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HAPPY NEW YEAR 2015 to you!!! Hope you had a super year 2014 and great holidays leading up to this New Year. I hope you did not wait till now with all your reflections, but you were constantly reevaluating each day throughout the previous years. This way you were able to stay on top of things and alter your journey as need came up. Surly you did not wait just to find yourself in deep you know what. Of course, it is all easy to say, but hard to do. There are so many people, men especially, that hit their mid life and have to face this thing called “mid-life crisis.” They look back at their life and then look ahead to see where their life is taking them and do drastic things – change jobs, get remarried, start a new family, move, or even commit suicide.

They get to the “point of no return.” Wow, I remember writing on this topic in the last issue of Peak Performance and a little more in this one.

But, I know that it is always nice to have some new things to work on, new plans, new resolutions. Since all our walks of life are different, it is difficult for me to suggest new resolutions for you. But, for skiers I have one generic suggestion, which most skiers need. Here is a plan for you in case you could not come up with one on your own. In every cross-over transition try to feel the pressure rolling around on your toes and around the shins. Let me explain.

Pretend you ski with feet directly through analog clocks where 12 o’clock points straight forward. In cross-over transition, no matter how fast it is, try to feel each toe in a row while rolling pressure
against each boot with your shins in a circular fashion between 10 o’clock and 2 o’clock (or so) without skipping any hours. See the photo on the right.

Among the one I suggested to you, I have made some other New Year’s resolutions for myself. I have in the plan for May 2015 to get my right hip replaced. I have been waiting with this for several years because I was told that if I have one done, then I will have to tune down my skiing. But, my hip the way it currently is, is tuning down my skiing any way. My doctor showed me my x-rays and we are both amazed that I can do anything at all with the hip the way it is.

I was facing progressively restricting movements in my hips for some years now, but my skiing accident in 2008 has seriously contributed to my present condition when I tore up the right side of my body. (You can read my article on zero dorsi-flexion in this issue of Peak Performance.) Now I have huge bone spurs all around my pelvis preventing femoral ball to move around in its socket. There are dangers that some of those bones might break off. A loose bone floating around would not be good.

So, my resolution is somewhat dependent on other factors, but my intention is to recover and get myself ready to ski again next season. I pray for healing. Unfortunately, hip replacement will not fix other serious issues in my body. But, like others say – I hide it well when I ski and hope to continue doing so.

There are other reflections I have been making. In particular, those pertaining to Peak Performance Gazette. This gazette has been around now for 6 years and it is a highly respected resource for skiers and other athletes all around the United States. We have had articles published by people of knowledge from all walks of life. We have been supported by outstanding companies and individuals. I can’t thank them all enough.

I hope you will find this gazette as one of your worthy reading materials. This is the 54th publication of Peak Performance Gazette, and I am so excited to see you reading it. I hope that you will take time to look through our previous issues as well. They are easily accessible through numerous means, and the ARTICLE INDEX created by Gordon Carr of Sugar Mtn. NC, can help you locate an article that you are looking for.

Look for Peak Performance in the dropbox found on

www.dropbox.com/sh/wjrz16pzrpho63i/PQr004dmUj.

Click on the issue you want and then click “download.” You can also journey to the bottom of my webpage

www.mathsci.appstate.edu/~wak/.

Another way is to look up Peak Performance Gazette on Facebook. Or you can Google search “Peak Performance Gazette” and look at the very first reference. You can get information about Peak Performance Gazette from you Ski School Director or Ski Patrol Director.

The online collection has also been linked to the Appalachian State University Library collection. Here is what you need to do:

1. Go to the library’s web page at www.library.appstate.edu.
2. At the top of the library page in the yellow box, click on Books & Media.
3. Select Title from the drop-down menu to the left of the search box, then type Peak Performance in the box.
4. Select item number 1, Peak Performance.
5. There are four records matching that title. The first one, which indicates Online Access, is the one you want. Click on Online Access, and you are connected to my web page and the archived issues of Peak Performance.

Yet another great way to access Peak Performance is through the newly launched website

www.peakperformancegazette.com/.

The bottom line is: there are no excuses why you would not be able to find this wonderful skiers’ resource. Best yet, write me at

Kosmalaw@bellsouth.net.
I hope you will get so excited about this publication that you will share it with others. Let others find out about this publication. Let them read and get inspired and motivated and hear others’ point of views. My further hopes are that you will choose to share your knowledge and passion for skiing by submitting an article or a photo, by advertising through us your mountain, your ski school, your business, etc.

For legality issues: the ideas, concepts and opinions expressed in Peak Performance are, as always, intended to be used for educational purposes only. Authors and publisher claim no responsibility to any person or entity for any liability, loss, or damage caused directly or indirectly as a result of the use, application or interpretation of the materials in these gazettes.

Main Course

Peak Performance INDEX
Thru December 2014

By Gordon Carr

An Index for all the editions of Peak Performance has been completed up through December, 2014. The gazette now consists of 54 editions (2009 – 2014), 9 per year and is a concentration of knowledge about the winter sport we all love so much. In Witold Kosmala’s University website, www.mathsci.appstate.edu and the www.peakperformancegazette.com website, the current index appears separately and at the top of the page.

