Yes, indeed, this was a very good season for Sugar Mountain and for our Ski/Snowboard School. It started with a very early opening and finished with great PSIA/AASI certification exams. Congratulations to all of you that passed the exams. It was great to have 100% pass rate. In addition to Level I takers who are pictured, we want to congratulate Sumiko Tanaka who passed her skiing portion of Level II exam. Also, our own (even though not at Sugar Mt. currently) Zach Dease passed his skiing portion of Level III in Vermont. Your great performance makes our Ski/Snowboard School look good.

As I am writing this message on April Fool's Day, it is snowing in Boone and this whole region. This is just a reminder that many areas are still skiing/riding, and will for a long time. Granted, Whitefish, Montana will be closing soon to protect skiers/riders from hungry bears that are waking up, many areas will be open for a long time. Mammoth Moun-
tain will probably celebrate their 4th of July on the slopes, like they did last season. Today they are reporting over 600 inches of snowfall this winter and 16 – 26 FOOT base, which covers almost 3 floors of their main lodge. Yes, we are in Spring skiing/riding time of the year. Many of us are planning on going other places to ski/ride. I am especially envious of you that are planning on heli-skiing in Chile later in the summer.

Doug Washer was in Quebec City last month and they were setting up a huge racecourse in the center city for an event called the Red Bull Crashed Ice Championship. You can check this out on YouTube. Unbelievable! It’s an elevated wooden track that is coated with ice like a bobsled run, and it snakes from the famous Hotel Frontenac at the top of the city, to the old port down below. Four ice skaters at a time race downhill against each other. Some of the slopes are 45 degrees, and there are also lots of jumps, etc. What else are they going to think of?

I truly appreciate all those wonderful comments that I received pertaining to our Peak Performance. It is great to see that you read it and that you pass it on for others to read. Remember that all previous issues of Peak Performance are posted and downloadable from my web page found at:

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

Our next issue of Peak Performance will be the July issue. And then we start up monthly in September. Please, send all your correspondence to me at:

kosmalaw@bellsouth.net.

It should be pretty clear to all our readers that snow sports are dangerous and participating in them is at your own risk.

One day Alex Wells was talking to a few of us in the locker room when he noticed that all of us he was talking to were Level III. It does not happen often that we are all together. So, we called Len from downstairs and Alex took our picture. Not only we are the only Level III certified skiers at Sugar Mt., but we are dear friends going back many years. To put it in perspective, out of 4 of us, I was the last one to join our Ski School in 1985. (And yes, that’s what it was called at that time.) Pictured from the left is: Len (Director), Doug, ZT, and myself (Witold.)
Main Course

Ice Castle

By Witold Kosmala
PSIA-E Alpine, Level III

and

by Alina Kosmala
Seventh Grader at Hardin Park School
Boone, NC

Just imagine that reindeer are pulling the sled and you are covered with a warm fur. It is perfectly quiet except for the sound of the sled riding quickly on the snow. The northern lights are off in a distance and you feel like you are coming to the northern edge of the Earth. Then the sled stops in front of an ice castle, which is magically lit. You walk in and you see that everything is made of ice and snow, including the ice-bar, ice-cinema, ice-church, the lobby, the rooms, the tables, chairs, counters, beds, even a commode – everything. Simply breathtaking, with magnificent colorful lighting. This must be a dream, a fairytale. No, perhaps a movie or a novel. Is this all my imagination? Could there possibly be a place like that on Earth?

Yes, there is a place like that, in fact more than one. But the largest and most magical in our opinion is the one that is 160 miles north of the Arctic Circle in northern Sweden. The closest village is Jukkasjarvi and closest airport is in Kiruna. Instead of taxi or a shuttle or a bus waiting for you at the airport, there are mushers with dog sleds. They will take you for about 10 mile long ride to the hotel. (But, for the right price, you can surely get reindeer to pull your sled.) What an incredible experience.

It all began about 17 years ago with one room. Now there are 85 rooms, reception area, hall of pillars, ice-art exhibition area, cinema, chapel and bar where they serve drinks in ice-glasses. That is, drinks are “in the rocks” instead of “on the rocks.” Ice hotel is different every year. The construction begins in December and then melts away in April. The building materials are free(zing) and abundant, but construction is expansive. Different artists build different rooms, creating their dream masterpieces. Lighting is very unique, especially when in presence of the bouncing northern lights that shine through the ice and reflect every-which way. There is a complete silence at nights.

Rooms stay about 5 degrees C below freezing (which is a good thing since otherwise they would melt), even though outside temperatures are much below that. Guests sleep in extra-warm sleeping bags. They can use ice-toilets, but warm bathhouse is adjacent to the hotel. However, getting to it at night is a cold challenge, so limiting fluid intake in the evening would be highly recommended. Guests will freeze their butts off… literally.

