIS race skis to FIS approved skis has proven to be quite a challenge for a lot of athletes. Athletes who were competitive at the younger age levels suddenly found themselves behind the competition simply because they couldn’t adapt to the new equipment and/or they didn’t have a solid fundamental technique and/or they didn’t have the athletic ability to make the new skis turn or hold them on edge.

This situation being what it is coaches have been struggling to come up with a solution to make the transition to the new FIS equipment as easy as possible. One theory (and the one I subscribe to) is to have junior athletes ski on longer length and larger radius skis as they are coming thru the lower age levels. This forces athletes to ski more athletic and to perfect their technique at a younger age sometimes at the cost of performance at the lower levels. It can be a bit of a short-term sacrifice for long-term performance. The included ski recommendation chart takes this into account which is why you will see different size recommendations for the same age level athletes dependent upon what level of competition they plan on participating in. There is no need to potentially hinder an athlete with longer skis and/or larger turn radius if they don’t ever plan on competing at the FIS level. On the other hand, I wouldn’t ever want to hurt an athlete or restrict their future success in a sport by putting them on skis that may make them feel like a hero immediately but may ultimately restrict their future in the sport. If parents are in doubt as to what their child’s long-term aspirations are then play it safe and go with the longer/larger radius recommendation/option.

As with boots all the major equipment manufacturers make very very good skis. Skis however tend to ski different and some athletes’ technique are better matched to different ski brands. Without having the ability to test the various brands and models it generally comes down to what’s the cool color or what can we get a deal on. Whenever possible I would always recommend having an athlete try out the various ski options before making a purchase – this can be as easy as borrowing a teammate’s skis for an afternoon in the spring. When testing isn’t a possibility consult your Head Coach or worst case the ski shop salesman. Don’t forget that even the best skis in the world are only as good as the prep and tune that went into them. A decent pair of skis can be made to ski good and a great pair of skis can be made to ski like crap. You can have the fastest car on the planet but it still takes air in the tires, gas in the tank and a driver to keep it on the road.

**Poles**

Ski poles tend to be the most overlooked piece of equipment. They also tend to be the most improperly sized piece of equipment used by athletes. While it is true that at the highest elite level of the sport racers don’t plant their poles all the time rest assured however that they can

and will plant their poles when needed and learning how to use their poles was an integral part of their development. It is therefore important that athletes are the correct length so that they can develop and use a pole plant as needed.
I very very rarely see an athlete using a pair of ski poles that are too long for them and often they are too short. I attribute this to a large degree on how athletes are sized. In most cases athletes are simply asked to grab an upside-down pole under the basket and if their arm makes a 90 degree angle it is assumed the pole is the correct length. Unfortunately, 9 times out of 10 (maybe 10 out of 10) a pole that is sized this way will be too short when an athlete is standing in the boots on top of skis. If you are going to size poles in a shop using this method take your initial measurement and add another 5 cm to find your SL pole length. Add another 5 cm to find your GS,SG length and if you are getting a 3rd set of poles for DH you would add yet another 5 cm. The extra length is a noticeable advantage out of the start in the speed events. The advantage of measuring the athlete is that it considers whether an athlete has long legs and a short torso or vice versa. If you are ordering poles or as a backup reference you can use the chart included in the equipment recommendations. Please remember that you can always cut a pole down to make it shorter but you can't really add more length to one. Also keep in mind that if an athlete grows 2-3 inches over the summer or winter they will likely need new poles the next time they go skiing.

**Junior Equipment Purchase Process and Ski Shop Fit Weekends**
As a general rule equipment manufacturers offer special pricing via local ski shops for race equipment. Because the markup on race equipment is so low as is the demand most ski shops don't carry a large volume of race product on their shelves. It is therefore beneficial for ski shops to work with their local clubs to provide equipment buying opportunities whereas they can place a special order from the various manufacturers for equipment that has been pre-purchased either via manufacturers race order forms or via a club buy night/weekend.