I’ve only been a PSIA/AASI member for 15 years so who am I to say…maybe there is another single publication which has this much focused information about improving our teaching and our skiing/riding performance. But I haven’t found it and I have most all of the current publications and many of the earlier ones also. Sure the official technical manuals and core concepts publication and all the discipline specific publications are chock-a-block full of great knowledge. But because they are “official” they have to be “vetted” and speak to the concepts and principles embraced by all our divisions and national organization.

The Peak Performance is “official” nothing; it is “grass-roots.” It is a compilation of articles written by skiers and riders who love the sport…that have a passion for snow sports, a commitment to improve and also a desire to share their passion with their students. Hence you may very well read articles which are not exactly “politically correct.” And that is the strength of the gazette! The articles are the views and beliefs of the author who has found value in the concepts expressed either for improved teaching or personal on snow performance improvement. Just like with our students there is no “one way” to present an important learning task. Not everyone responds and understands and learns in the same way...hence the value of creativity and flexibility in our teaching strategies. So too with the gazette and the concepts and principles expressed herein. All these 100s of articles over these 5+ years present information about skiing/riding or teaching which is important to someone (at least the author.) Hopefully the article may just contain that wording or that piece of information about a topic which helps a reader or two have an “ah ha!” experience and a break-through in understanding.

It has been an enlightening experience for me to write for the Peak Performance and it has clarified my understanding of many snow sports concepts and principles. Having to put an idea to paper requires that you distill the garbage in your head, discard the trash (this part always takes me a bit of time) and organize the pearls. Teaching others in any endeavor always improves your own understanding and performance. I encourage all of you to send an article to Witold Kosmala at Kosmalaw@bellsouth.net. He is a gentle editor and constrained in the exercise of his editorial pen. This must be so...he accepts my stuff.

But I do have to stop doing this index update...each year I get sidetracked by an exploding interest in an article discovered by an accidental view of the title during the review for this update. The diversions this year have had me reading into the wee hours several nights. You find an intriguing title and by tracking it down in an edition, you see other interesting articles in that edition which you had forgotten and so you read that and...ad infinitum. Oh! Woe is me! But then again to have such a problem....! Enjoy.
Internalizing the Dynamics of Skiing

By Eric Marlan

Sometimes great insights come from our own experiences. Having skied for a long time (I first joined ski patrol in 1986) and biking competitively for many years (cat 1 for almost 10 years), sometimes I forget what it was like to learn. I group the two activities since there are many similarities for the ideas that follow and I want to draw on that connection. I don’t remember anymore the struggles and slow progression in my skills development on the bike and skis, however two recent events have given me a bit of insight into that learning process. Unfortunately I have ended up with lots of ideas and questions but few answers. I hope that my column here will inspire someone with more experience than myself to write a follow-up article that will resolve a few of my questions.

Event one: I have returned to ski patrolling after a hiatus of 15 years. Between a move away from ski country and a newly growing family, skiing was just not in the cards for many years. Now however, my younger son has decided that he wants to learn to patrol and so we are doing it together. I am relearning all of the skills and knowledge I had 15 years ago. It is coming back quickly, but I can tell I have lost a great deal.

Event two: My first bike race was in 1991 and I have raced more or less continuously since then. One of those years I raced 46 times! For all of this preparation, I felt an almost panicked fear riding a mountain bike tandem this past weekend with my wife, mostly worrying about the consequences of a fall. This is our latest adventure and it is going to be great fun, but the dynamics are not the same. Nothing felt natural and it seemed like I was wrestling the bike and losing badly.

So the issue for this article is, how do you move from the death grip tension of your first few experiences to the unconscious movement we develop over time? On my single bike and skiing a nice groomed run, I hardly even pay attention to what my body is doing. I use these times to relax and think about other things – I feel
like I turn my brain off and just let my body do whatever it wants, confident that it will make the right decisions.

Now, in this transition I don’t mean the stage where we are learning techniques and concepts. I mean the stage after that, the stage where I know what I am supposed to do but I have to consciously think about it and dictate to my body what to do. I commented to a friend the other day that I felt that my wife was actually a better skier than I was but that I was just very good at recovering from mistakes. This got us both thinking. In a sense, we make mistakes skiing and biking all the way down every trail. Every bump threatens to send us to the ground and we respond by altering our body position to compensate. We increase pressure to one toe, flex a muscle in a forearm just a bit more, and we continue in a straight line. Small adjustments made without thinking keep us looking from a distance like everything was planned out in advance. Ha! Sometimes we work very hard to make things look easy.

Somehow, these adjustments become quicker and require less thought as we progress from the beginning ranks to the advanced. At the beginning you might be laying in the dirt, blood seeping out of your knee, thinking that maybe you should have leaned a bit more to the right when you hit that rock. At the beginning you might be cooling your face in the snow, thinking that turning your knee in just a bit more would have prevented that edge from digging in. But later, those thoughts would just be an integrated response that didn’t even register. Your body would respond and adjust “automatically”, whatever that means.