They say that an outdoor ice bath is truly an experience. Guests start with a sauna, then go outdoors and take a plunge in the ice bath, a hole in the ice, then out as quickly as possible before jumping into the outdoor hot-tub. This huge temperature shock to the system takes their breath away completely and confuses the body. Afterwards they feel very warm for a long period of time.

Although the sun doesn't rise above the horizon for 2 weeks of the year, the whiteness of the snow reflects whatever light there is. Winter is the darkest time of the year and the sun hardly goes above the horizon in that part of the world, therefore it
is bitter cold, but air is very dry so it does not feel as cold as expected. There is a terrific crunchy snow under the feet. What an experience. But, now is the last chance to go there before the hotel melts away. They offer special deals at the end of the season since every once in a while guests get dripped on by melting ice. So, go and make your reservations NOW. It would be an experience you would never forget.

An Attitude Adjustment

By Gordon Carr
PSIA-E Alpine, Level II

Hey! What a grand season this has been: terrific snow, great lessons, wonderful friends and colleagues, and a fantastic PSIA-E Workshop on the snow March 7 & 8! Of even greater import is the large number of riders and skiers who took the Level I Exam and PASSED! Welcome to PSIA and AASI! And a very special congratulations to Sumiko Tanaka who PASSED her Level II, Part 1, “Skiing” Exam. A 100% success rate by all of you on the exams is a wonderful reflection of the dedication and quality of snowsport professionals we have at Sugar Mountain Ski and Snowboard School!

So now it’s time to look forward to 2011–12! Along the way to next season however is Summer during which you can further develop endurance, balancing skills, and overall conditioning. The usual aerobic sports are great for strength and endurance training: biking, swimming, running, tennis, etc. And of course these, too, exercise dynamic balancing muscle movements. But few of us will actually get on a “slack line” (a loosely strung tight rope) or unicycle or other gadget like that and really get after strengthening the core muscles involved in dynamic balancing.

But there is a way to incorporate balancing skill practice into your everyday life chores, errands, and activities. Granted this may not be “balancing while moving” and therefore not truly “dynamic” balancing, but ANY balancing activities helps us develop the core muscle strength which will help us in skiing and boarding next season.

So… the ATTITUDE ADJUSTMENT… you just have to begin seeing the world around you as full of opportunities to STAND ON ONE LEG. Any time you stand balancing on one leg, you exercise muscle in that leg and also in the “core” muscles. Examples which come to mind: brushing your teeth, washing dishes, standing on line in the grocery, making follow-up dental or health care appointments, etc. Kick it up a notch… anytime you drop something, pick it up by standing and balancing on one leg and then lower yourself to get the object. In the ski journals, this is more commonly known as a “modified, full bore, one legged squat!” Out in the yard raking leaves, washing the car, or doing other outside chores perform all activities, when possible, balancing on one leg… this gets things a bit more dynamic and I’ll verify that raking leaves balancing on one leg is a workout! Anytime you move your arms in an activity, one-legged balancing calls into play serious work by your core muscles to maintain balance. Here is a hint for balancing on one leg: flex the ankle a bit… it is much easier to balance with flexed joints than with a straight leg (see any parallel to balancing when skiing or riding here [pun intended]?). Actually try balancing on one leg with straight and then flexed ankle and knee joints and pay attention to the constant muscle movements involved in balancing. Are muscle movements in your feet and legs greater when flexed or with a straight leg? Anyway, if you regularly do one-legged balancing in situations it becomes so habitual that you will have to consciously think NOT to do it. (Of course, then we’ll all start to look like storks or herons!)

An excellent reference for a terrific year round one legged balancing exercise is Harald Harb’s “Anyone Can Be An Expert Skier 2… Powder, Bumps, and Carving,” Hatherleigh Press, 2001. In this book, as one example, Harald describes standing on one foot on a 2 X 4 wood block and then reaching out with the other leg and making touching movements from behind the body around to in front of you in as large as circle away from your body as possible. By the way, in all of these activities you alternate legs, right? You’ll be surprised how much more difficult it is on your non-dominant leg… same with one legged skiing (one legged boarding?... uhm). So maybe do a few more reps with the weaker side. I once gave skiers in a season long program with me a reward for their effort and hard work (and for putting up with me all season)… I called it, as a suspense build up, a VERY special piece of expensive exercise equipment. It was a 14-inch piece of 2
X 4 for each of them! I think they were pleased… it was hard to concentrate on the assessment of their happiness and emotions while dodging small pieces of pine flying through the air. But anyway, the block-balancing gig is absolutely great for balance training.

