MANITOBA MASTERS SKI CLUB

HANDBOOK 4

Equipment

for the ski racer

WHAT EVERY SKIER NEEDS TO KNOW

SHOULD I WAX MY SKIS REGULARLY?

The answer is a resounding yes. The performance of your skis can be significantly improved (or at the very least the original performance of the equipment maintained) with very regular maintenance. If you are skiing on snow that has a high component of man-made particles my experience is that after about 6 hours of repeated skiing time the base is depleted of wax (what technicians refer to as dry) particularly right by the edges. Here is where the pressure and friction that occurs on the ski base from edging and then arcing is greatest. This is roughly the equivalent of 2 to 3 days on the snow at most when skiing on soft snow. In effect what wax does is protect the base, encourage the base to slide over the wax particles faster and enhance the smooth interaction of the skis with the snow.

ARE SKI SOCKS REALLY IMPORTANT?

For your socks use a modern ski sock with a moisture wicking property (e.g. Thermax, polypropylene, etc.) or heat retention property (e.g. Outlast). Whatever you do don't use cotton socks. These will thin out from friction trap moisture next to the foot and provide generally poor insulating properties. Too high a wool content will also often trap too much heat. Get a few pair at a time so you can change them daily or even half way through the day when skiing if you go on a trip. Ski socks are also designed for the sport. They are thin where they should be (along the top of the foot so as to prevent the restriction of blood flow and prevent nerves from being pinched) and thicker along the bottom, around the toes and heels so that there is insulation and shock absorption. This assists with a better, more comfortable fit in the boots. Happy feet allow you to perform better on the snow.

WHY ARE FOOTBEDS SO IMPORTANT TO BUY FOR MY BOOTS?

Even an off the rack foot bed such as the ones designed for skiing from uperFeet will allow the skiers foot to remain in a more effective position in the boot and more comfortable shape while skiing. This allows better balance and assists in providing the proper fit. When you stand on your feet and apply pressure to the inside of the arch of the foot your foot can change shape quite dramatically. To see this happen sit down on a chair and take all the pressure off of one foot on a smooth floor. Put a pencil perpendicular to your foot at the front touching the toe in the middle. You may need someone's help to do this. Stand up and watch the pencil for movement as you transfer your weight to that foot by lifting the other off of the ground. If the pencil moves and you find it difficult to stand without rocking or shifting in order to remain in balance you need a foot bed. You are in good company here as 95% of all skiers benefit from it. At the same time your foot will probably have widened at the front in particular and extended in length. This is considered normal in most cases because this is what the foot is supposed to do when you walk. Skiing isn't walking though so you want your foot to remain as stable as possible and as small as possible. This is so that when you try to roll your ankles inwards of the turn and apply pressure to your edges by resistance while skiing you get a reaction and can stay in balance as the turn shape tightens up. Without a stable platform underfoot it's difficult to be consistent and impossible to ski at your full potential. My experience has taught me that **Footbeds=Fit=Function=Fun**.

- Glenn Allen, Head Coach, Manitoba Masters Ski Club

BOOTFITTING BASICS: part 1

One of the most important equipment choices a skier makes in terms of affecting their performance and fun on snow is their boots. This is the essential link that either allows or inhibits good balance and as a result the performance of the skis. The steps to properly assessing this are as follows:

1) The first question is whether it is the proper category (and this includes the flex of the boot) for the skier. Often skiers are spending a lot of money on products that are too stiff for them to flex the ankle through a relatively broad range of movement and as a result balance and make fine adjustments at the ankle joint. The higher the performance of the boot the stiffer it is generally made but this does not take into account individual differences in skier size and strength (which dramatically have an impact on the ability of the skier to use the boot). The question I always ask is it possible to stand in the boot when it is cold and bend the boot cuff towards the toe of the boot so that the skier's knee approximately reaches to the end of the boot? This is with the cuff buckled up, completely enclosing the shin and calf of the skier. In other words does the whole cuff move with the skier's lower leg or does it block this movement in some way.