At some point, we have learned the lessons, we know what we are supposed to do, but our bodies are not yet responding seamlessly. We have not internalized our motions to respond to subtle (and not so subtle) changes in the terrain. A first question might be, how do you make the transition? How do you take this process knowledge and internalize it to make it part of the integrated system?

However, I argue that these are not the important questions. We know that practice and repetition does more than just bore us to tears. Practice, over time, trains our responses to incorporate these new types of input and matches them up with automatic responses. It is not enough to know the theory, our bodies need the time to internalize those responses. We know how this works. But the more important question is, how can we accelerate this process? Why do some people internalize faster than others? Can we teach this process? Can we do this without becoming too friendly with the ground? Or maybe the greatest teacher is desire and commitment?

So now that we get to the primary question, it comes back to you. What are the specific exercises that might accelerate the process of internalizing reactions and what is it about the exercise that works? If we could understand the drivers, I think we could purpose build exercises for a variety of skills that incorporated the same theory. I will propose one idea, hopefully you will have more.

As a possible example, let me give an example from mountain biking. Frequently I run into people who have trouble managing braking power in the front and rear brakes on their bike. I have talked to people who are so scared of going over the handlebars that they never use their front brake at all. When should they use the front brake and how can they avoid disaster? So here are some exercises to get you comfortable using your front brake properly.

- Riding very slowly on the pavement, crouch down, lean back, and apply the front brake mildly. Slowly increase the strength of the brake until you feel how strongly you can apply the brake and how low you have to crouch and push the bike forward (lean back) to feel comfortable.

- Ride down a mild downhill stretch of paved road. Using only the front brake, weave back and forth in an “S” pattern. Repeat using only the back brake. This is the easiest way to feel first hand how the handling changes when you use the front brake and how the effectiveness of the brakes are different. The front brake is the best at reducing your speed, but limits your steering ability.

- Now apply these same two ideas on a straight stretch of trail and experiment.
• Now ride a switchback with only the front brake. Ride the same switchback with only the back brake. Experiment with applying different combinations of the brakes both in timing and strength. What you will find is that a balance works best usually, but that being heavier on the front brake coming into the turn controls your speed better and more pressure on the rear brake helps maintain control during the turn.

After this, the ideas are ready to be implemented on longer stretches of trail and discussed. The rider should continue to experiment on the trail and try different combinations and discuss how it felt.

So what has this exercise accomplished? I think there are two parts: experimentation in the limits and reflection. If you don’t experiment, you won’t have as good a sense of what doesn’t work and what that feels like. You need your body to learn what it feels like to get it right and what it feels like to get it wrong – in small ways and in big ways. The more sensitive you can differentiate, the better your tuning. However, you need to experience the bigger, exaggerated differences at first so that you can learn what to look for. You have to try it yourself and then reflect on what the differences are. As you experiment, you can progress to more difficult terrain and conditions.

I suspect many of you have told skiers to lean forward more but have you thought about having them lean backward more or to lean forward much more than they should? At first they can feel the extremes easily but are not skilled enough to sense the more subtle differences. Exaggerating the differences can help them get a sense of where you are headed. After they understand the extremes, they will have a better idea of what to look for as they fine tune. Then, continued experimenting and reflection helps to train them not only in how it feels to “do it right” but in how to correct themselves, beginning in an environment where they are ready for it.

Does it work? Maybe. I think it has helped me to improve my bike handling skills. Is it faster than just riding more? I am not sure. I wrote this partly to see if anyone else had thought about this before …

Dr. Eric Marland of Boone, NC
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• USAC Category 1 racer in mountain biking and cyclocross, with multiple state and regional medals in cyclocross, cross country, super downhill, and road biking.
• Professor, Department of Mathematical Sciences, Appalachian State University

Can one Ski with NO Dorsi-flexion?

By Witold Kosmala
PSIA-E Alpine, Level III
K2 Ambassador

The answer is: YES, in fact, I do. So, I will speak from my own experience. First, let me tell you a little about myself. Almost 7 years ago, on March 4, 2008, I had a skiing accident, which, according to ski patrol and doctors, I was not supposed to survive. Enormous inner bleeding and trauma were going to do me in. They could not pump blood into me fast enough. My own blood was running out my lower leg together with small pieces of bones from shattered tibia and fibula in my right leg, and the rest of the blood was collecting in my hip area causing the largest hematoma you can imagine which made the right side of my hip eventually twice the size. But, all this is not really an important part of this article. It is just to draw you a picture of the situation which took my quite a healthy body to the broken state and eventually resulting in a miraculous recovery, but leaving me with a permanent issue of zero dorsi-flexion in my right leg, crooked leg, sticking out screws, calf muscle was put in the front of my leg in the place of the shin which still has tendency to cramp up, extensive
skin grafts, extremely poor circulation, total numbness in many parts of my body including my lower right leg and my right hip, as well as only partial feeling in both of my legs and left arm, and degenerate hips. Fortunately, I have some feeling of the bottom of both my feet and the toes. (Yes, number of other issues still exist that make my life a real challenge.)