I know this isn’t about one-legged stuff, but so much of simultaneous and seamless release and re-engagement of the edges during the turn transitions for skiers requires simultaneous movement of our ankle joints. Because this is not a usual pattern of ankle movement, I thought I’d include what I believe is the only exercise which calls this kind of move into the spotlight. If you have a BOSU Ball, use it; if you go to gyms or health clubs, they usually have one. Flip the ball onto the “half sphere” side and stand on the flat side in your usual ski stance in a balanced position… careful getting there! Now with only ankle movements tilt and rotate the platform under your feet counter-clockwise, i.e. to the front in a tilt, (see Picture 1, at right) to the left side in a tilt, (see Picture 2, below) to the rear in a tilt and to the right in a tilt. Continue this tilting rotation and after practice, speed it up. Now change directions and rotate the platform clockwise as above. Now this is not really “just” movement of ankle joints… a lot of other muscles come into play. But, I can tell you from experience when you first do this exercise, your ankle joints scream out and tell you they haven’t done this kind of movement to such a degree before (well, I’m not sure, maybe young ankles don’t ‘scream’)! The more firmly you blow up the ball, the more difficult this exercise becomes. On most floor surfaces, oddly enough, as you rotate the BOSU ball flat surface clockwise with your ankles, the entire ball moves counterclockwise, and vice versa. Strange feeling. Anyway, this strengthens ankle muscles, trains you to absolutely coordinate ankle moves simultaneously (albeit one foot is pronating and one is supinating as during ski turns, but the fore-aft foot moves are in tandem), and is a dynamic balancing environment calling to play hip and core muscles. Although this exercise doesn’t exactly duplicate the foot and ankle moves in ski turns, it is close; and, ALL exercises like this which help you develop and feel fore-aft balance changes under your foot and which require coordinated ankle flexion are something we all need more awareness of. Anyway, it isn’t one-legged, but it is such a great all year home exercise I thought I’d throw it in this article.

To conclude, the range of activities which can be incorporated into an off-season balancing training program is only limited by your imagination. So make an Attitude Adjustment toward your daily activities and practice… practice… practice! Remember it is only 221 days until the 2011–12 season starts… we’ll open on November 11, I just know it!

HAVE A BALANCED SUMMER

Skiing Tips

Skiing Powder, Yes!

By Witold Kosmala
PSIA-E Alpine, Level III

Powder is the snow that was not yet skied or ridden on. (If there was no wind, skiers and snowboarders can turn powder to crud in a hurry.) Powder can drastically vary. It can be relatively thin, it can be deep with a bottom or bottomless, sometimes made with different layers and that which melted and then refroze. Snow can be light and dry, thick and heavy, crusted over, of different temperatures and consistency. Skier movements will need to be somewhat different in different conditions, and they will especially depend on the equipment used. Usage of skis of varied widths, lengths, side -cuts, shapes, types of rockers, amount of cambers, distribution of stiffness, types of ski boots used, pitch of slope, desired speed, athleticism together with types of powder encountered create an infinite number of moves needed for a successful decent on the powdery slope. We will discuss tactics for only some of them.
First, however, is a list of things you should be able to do on a groomer before going to ski powder.

- Short swing and hop turns (90 degree hops on very gentle slope are enough)
- Make turns on the inside ski
- Use poles effectively
- Be able to ski fast without fear
- Be able to ski steep slopes without fear
- Be able to ski dynamically
- Be able to ski with legs almost touching each other
- Be able to ski with DIN adjustment very small, that is, without jerking and pushing skis around, and minimal skidding
- Have a very good dynamic balance when skiing

Skiing powder does not actually require different skills than skiing groomers, just a different blend of skills. For one, sensation of skiing powder is different than on the groomers. It’s just like it says: “in” powder and not “on” the groomed snow. In powder snow gets on top of skis, builds up in front of boots, pushes on skis and boots and skier themselves different ways at different times, and it is soft under foot. It may spray in your face, block your vision, get under your jacket. If you fall it will get under your helmet or hat, goggles, inside your groves, make you loose your equipment (for real), make you feel like you are in quick-sand with body lower than the skis. Getting used to skiing “in” the snow takes time and repition. You should try to feel this new sensation by taking a straight run through powder. Perhaps you can find it along side of a groomer, or traversing through it. It would not be recommended to attempt traversing through powdery slope without skiing out of powder to turn around. Turning in powder to go from one traverse to another is hard since you will be moving very slowly.

Next step would be to ski very shallow powder, less than 6 inches. You can practice in it and then move to deeper stuff. The technique will stay basically the same, but the feeling will be different.