2) Is the boot the proper length (measuring using the smaller foot there should be about 2-3-cm of space in the boot shell length-wise between your foot and the inside of the shell)? This also promotes good balance on the ski for if the boot is too large for the foot often the mounting point on the ski will result in the skier being too far back on the ski to easily achieve early control of the ski. This phase is critical to creating a platform for generating power.

3) Does the boot provide comfort and warmth under most of the conditions that you ski in? If the boot is not able to keep your foot comfortable (not loose but snug without severe constriction particularly on the top of the foot) and warm then you lose approximately 80% of your ability to balance on the foot. In extreme conditions the boot may require boot heaters but if your feet are cold all the time (and you do not have a medical condition predisposing you to this) then this may require custom fitting or a new boot.

4) What kind of insole is in the liner? This is critical to good balance and is a complex subject. Suffice to say that the insole (often referred to as the footbed) provided with the boot is rarely adequate. Unless the ankle joint can allow the foot to roll inwards (towards the arch) and lengthways (towards the ball of the foot by the big toe) in a
biomechanically appropriate fashion then it is very difficult to apply pressure and balance against the forces involved in carving.

Honestly in terms of the flex adjustment features that come with most boots by far the majority of skiers make the mistake of making their boots too stiff for their body to balance or buying boots that are too stiff in the wrong planes in the first place. This is clear at all levels of skiing. In 2004-5 some members of the Canadian Alpine Ski Team did some on hill training in boots that were totally devoid of a cuff (the upper of the boot). This was in order to realign their points of reference for balance and practise balancing on their feet instead of leaning on their boots. In other words they trained with zero stiffness around their lower leg to improve their balance and to rediscover awareness of their foot on the ski!

My suggestion is that you try skiing with the boot at all times in the softest position possible to achieve better balance. This will to allow you to carry your momentum by moving the centre of mass (roughly your body) down the hill to the inside of the turn. This is critical so that once your skis have reached the fall line and you are starting to carve the turn (grip the snow with the edge rather than skid the skis on the edge and base) you are able to take advantage of the skis capabilities.

A simple diagnostic is to ask a friend who is capable to ski beside you and watch whether you bend the ankle and the knee almost equally at the start of the turn. In other words (depending upon your speed) is your hip over the heel of the binding when your knee is over the toe of the binding or are you sitting back more (greater bend at the knee than at the ankle)? Video will also tell the tale. I hope that this has offered some guidelines. The best thing a skier can do for their long-term enjoyment is find a good custom boot fitter who will work with them to enhance their comfort and value from the boot they buy.

- Information provided by Glenn Allen, Masters Head Coach
- Source from presentation by Terry Makos, Footworks, Canmore, B.C. Check out these websites:

http://www.gmolfoot.com/balance.html , http://www.theboosterstrap.com , http://www.footwearfitter.com
http://www.footfoundation.com/ski-al.htm

BOOTFITTING BASICS PART 2*: After You Buy!*

So you bought those boots that fit you like a glove. There were no pressure points to bother you when skiing to cause discomfort or pain. You were certain they were flexing smoothly and properly in order to allow you to balance on and get the full potential from the new skis. There doesn't seem to be too much room (looseness leads to a lack of precise control) or too little (too tight means cold feet and poor balance). Yet whenever you ski there's a nagging doubt in your mind (or maybe you've seen it on video or a coach has identified this with you) that how you use the mechanics of skiing differs from one side or turn to the other. Many people know that they have a turn to one side that seems better than on the other side and no amount of concentration, practice or instruction seems to make this go away. Is this possible? You betcha! Why? Why Lord Why?

Simply put most of us have issues. Alignment issues. While most of us have two of everything we need that come in pairs (feet shape, shinbones, joint stability, muscle density/strength, etc.) they are rarely symmetrical. As a matter of fact one of the noted things about our standards of beauty are that many of the people we consider to be exceptional in this category are far more facially symmetrical than the rest of us. We're envious cause we're normal (if that can truly be said about anyone)! So put away that self- help book (see below for I Skied like a Freak of Nature in the 70's by Glenn Allen) and come over to the light side Luke with the rest us.