My road to partial recovery following multiple surgeries and stiff bills was long, difficult, humbling and hardly over. But, I am convinced that due to powers from the above I am back on skis. After skiing in agony with one huge unbuckled rear entry boot for a season and a half, in my second ski season after my accident I was finally able to put on a front-entry performance ski boot on my reconstructed right leg. An outstanding boot-fitter and part owner of Foot Loose Sports in Mammoth Lakes, CA by the name of Corty Lawrence, made huge number of adjustments for me to Nordica Spitfire 120. He fixed the canting, installed interior and exterior heel risers and dropped my toes in the boot’s shell. He also made a custom liner and put in foot bed and heaters. Sounds simple, right? Well, no, it was not simple, and work is still in progress. Pressure on extremely sensitive muscle flap (where they used calf muscle to plug up the hole in front of my leg where shin was totally shredded and where I need to apply pressure in order to ski) and damaged nerves on top of the foot together with poor circulation, were causing excruciating pain even though the foot is partially numb and the lower leg totally numb. Every little excess pressure needed to be punched out of the boot or shaved out.

When I left Mammoth Lakes, CA that winter (2010), I attended a PSIA-E event at Hunter Mtn, where during lunch and after the day was done I visited Irwin Mallory for boot adjustments. There was no way I could take off the boot without warming up the shell, the foot was just too sensitive and I could not bend down far enough to open the boot with both hands. Next season I was back at Mammoth and every day after skiing I visited Foot Loose Sports where their wonderful boot fitters made fine adjustments.

This is the lower part of my reconstructed leg. It has zero dorsi-flexion. If I push the knee forward in order to get it over the toes, the heel goes up about 2 inches. (I am amazed how well this leg has healed. The hole under the fold on my leg where they put my calf and covered with skin graft is hardly visible. Even the dibble of calf they left on the back of my leg has nicely developed. Absolutely incredible.)
OK, so, 3 seasons later I can finally have a relatively comfortable boot on my reconstructed leg, where forward lean is manageable. (It still needs heel rise of another 3 or 4 mm.) But, I can click my boot into the ski binding and look to an outsider like a normal person. Unfortunately, that foot is on its tiptoes with incredible heel rise and toe drop of roughly 1.5 inches. The boot on this leg with 120 flex index is practically like a 1,000, since the ankle is frozen to flexing past 90-degree point. One other issue is the bone alignment. Since this leg is excessively flexed all the time, I cannot rely enough on bones to hold me up, so in my case, I regularly get cramping hamstring and adductors in my thighs.

Now, what does that do to the other leg, knees and to the hips? That’s another story. When my left ankle bends so that the knee is over the tip of the toes, my right leg has to slide forward good 6 inches. That is an unavoidable tip lead in the right leg.

Here is a side view of my legs. If my left leg has a proper dorsi-flexion, then the right leg has to slide forward about 6 inches. If it stayed side-by-side with the left leg, then the heel would come up much higher then the ski boot would permit while ski boot still staying flat on the floor. Remember, currently my ski boot can accommodate only about one and a half inch heel rise at best. Furthermore, observe how much steeper is my upper left leg then the right. The right side makes it look like I am sitting back. There are no parallels anywhere.

Here on the left is a diagonal view of my legs. You can see how much higher is my right knee and my right heel. This seriously tips and twists my pelvis.

One leg cannot be fixed without altering the other. In addition, my hip was seriously tipped and twisted and one knee was couple of inches higher then the other. To help this scenario, Corty at Foot Loose Sports gave me a 7mm rise on the whole left boot. This helped with tip lead and crooked hip, but it is still not enough. Also, flex index of 120 is much too soft for me, especially compared to the one on the right leg that feels like a 1,000.

Zero dorsi-flexion doesn’t only affect my stance but movements and mechanics as well. To start with, it is difficult to prevent the right foot from sliding forward in my boot and jamming the toes, unless the bottom boot cuff buckle is pretty tight. That however cramps up the foot and restricts the blood flow. It is difficult to keep the heel back in its place, which creates broken, bend, in-grown toenails.
and toe infections. The raised heel makes me stand taller and tip toeing down the slopes as if in high-heel shoes with having less power in turning. Foot with raised heel has shorter base of support and has smaller twisting strength, has poor angles and creates more sensitive balancing abilities.

Outside ski with excessive tip lead almost all the way to the end of a turn creates unwanted hip rotation. Turning to the left, my right leg wants to do that. To avoid this, I overpower my left inside leg. This creates undesirable pressures, especially on firm snow. Now, turning to the right, where my right leg is the bad one, it is extremely difficult to tuck it under me. The tip lead is just too big. So again, I force it back which puts more pressure on the tip of the inside ski, which reacts a different way then I want it to react. After all, my right leg will not flex forward in my ankle, so to pull it back I am making my heel come off of the boot’s foot bed and apply extra pressure to the top of my foot as well as over-decambering the ski tip.