**Shallow powder.** If you are skiing in 6 inches or less, the technique is pretty much the same whatever the snow texture is and whatever type of ski you use. Stance is most important and you should practice it before going down the hill. Your weight should be transferred from the balls of your feet to the front of your heel with minimal movement of your upper body. Your shins should remain in close contact with the boot cuffs and your thighs should not be tight. (If they are, move your body more forward.) Your arms might need to be a touch higher with pole swing more circular so poles clear the snow surface. Head should not be tucked down to look at the skis and this wonderful snow. Keep it up. The biggest difference between groomers and powder is that your legs should almost touch each other, similarly to skiing moguls. Your skis should track in one plane at all times and should leave one track, just like a mono-ski, (a wide ski with two bindings side by side.) If the skis are not pressured evenly, 50/50, then one ski will go deeper than the other, skis will decamber differently, and eventually they will cross. And you test the depth of the snow with your head. The easiest way to get introduced to powder skiing is on a relatively flat terrain, blue or even green. Point your skis straight down the fall line. After you get going at some decent pace, start making short little turns with both feet side by side keeping your body moving straight down the fall line. (See the article entitled “Short swing” in January 2011 issue of Peak Performance.) Then make these little turns more dynamic by kicking your feet deeper and harder into the snow on each turn. This should feel like you are trying to get a bigger number on the weight scale which has a needle, but the scale is off to each side of you a little bit. Thus, your skis should be moving side by side, you kick and turn them dynamically, wait for them to rise to the surface, guide them to the other side of you and kick and steer again. Do not over-steer, do not turn the skis all the way to be perpendicular to the fall line. Keep moving down at the same pace, no matter where you are in a turn. There should be no slowing down or speeding up. Remember that there should be only one track left by your skis, which should act as if they were glued together to make one wide ski. Take many runs on tame terrain to get a good feel of these dynamic short radius turns before moving to steeper slopes or deeper powder.
Deep snow with a bottom. This means that as you are skiing the fluff you can feel a firm support underneath provided for you by the surface under the powder. (If it is not there, then you will need to form that platform yourself and we will discuss that in a section below.) We will break this section into 4 subsections: skiing in heavy powder which will only reach middle of your thighs, “champagne” powder which might go over your head, usage of conventional shaped skis, and usage of fat skis with 100+ mm under foot.

1. Heavy powder. This is the stuff that only grabs you around your ankles and lower legs. Actually pretty hard to deal with since it provides no resistance to the upper body. This means that skier’s automatic reaction is to sit back to prevent sinking tips and going over “the handlebars.” Not a good reaction. A better way to keep those ski tips up is to:
   - Keep weight on the front of your heel
   - Ski more dynamically
   - Use 50/50 weight distribution over both skis
   - Use more definite flexion and extension
   - Do more upper/lower body separation
   - Do not over-steer
   - Plan your line of descent
   - Take longer runs with less stops
   - Never ever lose touch with your boot cuffs

Loosing touch with your boot cuffs is like letting go of your steering wheel in your car or handlebars on your bicycle. Turning is done in a similar way to that in shallow powder, but in the deeper stuff you can use less steering since fluff will let you decamber the skis more when they are in the belly of a turn. But, if you use wide skis and snow is heavy, you might need more steering then if you use shaped skis. But then again, if you go faster, then you will not need to steer as much, just like on a bicycle. If tips of your skis are soft, they will bend due to pressure against the snow and again less steering will be needed.

Steering will be made easier if when you flex your body you also pull your skis up at the same time. This will help your skis get closer to the surface making it easier to guide and steer. Keep your upper body calm and always pointing down. Steer with your feet and knees. To start a turn, plant your pole down the hill. Think about pointing your skis straight down the hill. Skis like this. Then, after they start turning just hold on to that turn a little longer. Remember to press your feet a little on a diagonal forward and into the turn, as you want a little steering to go together with decambering of skis. Turning together with flexing and extending will control your speed.

In skiing powder you need to keep moving down the mountain. Avoid long radius turns. Finish your turns before skis become perpendicular to the fall line. Since abrupt turns and hockey stops are not good to use in deep snow, plan out your general direction of descent.

Avoid stopping for 2 reasons. One is that it is hard to stop. You will need to resist lateral pressures and gently release them before you actually stop. Then, starting out is hard again, so stop in such a way that you can start without need to turn or to walk or to push with poles. It is not recommended that you walk or shuffle your feet. When you make a step you put more weight on one ski. It will sink deeper than the other ski. If the snow is thick and heavy you will have trouble counterbalancing and chances are high that you will fall on your side. For this reason (as well as for lack of sudden change of direction) choose your line down hill wisely so you will not run out of speed and have to come to a stop. Keep all your lateral movements to a minimum. You want tails of your skis to follow the tips. Religiously practice this on groomed slopes.