All our lives we learn how to adapt to the inequalities and imbalance of our bodies and make them do things as much like one side to the other as we can. What's truly amazing is when you see how incredibly well skiers without the benefit of 2 or even any of the functioning parts we take for granted (watch a member of C.A.D.S. Canadian Association of Disabled Skiers) adapt in order to rip it up on the slopes. Very many years ago when I was trying out for a high level of certification in the C.S.I.A. the examiner that I was with said to me "Glenn I can't figure it out, sometimes you ski just perfectly and other times like a bag of s---!" Well that started me off on a long journey of self-discovery I tell you (since suicide wasn't an option). Along the way I just discovered that my problems were just more extreme versions of what most people were experiencing but weren't aware of the results because they had no means of measurement.

Proper alignment for skiing has to do with facilitating better balance, timing and the application of force through the boot to the ski to be as similar on one side of the body as it is to the other. This reduces the cognitive need to be aware of what is happening and to allow our body to relax and just do it. It's not a surgical process (we aren't going to reshape your bones) but a boot modification process. Often tools are built into the boot (cuff adjusters) though in more extreme cases the angle of the sole of the boot in relationship to the ski may be altered (canting). With footbeds and flex adjustments, playing with alignment is critical to getting the skis to grip on edge effectively. **BOOT ALIGNMENT OPPORTUNIES ARE AVAILABLE FOR MASTERS MEMBERS BUT MUST OUTCOMES MUST BE OBSERVED ON SNOW TO BE EFFECTIVE. SEE GLENN.**

Picture- Tony H. and coach George B. playing with cuff alignment while Ted H waits his turn.
Article by- Glenn Allen, Manitoba Masters Ski Club Head Coach
Level 3 C.S.I.A., Development Coach C.S.C.F. Sales Manager Sport Chek Polo Park

Balance, Bending and the Boot?

As a contributor to the Sports/Skiing heading of North America's biggest on line volunteer advice centre (AllExperts.com) I am bombarded with questions about boots. I invite you to reach my service at www.allexperts.com and then follow the links Recreation/Outdoors/Skiing/Skiing and other snowsports where you will reach the Profiles pages. Then just click on my name and away you go. I have come to the realisation that the single biggest factor standing in the way of improvement as a skier for most people can reside in this piece of technology. If what you seek is improvement then read on.

Why are the boots so critical to skiing? Why could these be the reason you feel that your improvement is a struggle or you try to accomplish something that seems so simple to grasp intellectually but seems so difficult to perform physically? The answer may be simpler than you think. Here is a recent article I have posted on Allexperts in response to what in the past might have seemed to me or any other member of the retail industry seemed a pretty simple question to answer in the past (and there's where the problem lies).

Question: I am a recreational adult skier and am trying to improve my technique. This year I decided first to rent some equipment for the season while I research before buying. I came across a pair of new boots in a store in_____. The model is_____. They fit very well and seem to be of good quality. Do you know anything about this model and whether they would be good for somebody on an intermediate level?

Answer: This boot is a predecessor in design to this year's Atomic B70. It is a 2006 boot. The specs are: Flex 7; 4 Micro Alu buckles; Forward lean adjuster; Custom Sport liner; Iso. Zorb hinge dampening; 35 mm textile strap; Recco rescue device; Thermic prepared; Offset shell. To see the information associated with most of these specs visit _____ website.

The real answer to your second question is one of 3."Maybe", "Could Be", "Should be".

Now some more specific advice. What makes a boot good for an intermediate? If what you mean is will this allow me to ski comfortably and yet at the same time also to improve my skiing progressively that depends on 4 things:
1) your size (weight and height) and body shape
2) your athletic ability (strength, flexibility, ability to balance)
3) the kind of skiing you want to do or technique that you use and where you are going to do it (terrain and snow type).