There is something else that is an issue: skiing bumps with one boot that is as if made of steel with absolutely NO flex in its boot cuff, while the other boot is normal 120 flex. Lateral action is pushed to its limit.

How about this one? Try skiing fast on a wavy or rough surface. It took me a while to learn how to do this to avoid loosing teeth and painfully shaking my brain. Letting the leg absorb the vibrations in the knee helped, but not adequately. What helps me the most is to transfer my weight to the good left leg. This makes turns to the left more awkward, but at least safer on the brain.

Surprisingly enough, there is no separate classification on NASTAR for skiers with reconstructed legs.

What else? Hop turns to the left where landing cannot be absorbed by the ankle. Ouch!!! Maybe that’s why my hip is getting so bad because I simply don’t stop?

When my skis hang down when sitting on the ski chair lift, tip of my right ski is half a foot below the tip of the other. The only way to lift it is to straighten out the knee (tip lead) or lift the leg off the seat which lifts the boot up as well. As you can imagine, this translates to undesired floatation in deep snow since the right leg wants to dive.

Surprisingly enough, I feel the least amount of handicap skiing steep powder since platform builds pretty quickly and edge precision is of lesser importance.

And how zero dorsi-flexion effects everyday life, like going up and down the stairs and inclines, or even the littlest things like trimming toenails is a story for another time. However, in dry-land training I do not demonstrate anything pertaining to going down the stairs. I only talk about it. No one wants to see me taking a step down without being able to flex the leg in the ankle.

If you have issues with limited dorsi-flexion, you can still ski as long as you have passion for the sport. Passion will help with physical limitations and with overcoming the pain, and will bring a necessary patience. I ski every terrain there is and I was told by many skilled skiers that I hide my handicap very well. You can too. Get your journey under way.
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Made in the USA
Tree Wells

By Witold Kosmala
PSIA-E Alpine, Level III
Trainer at Sugar Mtn. Resort Ski School, NC

Powder day. Hurray!!! As they say: “There are no friends on Powder Days”: right? WRONG!!! On powder days ALWAYS take your friend with you. Deep snow conditions, tree wells, fallen trees, fences and other obstacles may be encountered, especially on ungroomed slopes. Bringing your friend with you may save your life.

Skiing in powder techniques and tactics will be discussed at another time. This article will focus on tree wells. Tree wells are formed a couple of different ways. One, most commonly, tree wells are formed around the bases of evergreen trees where the canopy of a tree prevents snow from falling all the way to the ground. Branches of the tree block the snow from accumulating near its trunk. The visible overhanging limbs interfere with the deposition of falling snow as well as the limbs that are already totally covered by the snow and are further away from the trunk since they are longer. The resulting cavity, known as a tree well can be deadly. A well is made up of branches, very loose snow, pockets of air, and has practically vertical walls. Every year, the swallow people whole, who not rescued instantly, die from suffocation.

What normally happens is that a skier gets close to a tree (visible tree or totally covered up tree by snow), his/her skis tracking deep under the snow’s surface get caught up by widely spread out branches or other obstacles, or he/she drops into pockets of deeper and looser snow if an entire tree is covered, and send the skier forward on their head – like going over the handlebars on a bicycle. Even if the skier is not going directly toward a tree, the looser snow next to the tree will make the skier’s body slide that way. Tree is like a magnet. It is harder for the skier to submerge his/her head into a snowpack away from the tree, so if he/she is close to the snowpack’s edge, the loose snow near the tree will steer the fall toward the tree. Also, longer branches of a tree close to

In the photo below, look at the trees behind me. Do you see all that snow on them? If those limbs weren’t there, where would this snow be? Yes, that’s right, most-likely on the ground below. (That’s not exactly true, but for now we will say that.) Some of the snow was probably blown off the tree by the wind or evaporated, so even if all that visible snow came off the branches and fell right under the tree, there would be still less snow then there is further away. Moral to the story is that there is much less snow next to the tree then further away, and there is nothing that packs it down. Look how uneven the surface is between the trees.
the ground which are covered by snow make the surface away from the visible canopy very unstable as well.

So, now the skier is going head first into the hole next to the tree. He/she is falling through small openings between the branches knocking down loose snow as they submerge. If the skier looses skis, they will fall much deeper since their skis will get caught up in the branches and stop the fall. But, always, snow will follow the victim (with skis on or not) and cover them up even more, making it almost impossible to see them from the outside. There are extremely high chances that this skier will suffocate.

If this skier moves around, more snow will fall in next to him/her and decrease the amount of air even more so. Shaking will make the skier fall in deeper, make them breathe quicker and use up the little air surrounding them. There are a few things that skier can do to help themselves when actually falling into a tree well. Here are a few suggestions.