Once again, keep pressuring your boot cuffs. Leaning back will result in loosening the touch with the tips of your skis. Skis will jet and you will end up pressuring the back of your boots and this will be transferred to the tails of your skis. Tails will sink deeper, tips will surface at a high angle and ski will fall on its side, and so will you. Another danger is that tips will remain under the surface due to the lack of pumping, (that is, energetic extension off the ski which will pressure the ski into the snow and decamber it,) snow will build up in front of your boots, and since your
weight is on the tails the front of the skis are left “unguarded.” The heavy snow will eventually make your ski tips dive and so will you. There is nothing funny about being stuck upside down in heavy snow with your feet dangling above you. Suffocation may result.

2. **Light powder** is much different from heavy. It will make you sink deeper but at the same time it will give you resistance on your chest. You will almost want to push against this wonderful stuff, so sitting back won’t be quite an issue. Visibility will be. Look ahead in between the turns so you know what’s out there when you are blinded.

In light and deep powder you really need to use proper equipment in addition to good ski technique. You definitely do not want to fall. Some falls may lead to suffocation, loss of equipment, trouble for you and others in your group. More on this later. In light snow good dynamic balance will really help you. To turn in the light fluff you can decamber both skis at the same time. Push both feet straight into the soles of your boots in the belly of a turn, and into the heels at the end of a turn. There is much less need for steering. If your ski tips are soft and your flexion and extension is well pronounced, you will end up looking like a porpoise going in and out of the snow. Remember, keep skis side by side. If you don’t, they will go into 2 different planes and you know the rest of the story.

Good dynamic balance is essential when skiing deep powder. Skis working together are much more effective than each on its own. Snow can fall in layers and it can be of different consistencies. Since your skis need to cut through all that, your body should exhibit constant functional tension. You definitely do not want to fall pray to things that can easily be prevented. If your body has functional tension throughout, hitting stuff like tips of trees and covered up rock might not mess you up in some instances.

3. **Skiing powder with skis of pronounced side-cut** is not easy. The tips and tails will be higher then the ski under foot, (unless the ski is very stiff.) The skis will be decambered at all times but mostly sitting under the surface. A little tip to the side will want to make them turn sharply. Now skiing powder turned to chore. When you finish you will be glad it’s over instead of being sad that it’s over. In general, old pencil-shaped skis will do better since they will float side by side like contemporary “fatties,” just deeper under the surface.

Stiff skis, or very lively skis like slalom skis do very poorly in deep soft snow. Soft snow simply does not provide enough resistance to decamber those skis. More you pump them, deeper they go under the surface. This means that snow builds up in front of your boots, and eventually take you under. Slopes with small pitch will not be your friends. However, if the slope is steeper, you will be able to pressure tails enough to make the tips surface. But, this will reduce greatly control over the skis, but at least you will be able to come down by gently pointing the skis with your feet and knees. In this situation you want medium radius turns since the short ones require quicker movements which will be harder to do if your weight is on your heals. Skis under fast movements will behave erratically and will easily derail you off to the side. Go to a ski shop and get you wider boards. It will be worth it.

4. **Using wide boards** with soft tips (all wide boards come with soft tips) is the ultimate way to ski powder of any sort. They are lighter and provide more surface, so they will float higher and make everything easy, (except getting onto them if you fall.) Now most of the skis with 100+ mm underfoot come with rocker tips so turn initiation is simplified. If the tails are also rockered, then stopping is made easier as well.

**Skiing bottomless powder.** Here the only issue is that there is nothing under you except for more fluff. You need to create your own platform to extend from. Constant pumping of your skis is a must. Think that you are making little squats without stop. Take a straight run making these squats and see how it feels. You will be going up and down, like a porpoise. Now add a little steering to each side like you did when skiing shallow powder. Gently add more dynamics and before you know it you are flowing down as if suspended in the air. Awesome feeling, if successful. Not so good if you fall. See a subsection below.

**Proper equipment** for deep powder. This refers to not just skis and poles, but to your clothing and other things. It is recommended that wide skis are used for powder and poles with large baskets. Your outfit could be a one piece or jacket
with a powder skirt. Also, sleeves should have powder guards and gloves should be tightly strapped. Goggles should be vented so they do not fog up when you breathe hard. Helmet is a good idea for safety of your head. Also, snow does not stick to it and it will not move on your head to cover your vision like a hat might. To prevent runaway skis you should strap them to your feet or use streamers that float behind the skis. A folding shovel on your back may come handy. In your pocket you should have things like a radio or cell phone with programmed-in a ski patrol number, whistle, maybe flairs, food bar or jell which does not freeze solid, a copy of your driver’s license, emergency contact numbers and list of allergies.

**Potential dangers** in deep powder. We already talked about dangers of suffocation after a fall. Skiing on your tails, close to tree wells and attempting lateral moves can cause a fall. Stopping and walking create dangers of falling as well. If you ski in a ski area, avalanches are usually not an issue. Powder hides rocks, trees, logs, fences and other things. If your ski tips dive or you fall into a tree well, it will be most likely head first and then snow will quickly build-up around you. The same may happen when you trip on obstacles under the snow’s surface. In those cases try to form an air pocket with your arms as you are falling. Try not to go in straight as a nail.