The single most common error in boot selection that most intermediate skiers are forced into by the market designs and retailer pressure (or lack of actual on snow observation) is the assumption that a more expensive (assumed to be better performing) boot with more technical features will ski better. It may fit better, it may feel better but skiing really well is a matter of being able to do a number of relatively complicated movements and adjustments on the fly while encased in plastic. In short the CSCF has identified the following characteristics of great skiers:

1) Use of the pole (e.g. timing from a pole plant)
2) Upper and lower body separation (e.g. the aspect of counter rotation or resistance in the core to effect acceleration from the skis)
3) Carving on the outside ski (e.g. the use of momentum, angulation, inclination and effectively timed pressure to effect change of direction and decrease, maintain or increase speed)
4) Natural balance (rather than saying "centred" as effective balance is a product of the morphology and biomechanics of the skier and the capabilities and design of the equipment and is not static but needs to be adaptive)
5) Use of all joints

The later 2 are tremendously impacted by the boots. If you picture this analogy a skier is like a Formula 1 racecar with the driver. If the skiers are the tires the boots are your suspension. The best driver in the world can't overcome the components of their auto.

In a nutshell intermediates are often placed into boots that do not allow them to balance naturally and use all the joints effectively (in particular the ankle flexion necessary to stay in balance on the front of the ski and the whole ski at fairly critical parts of the turn shape.

The good news is sometimes that if you buy a boot that is not the right flex (very common problem) it can sometimes be modified (grinding and cutting in the shell) but this usually consists of some additional cost to the consumer. The other issues of alignment and support that can be dealt with through adjusting the features available

on the boot, adding footbeds that allow for skeletal support, additional items like Booster Straps to smooth out the flex of the cuff, and even progressing to canting or sole grinding to adjust alignment are all extras for the most part in today's bootfitting world. The important thing is to start with the right flex, fit and boot design to be worth doing this. Sorry I can't go into more detail. For more information you can visit the website http://www.manitobamastersskiclub.com/ and look under the link "Coaches Corner/ Bootfitting Basics.

There are ways to test the flex in the store but remember that the outside environment usually has the ability to stiffen the shell significantly (past the point of being able to bend the ankle enough to stay in balance). Next time you go skiing and ride up a chairlift watch the skiers coming down and guess whether from their body posture they are gripping the snow with the whole ski, starting the turn with pressure at the tip or simply riding the tails. As a long time coach and instructor it pains me to admit that we have spent decades trying to get skiers to bend and balance at the ankle through technical talk but missed the most basic and now most obvious question about performance: Does the equipment you are in allow you to accomplish the goal or task at hand? In most cases the answer is a resounding no!

Good luck and if I can be of any other service please let me know.

All right Masters now the straight goods. In order to achieve your goals as a skier you should have your boots evaluated on the snow and afterwards in the chalet to see if they are working. Without addressing this issue you could spend all year (or in the case of one of our members that I recently assisted 5 years!) struggling with ill fitting or poor flexing products or missing the enhancement that a little custom work could provide. Be assured that whatever shop has sold you your existing product has not intentionally made an error. The reality is that when we sell people ski boots it is usually in a vacuum of information. Most salespeople don't have an opportunity to receive training as coaches and the opportunity to observe the skier's performance afterwards. The natural assumption in the industry is that as a person gets better they need a stiffer and stiffer boot. This is not an attempt to sell you anything but an acknowledgement that as coaches we have a responsibility to ensure that your learning environment is ideal.

So here is my commitment to the membership:

If you have a question about whether your boots are correct in fit, flex or adjustment I will take the time to do a proper evaluation of your skiing and equipment on the hill. You can then take this info to the bootfitter or shop of your choice to work with them on the issues I identify for you. This is not an attempt to sell you anything as often some simple work can make most properly fitted boots perform better. Simply make sure that at training sessions you approach me before we go out on the snow and we will make the time for you. Your improvement is in your hands

BETTER BOOT SELECTION + BETTER FITTING = BETTER SKIING

- Glenn Allen, Head Coach MMSC

Article 6

Nine Steps to Basic Ski Tuning

Equipment plays a tremendous role in Alpine Ski racing, and there are many factors that must be taken into consideration: Strength, experience, and ability - just to mention a few. As a coach on hill, you will provide your athletes technical and tactical training, which so often is not effective due to improper equipment. Whether it is the boots (canting, stiffness, or fit), or the skis (kind, structure, length, torsional stiffness), it is important that you as a coach set up each individual racer with the equipment they need. The problem with many racers today is that they want top of the line equipment, which they do not have the strength, power, or skills to work with. It is important that the skis are not too long, too stiff, or too sharp and that the boots allow lateral movement and are not too stiff.