- If your fall is inevitable, try falling sideways away from trees. Roll if need be. Try anything you can in order not to go in head first and straight as a nail.
- Let go of your poles (straps should not be on your wrists when skiing deep snow) and put arms in front of your head to form an air pocket.
- Keep mouth closed to keep loose snow out.
- Call out to your partner as you are falling.
- Perhaps you have whistle in your mouth. Use it as you fall. Keep calling out for help as long as air permits.
- As you are falling into a tree well try grabbing branches as you are going in to prevent from going very deep. Thick gloves will protect your hands and helmet with goggles will protect your head.
- Don’t hurt yourself by hitting a tree or its branches.
- Once you stop falling, if possible, pull out your cell phone from the chest pocket and call ski patrol number already programmed into your phone.
- Don’t uselessly wiggle. That only causes you to fall in deeper, make more snow cover you up, decrease your air supply, and make you tired which takes up more air.

Tree wells can also form around tree trunks due to circulating wind. See the photo on the right, where a medium width tree well is in the making. Observe that the little trees also create unstable ground.
As you can see, skiing in deep snow may be very risky, even if you don’t see any trees. They might be all covered up by the snow. Invisible claws from underground can come up and grab you by your feet. It is like walking on land mines, unless you know the area. Little trees might actually be tips of huge trees with hidden deep tree wells.

OK, so you go “skiing the trees” with a partner, but how? If your partner is below you, most-likely his/her tracks will show you the way they went. You can follow their tracks, but what if you don’t? How will you know which way they went? It is so easy to get separated. Some sort of a whistle or constant calling out would be recommended. Best of all is if you both stay in visual contact with each other.

What if you see your partner fall into a tree well? Now what do you do? Remember, their life might be in your hands. They might live just as long as they can hold their breath. So, here are a few things you can consider doing.

• Don’t become a victim yourself by falling into the same well (or another, or dropping deep into powder surface.)
• Try to create a passageway to get air to your partner. Dig very quickly, but don’t hurt yourself as you will become useless.
• When a breathing hole is formed, try digging them out, if possible from the downhill side of the well because you will not be able to pull your partner straight up. This is most-likely not the way your partner entered the well.
• Don’t take time to call Patrol since there might be no time for them to get to you before your partner suffocates.
• Have an idea of where you are in case you were to call Patrol for further assistance. You need to tell them where to find you. Have Patrol’s phone number ready in your phone.
• Report the accident.

What if your partner is behind you and their calling or whistling stops? Now what do you do? Remember, walking up the hill on steep terrain covered with soft snow (or cliffs) simply might not be possible. How do you know what happened to your partner? Maybe they just got tired of calling or whistling? Maybe you got separated? Maybe they fell? Maybe they are calling or whistling from inside a tree well or from under deep snow? Now what?

You need to avoid this situation at all costs. It would be rough to live your life knowing that your partner died because you could not help him/her. By these words I am suggesting prevention. The best of skiers and snowboarders die every year in tree wells. Skiing and riding in deep powder and among trees is a thrill like no other, but be smart and stay close to your partner and keep looking at each other at all times.

In summery, when skiing trees:

• Check the weather report.
• Go with a buddy.
• Have knowledge of backcountry safety.
• Carry proper equipment.
• Remove pole straps from your wrists.
• When you ski, give trees plenty of space. Look at the open spaces between trees and not at the trees themselves.
• Keep your buddy in sight at all times.
• Don’t panic.
• Realize that accident can happen to anyone.

To close, let me just make a note that tree wells can actually be used to help people survive by providing a shelter in case of emergency. Learn more about that before you venture away from home.
Join Kamp K2 & Discover:

TRUST, STRENGTH,
AND CONTROL
Appalachian State University hosted the 71st Eastern Snow Conference (ESC) in Boone, North Carolina, from 3–5 June 2014. The ESC is an international organization in Canada and the United States concerned with snow and ice, in particular the origin, precipitation, accumulation, character, melt, and runoff of snow. The ESC is described in the first published Proceedings as a relatively small organization operating quietly since its founding in 1940 by a small group of individuals originally from eastern North America. The conference met eight times between 1940 and 1951. The first Eastern Snow Conference Proceedings contained papers from its 9th Annual Meeting held February 14-15, 1952, in Springfield, Massachusetts. Today, its membership is drawn from Europe, Japan, the Middle East, as well as North America. Our current membership includes scientists, engineers, snow surveyors, technicians, professors, students, and professionals involved in operations and maintenance. The western counterpart to this organization is the Western Snow Conference (WSC), also a joint Canadian/US organization. Every so often, the ESC and WSC hold joint meetings.

At its annual meeting, the Eastern Snow Conference brings the research and operations communities together to discuss recent work on scientific, engineering, and operational issues related to snow and ice. The location of the conference alternates yearly between the United States and Canada, and attendees present their work by giving talks or presenting posters. Authors submit their manuscripts for publication in our yearly Proceedings of the Eastern Snow Conference. Papers may also be submitted for a special annual ESC edition of the journal Hydrological Processes. These manuscripts are subject to a standard academic journal peer review process. Volumes of the Eastern Snow Proceedings can be found in libraries throughout North America and Europe; papers can also be found through the National Technical Information Service (NTIS) in the United States and CISTI in Canada and issues since 2000 are available on the conferences website at: http://www.easternsnow.org.