Don’t follow tracks of other skiers since you don’t know who they were and what happened to them. Maybe those tracks will lead you to a cliff. If you suspect that the tracks you see lead to someone in trouble, call ski patrol.

Think ahead and think safety. Take precautions and be a smart skier. Observe the weather and respect the mountain. Be cautious of changing snow conditions and of your limitations pertaining to your own physical abilities, your own quality of skiing, your own equipment as well as those with you. You should always go in a group and never on closed slopes. Know the slopes or go with someone that knows them so you avoid runs with no outlets or cliffs. Shoots need to be checked out from below. Remember that when in a group, you are all like a chain. The strength of the chain is only as strong as its weakest link. Group can endanger you and you can endanger the group. Many wonderful ski guides die due to others in their group. Think very carefully as to who skis last. If they were to fall, what are you going to do? You can’t possibly walk up the mountain covered with all that powder. At all cost try to prevent a situation which would put you or other group members or rescuers at risk.

**Falling** can be very dangerous in deep powder. If you are on a very steep terrain, head plants will not usually cause suffocation since you will be able to roll out of your own hole. However, as you fall the fluff might go into your mouth and nose and cause choking and shortness of breath. Don’t panic. It will melt pretty quickly if you spit out all that you can. But, just in case, prevent this by remembering to close your mouth as you fall. Yes, easy to say but hard to do.

If the terrain is mild but the snow is very thick, do all you can not to make a head plant since you might go in straight and get stuck like that with no air to breath. If you know that head plant is coming, try rolling or at least bending in your waist.

If the snow is very light, expect to go deep into it. Try leveling out quickly so you don’t sink any deeper.

When you fall in deep snow there is a danger that your skis will come off and you won’t be able to find them. Also, loss of a ski will perhaps make it impossible for you to come out of a hole and to continue skiing. Deciding whether to increase your DIN setting is difficult. If you tighten those bindings enough, they will not release. But, on the other hand, in deep snow your falls are usually slow, which means that you endanger your knees if bindings do not release. It is your decision as to what to do. You are at risk either way.

**Getting up** is always an issue in soft snow. Not a serious problem if the powder is not bottomless. Just take your time and stand up. If snow is heavy you can put your poles in an “X” and push on them in the center to help you balance when getting up. (This is useless if the snow is very fluffy.)

1. **If your skis did not come off your feet** try rolling yourself so that the skis are further down the slope than you are. Even then, your torso might actually be lower than your skis if the powder is deep. In that case try to first pull yourself on top of your skis without standing up, just squatting. If successful, attempt standing up by pulling yourself around your knees.

2. **If only one ski came off your foot** in deep powder, try to locate your other ski before getting up.

3. **If you cannot feel the bottom** from the position you are in and you lost both of your skis, try poking your pole into the snow. If it touches something firm then you will know that you cannot sink too deeply. If it does not touch anything, then you better lie down so you don’t start sinking deeper. Try swimming out of the hole. Use your equip-
4. **If you are upside down**, try forming air pocket around your face and breath gently so loose snow will not go up your nose or mouth. If you are really deep in, make circles with your legs in order to widen your hole to get more air. If you can bend in your waste, you might be able to back out if the snow is firm enough. If the snow is very soft, you might be able to lie down.

5. **If you are in a hole** (not upside down) in deep snow and a ski is near you, you can use it to pull up on in order to get to the surface. Try going to the downhill edge of your hole. If you do not see your skis, you can use a whistle to get help, or a phone to call ski patrol. Depending on the situation, you should on the average look for your skis uphill from where you end up. Your body has higher mass, so it will travel further than your skis when you fall. But, of course there is an exception to every rule. Some skis will point themselves straight down the hill and slide under the surface to who knows where. Hopefully you had streamers on them and will be able to find them, or have your group member find them for you.

6. **Putting skis on** maybe a challenge in itself. If you can stand, put skis across the slope so they are relatively flat and cleared from snow. Work on putting the downhill ski on first. Stand close to that ski and scrape the snow from under your boot by sliding it on top of the rear binding. Put the toe into the front binding without putting the heel on the ski. Lift the front of the ski by the hooked front binding on the boot and kick your leg so that the tail pushes against the snow and the rear binding clicks on. Now do the same to the other ski.

   If you cannot stand up since you sink too deep being vertical, try to pull yourself on top of flat skis that you put side by side. You might need to squat when trying to put them on. Good luck.