Tools for Tuning

· Good set of ski tuning vices (very important to do the job right!)
· Flat block
· Elastic for holding the brakes
· Fibertex
· Horsehair brush
· P-tex candles
· Silicon sand paper (#100 #150 #200)
· Metal scraper
· Plastic scraper
· File cleaner
· Body file
· Chrome files
· File Guide (2 degrees)
· Masking tape (1/2 inch wide)
· Straight edge
· Diamond stone (or finishing stone)
· Iron or waxer
· Wax
· Plastic wraps

Step One

Before you start to tune the skis, look at the sidewall, and the top sheet condition. There should not be any nicks or deep marks on the top edge , sidewalls as during a turn not only the edge runs in the snow, but also the sidewalls, the corner edge, and the top sheet will be dragging in the snow. If these surfaces are rough, they will interfere with the ski and slow it down. Use a file, or sandpaper to smooth out these surfaces.

Step Two

Securely place the ski in the vice. The brakes should be clearly out of the way for both the work on the base and the work on the sidewall. Look at the base for any gouges. Use a P-tex candle to fill the base. When dripping the P-tex into the grooves, ensure that you do not drip carbon onto the base. Constantly keep the flame clean by dripping "dirty" p-tex onto an extra metal scraper. Let the P-tex cool, then scrape using a sharp metal scraper to level the repair with the base. A body file may also be used for this purpose.

Step Three

Use a straight edge to check how fla t the bases are. The base should be flat. If it is not, wrap the #100 sandpaper around the flat block and sand with even strokes until the base becomes flat. It is important that while you are doing this, you keep checking with the straight edge to see how much sanding is really needed. Remember that while you are doing this process you also texture the base! Once the base is flat, use the brass brush to clean the base, this will also cut the extra fibres that are left from the sandpaper. Use the Fibertex (wrapped around the flat block) and the brass brush again and again: The more

you brush and Fibertex a ski the faster the ski will get! It is very important for the entry-level athlete to have skis which are flat, or which have a slight bevel. This will facilitate turning. If skis are checked with a true bar occasionally, then convex or concave (railed) skis will not interfere with skill development.

Step Four
To make the ski turn easier and to eliminate the "grabby" feeling that sometimes occurs, you will need to bevel the base edge. To do this , take your role of 1/2 inch masking tape and wrap 2 or 3 layer thickness around a file. Place the file almost across the ski - 90 degrees (NOTE: not 45 or 60 degrees). The file should be perpendicular to the edge. It is important that you do one edge at a time. Please note: Depending upon the location of the tape on the ski, it will change the angle of the bevel. A good trick is to mark the edge with a felt pen so that you can see how much edge you are taking off. When finished check again with a straight edge.

Step Five
Place the skis securely on the side in the vice, with the base facing away from you. To bevel and sharpen the side edge, take your file guide and with consistent strokes begin to file. It is best to pull the file towards you, rather than push the file away from you.
If the skis are new and the edges are at 90 degrees, to do the first initial filing, replace the normal file with the body file. Once the edge has been taken down, finish with the regular file.

Step Six
Once you have achieved the sharpness that you want, use the polishing stone to smooth the edge off, and also to take the burrs off the edge.

Step Seven
Now you must de-tune the skis to meet the needs of the individual racer. To do this consider the ability and strength of the racer, and also the conditions of the snow. Some racers will require a short de-tune, for others they will need a longer de-tune....this will require the coach to watch the athletes ski and train. To de-tune you can use a stone, or emery cloth.

Step Eight
Once you have cleaned off all the filings and excess it is time to wax. To ensure that you "hit" the wax it is important to consider the snow temperature, the air temperature and finally the humidity of the air. It is very often that the snow temperature and the air temperature will be very different. When waxing, ensure that the iron is not too hot and loosen off the vices to allow the skis to expand with the heating of the bases. The wax should puddle on the base, but should not smoke. Allow skis to cool completely before scraping (approx 20 min).

Step Nine
Once you have scraped the skis, texture the wax using the horsehair brush. Ensure that all excess wax has been removed from the sidewall, edges, tip and tail of the ski to ensure smooth running. Place Plastic between the skis before taping or strapping.