In recent years, the ESC meetings have included presentations on snow climatology, snow physics, management and hydrology, snow and ice loads on structures, river and lake ice, remote sensing of snow and ice, glacier processes, snow science as a teaching tool and socio-political impacts of winter. The 2014 conference’s general theme was Snow and Ice in Mountain Environments, with a complementary sub-theme of ephemeral snow. The scientific program included sessions on Remote Sensing of Snow and Ice; Snow Measurement, Modeling, and Runoff; Snow in the Appalachian Mountains; Snow Hydrology; Precipitation, Climatology, and Impacts of Snow; Methods, Techniques, and Models; Snow and Ice in Mountain Regions; Snow and Ice in the Tropical Andes Mountains. The full scientific program of the 2014 meeting is available at: http://www.easternsnow.org/meetings/2014/2014_ESC_Program_Final.pdf

Nolan Doesken, an internationally acclaimed snow scientist, served as the banquet speaker. Doesken is the Colorado state climatologist, founder of the Community Collaborative Rain, Hail, and Snow (CoCoRaHS) network, and author of “The
Snow Booklet: A Guide to the Science, Climatology, and Measurement of Snow in the United States.” His talk was titled “For the Love of Snow” and included a moving and at times hilarious personal and scientific review of his career as a snow scientist.

The ESC encourages student research through its Wiesnet Medal. This medal is presented annually to the best student paper presented at the conference. Campbell Scientific Canada also graciously awards a cash prize to the student research showing the most innovative use of technology in the gathering of data. Finally, the David Miller Award is awarded to the best student poster presentation at the annual Conference. The 2014 award recipients included: Justin Hartnett, Syracuse University (Wiesnet Medal) and Aaron Thompson, University of Waterloo (Campbell Scientific Canada).

The ESC annually bestows upon a distinguished snow scientist who, in striving for excellence in snow research, contributes to an event of notable humor the highly coveted Sno-foo Award. The 2014 recipient was Dr. Dorothy Hall, Senior Research Scientist at NASA Goddard Space Flight Center and Principal Investigator of NASA’s MODIS satellite snow and sea ice mapping program.

Special thanks to the 2014 ESC corporate members, which included Campbell Scientific Canada, Cold Regions Research and Engineering Laboratory (CRELL), Geonor, Hach Hydromet, Grandfather Mountain Stewardship Foundation, and the College of Arts & Sciences, Department of Geography & Planning, and Appalachian Atmospheric Interdisciplinary Research (AppalAIR) at Appalachian State University. The ESC also gratefully recognizes individuals who have made lifelong contributions to the study of snow and for their support of this organization. Our current life members are Peter Adams, John Metcalfe, Art Eschner, Hilda Snelling, Donald Wiesnet, Gerry Jones, and Barry Goodison.

The 72nd annual meeting of the ESC will be held June 9-11, 2015, in Sherbrooke, Quebec, Canada. This year’s general theme is Recent Advances in Snow Remote Sensing. The ESC has only plenary (paper and poster viewing) sessions, allowing time to view and discuss the research of each participant. You are invited to submit an abstract for an oral or a poster presentation (please indicate type). An abstract of 200-250 words should be submitted by 6 March 2015 to the program chair: Dr. Alain Royer (Alain.royer@usherbrooke.ca).

Baker Perry is an Associate Professor of Geography at Appalachian State University in Boone, NC. He holds a Ph.D. in Geography (Climatology) from the University of North Carolina and his research interests include synoptic climatology, orographic precipitation, snow, and precipitation-glacier-climate interactions. Recent research activities have focused on snowfall patterns and processes in the southern Appalachians, precipitation delivery mechanisms in the tropical Andes, and investigation of meteorological influences on oxygen stable isotope values preserved in seasonal snow in the tropical Andes. Perry is also a founding member of the Appalachian Atmospheric Interdisciplinary Research (AppalAIR) Program housed at Appalachian State University and is a National Weather Service cooperative observer. He maintains seven high elevation meteorological stations in the southern Appalachians and five in the tropical Andes, including comprehensive precipitation monitoring stations on the Quelccaya Icecap (5760 m) in Peru and Chacaltaya (5160 m) in Bolivia. Perry is the current President of the Eastern Snow Conference.

Training

Sequential Moves

By Witold Kosmala
PSIA-E Alpine, Level III
Trainer at Sugar Mtn. Resort Ski School, NC

In the skiing world, on the average, sequential movements are frowned upon. Normally, sequential movements are those movements that are not the same on both skis at the same time. It should be noted that there are NO identical movements ever performed to both skis at the same time, but sequential movements are considered to be those where
big differences occur in movements between one ski and the other. Stem turns are a common example of sequential skiing. That’s where in a transition the tail of an uphill ski is stepped into a diverging position later joined by the other ski. If that’s how a skier skis on regular basis, then those sequential movements are considered to be in the need of an improvement.