**Preparing equipment for deep powder** is very important. You want a good layer of wax on your boards. They need to be nice and slick. It is a misconception that if the ski is sticky, it will go slower and provide an automatic speed control. A sticky ski surface will just make you miserable because the ski will not want to do what you want. It is imperative that your skis can easily slide in every direction of your choice. Granted, most of the sliding will be lengthwise, but if you ever want any lateral movement, your ski needs to respond, so it needs to be slick.

We already talked about making correct DIN adjustments. Good luck with that. Also decide on using streamers or other devices to reduce chances of loosing your skis in case of a fall. Put on large baskets on your poles, make sure hand straps are on, and be sure you know how to properly put them on your wrists.

Be sure to wear a helmet and goggles, which do not fog up. There are liquids (or spit) that you can use. Check with the manufacturers what they would recommend. You might want to keep the vents on your goggles open as well as on your helmet, so know where these adjustments are and how they operate. Also, don’t forget to put some sunscreen on your face. It will protect your skin against sun and also against wind and frozen snow that will land on it.

**Crusted-over powder.** This is powder which melted and then froze again. Now it has a layer of crust. This layer can have a very rough surface and unknown thickness, which might break or might not. Skiing this stuff (we almost don’t want to call it powder, because it is not really) is almost like skiing crud. We still call it powder since it is untracked.

Wide skis would be recommended for this kind of surface, but low speed so you don’t loose your teeth. Expect a harsh ride, especially if the surface is rough. If you feel like the surface is breakable, then break it on every turn by pronounced flexion and extension. If breaking the surface, try doing it under foot. Definitely don’t let the tips go under the surface, or else you break your nose. If you have skis with very little side cut, you can break the crust with heals. If the side cut is pretty big and you break the crust with the heel, expect the ski to get hung in the tails since they are wider than the potential break in crust that you made. Functional tension will keep you from going over the tips on your head.

If the crust is relatively thick and/or surface is quite smooth, you might just want to slide on top of it without breaking it. In that case, exercise extreme smoothness. No jerking or hopping or pushing. You might want to even use more skidding and longer radius turns as to not wake up the dragon.

**Preparing for powder physically** is imperative. You need to be able to ski perhaps a long way before you can stop. If you start getting tired, your performance will drop, your dynamics will suffer, and so will your concentration leading to a possible fall. Make sure you are physically fit, well hydrated (for a long time period before skiing,) and acclimated to the elevation. Since you will need a constant functional tension, you will need strong shins, calves, thighs,
hamstrings, core and lower back. To all the usual exercises add pillow squeezes. Simply lie on your back with feet flat on the floor and knees up. Put pillow or a couple of towels between your knees and squeeze. You will be glad you did this.

Questions and answers:

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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</thead>
<tbody>
<tr>
<td>How do I know if my skis are close enough to each other?</td>
<td>True, you do not want them any closer to each other than necessary since having skis together sacrifices lateral balance. It all depends on the snow texture. If you ski straight, the snow between the ski tracks that you just made should fall over. If it continues to stand, then your skis are too far apart.</td>
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<tr>
<td>I am not sure if my weight is in the proper place over the skis.</td>
<td>Standing across the hill with skis 2 feet apart, take your uphill ski off, put boot on the snow with a pretend marble under the front of your heel. Now pivot to the big toe side and observe the mark this movement leaves on the snow. Thus is how you are to turn in powder, so when skiing think about pressuring that marble, but do not loose contact with the cuff of your boot.</td>
</tr>
<tr>
<td>My skis seem to be less steep in the fall line than the slope, is that OK?</td>
<td>Yes, that is good. Since you are pressuring right in front of your heel, skis are heavier in the back than the front. Also, ski tips will pull skis more to the surface in the front, especially if you are moving pretty quickly.</td>
</tr>
<tr>
<td>I am afraid.</td>
<td>This is normal, but what are you afraid of? Is it of speed, of the new sensation, of not being able to turn or slow down or stop, of failing or getting up, or getting hurt? Whatever it is, practicing in less intimidating places always helps. Don’t be timid when skiing powder. You really need the movement and momentum. Practice self-imagery as well.</td>
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Turn to Wisdom

- When God measures a man, He puts the tape around the heart instead of the head.
- Your companions are like the buttons on an elevator. They will either take you up or they will take you down.
- Although the tongue weighs very little, few people are able to hold it.
- Failure in people is caused more by lack of determination than by lack in talent.
- We judge other skiers and riders on accomplishments. We judge ourselves on intentions!

Health Course

We thank again Danica Goodman, who is a videographer, photographer, layout and graphic designer who freelances for several of the area magazines and newspapers, including All About Women and The Avery Journal-Times, for sharing her knowledge with us. Health is a big part of snow sports professionals who need to stay on top of the weather, strength, health and public.
Can Your Diet Prevent Cancer?