Since in the skiers’ jargon it is so often implied that sequential movements are considered bad, I want to use this opportunity to defend the poor guys. There are lots of places skiers use sequential movements that are even forgotten to be sequential. Below is a partial list of situations where sequential movements are in fact, necessary.

- In side-stepping
- In skating
- In bullfighter’s turns
- In performing wedge Christies
- When skiing spine or sharp edge. Often along a groomed slope. See photo below.
- In transition when extending uphill leg while collapsing the other.
- When stepping into a new line
- In avoiding obstacles
- In stem turns (they still exist and should be in skier’s vocabulary, but only in needed occasions.)
- In 1,000 steps
- In bellows turns
- In White Pass turns
- In many other drills, especially one-ski at a time tasks.

Here is my son, Konrad skiing along a slope’s edge. In order to nicely turn on both sides of the edge running along side of the slope, Konrad’s movements have to be sequential. In the photo you can clearly see that his right ski is ready to start turning, while the left ski is still climbing. If he waits with turning until his left ski is parallel to the right, then it will take him much longer to drop back to the left side of the slope. This will still remain true even if his skis were closer together.
In the previous issue of Peak Performance, I touched on the topic of “Point of no Return.” Point of no return can occur in many situations pertaining to skiing, as given in that article. Many different places one can also discuss this topic. For example in ski technique, like it turn initiation – commitment to a turn. But one commonly missed discussion in the aspect of reaching the point of no return is in loosing body heat.

Maintaining your proper body temperature is extremely important. Cold muscles will not perform at their peak, and fear of frostbite ruins the concentration. If you let your fingertips, toes or other extremities get too cold, you will reach point of no return leading to gradual heat loss which can have very bad eventual results.

If you get cold, deal with it immediately. If you wait, it might be too late to correct the problem. Best way is, of course, prevention. Go on the slopes dressed properly. Don’t sweat as the evaporating moisture can rapidly remove heat from your body. Be adequately fed. Food is a fuel which when burned will create heat. Be adequately hydrated. Your body uses water to regulate temperature.

However, it always happens that you or someone around you will get cold fingers at some point. If you catch it before the “point of no return” you can warm them up by making fists or “windmills” with your arms. That is, by spinning your
stretched out arms. Centripetal force will bring more blood to the fingertips. If feet get cold, do jumping jacks. If you keep your skis on, they will actually help you master the lateral movements of your legs at the same time. (Just don’t do it on ice if splits are not your forte.)

But, if you wait, then you can get frostbit or you will have to cut your skiing short, which sometimes is impossible. Prevention, prevention, prevention!!!

**Turn to Wisdom**

- Learn from other’s mistakes rather than making them all yourself.
- The most valuable gift you can give another is a good example.
- Never pass up a chance to keep your mouth shut.
- If you feel “dog tired” at night, maybe it’s because you “growled” all day!

**Deep Stuff**

What are the traits of an “aggressive” skier? Are you an aggressive skier? Is it good to be an aggressive skier? Are racers aggressive skiers?

**Thoughts for the Month**

- What is “hypothermia?”
- Describe what is normally meant by “bellows turns” in alpine skiing.
- Describe what is normally meant by “bull-fighter’s turns” in alpine skiing.

**Elaborations on last month’s Thoughts for the Month.**

**Question.** What are “sequential” moves and are they good to have?

**Answer.** See article on page 17.

**Question.** What is an altitude sickness?

**Answer.** See the next issue of *Peak Performance*.

**Question.** Can one ski with no dorsi-flexion?

**Answer.** See article on page 7.

**Question.** What are tree wells?

**Answer.** See article on page 12.

**This and That**

**ON ANY GIVEN DAY ...**

Surly you heard skiers say that conditions on a mountain are either good or they are good for you. In either case – **you need to go on the hill.**
LEARN TO SKI

January is a Learn to Ski and Snowboard Month nationwide. This is a perfect opportunity to promote our great sport. If our guests take ski lessons, they will learn to ski that much faster. If they are better at it, they will be more likely to come back. I have not done any surveys, but from my own experience, better skiers tip me more often than beginners. Perhaps this can also be a motivation to teach others to become better skiers? Besides, isn’t it so very rewarding to see others improve and fall in love with skiing? In addition, you can use this month (and those to follow) to test yourself as an instructor. Are you able to zero in on what keeps your guest from improving?

Now is also a great time for Ski Schools to search their souls and decide how to improve their programs. Everything can always use an improvement. As previously stated, why are there so many guests who do not take any lessons, especially more advanced skiers? And another question, why those that do take a lesson, do not return for more lessons?

So, go out there and make more skiers!!!

Pet of the Month

To the great envy of her little brother, PEPY, in Decatur Alabama, Frieda Carolina drags the Mother of All Chews out of the Maine North woods! She believes this one may last for a few weeks.

By Gordon Carr

The Bottom Line

Peak Performance depends on its sponsors. If you find these publications worthwhile, I hope you will choose to support them. Every little bit helps. Sponsors of this issue of Peak Performance are:

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