BY DANICA S. GOODMAN

“To know is science. To believe one knows is ignorance.”
— Hippocrates

Dr. T. Colin Campbell was the leading scientist and director of The China Study, which was an extensive and in-depth study on the people of China over the course of two decades, beginning in 1980. It was a study that closely examined the correlation between diet and disease for the entire country. The conclusions derived from this research are notable; the project eventually produced over 8,000 statistically significant associations between various dietary factors and disease.

Growing up on a farm in northern Virginia, Dr. Campbell decided his career path was to promote better health by advocating the consumption of more meat, eggs and milk. Much of his Ph.D. research at Cornell University was devoted to finding ways to make cows and sheep grow faster. He spent a lot of time working with two of the most toxic chemicals ever discovered: dioxin and aflatoxin.

One study had very provocative findings. Researchers studied two groups of rats, administering to each group the same amount of cancer-causing aflatoxin. One group was fed a diet of 20 percent protein, which is an average similar to what many of us consume in the West. The other group was fed a diet of 5 percent protein. The results were 100 to zero. Every single rat on the 20 percent protein diet developed cancer but not a single rat on the 5 percent protein diet. In response to these results, researchers increased the aflatoxin in rats on the 5 percent protein diet and the results were the same.

Researchers then switched the diets of the rats. Rats that had no cancer on the 5 percent protein diet started developing cancer on the 20 percent protein diet. The cancer of the rats in the other group stopped progressing. In fact, dietary protein proved to be so powerful in its effect that the researchers could turn on and off the growth of cancer, simply by changing the level of protein consumed—regardless of the levels of aflatoxin administered.

However, they found that not all protein was beneficial. Casein, which makes up 87 percent of cow’s milk protein, promoted all stages of the cancer process. The safe proteins were from plants, including wheat and soy. Gluten, the protein of wheat, did not produce the same result as casein, even when fed at the 20 percent level. They also examined soy. Rats fed 20 percent soy protein diets did not form cancer, just as the 20 percent wheat protein diets did not. This information is astonishing because it indicates that nutrition trumps chemical carcinogens, even extremely potent ones, in controlling cancer.

According to Dr. Campbell, the “depth and consistency of findings within the rat study strongly suggest that they are relevant for humans. First, rats and humans have an almost identical need for protein. Second, protein operates in humans virtually the same way it does in rats. Third, the level of protein intake causing tumor growth is the same level that humans consume. And fourth, in both rodents and humans, the initiation stage of cancer is far less important than the promotion stage of cancer. This is because we are likely dosed with a certain amount of carcinogens in our daily lives but whether they lead to full tumors depends on their promotion through nutrition, or lack thereof... Nutrients from an-
mal-based foods increased tumor development, while nutrients from plant-based foods decreased tumor development."

As this picture came to view, Dr. Campbell said his most cherished assumptions about animal products began to shatter. Dr. Campbell and his colleagues wanted to take to the next level all of the principles that they were beginning to uncover in the lab. Given the opportunity to study the role of nutrition, lifestyle and disease in the most comprehensive manner ever undertaken in the history of medicine, they turned to the China Study.

The China Study looked at the death rates of twelve different kinds of cancer for more than 2,400 Chinese countries and 880 million (or 96 percent) of their citizens. It was the most ambitious biomedical research project ever done, and it involved 650,000 workers.

Cancer being due largely to environmental and lifestyle factors was a conclusion that a few scientists already had reached. Sir Richard Doll and Sir Richard Peto of the University of Oxford wrote a major review on diet and cancer for the U.S. Congress in 1981. They estimated that genetics determines only about 2-3 percent of total cancer risk.

People tend to adopt the same eating habits as their families and, therefore, develop similar diseases. The China Study concluded that diseases were confined to specific areas of the country. As people adopted a Western diet, blood cholesterol levels rose, as well as rates of obesity, heart disease, cancer and diabetes. According to Dr. Campbell, "The average total blood cholesterol levels of the Chinese people are 197 mg/dL, which is almost 100 points lower than the American average (295 mg/dL). Most Americans know that if you have high cholesterol, you should worry about your heart, but they don't know that you might want to worry about cancer as well. . . . Certain parts of China had cancer rates 100 times (or 16,000 percent) higher than other parts."

Another conclusion derived from the China Study is that there are at least four important breast cancer risk factors that are affected by nutrition: "an early age of menarche (first menstrual period), a late age of menopause, high levels of female hormones in the blood, and high blood cholesterol . . . Lifetime exposure to estrogen is at least 2.5–3 times higher among Western women when compared with rural Chinese women. Estrogen directly participates in the cancer process . . . Increased levels of estrogen and related hormones are a result of the consumption of typical Western diets, high in fat and animal protein and low in dietary fiber . . . . The difference in estrogen levels between rural Chinese women and Western women is all the more remarkable, because a previous report found that a mere 17 percent decrease in estrogen levels could account for a huge difference in breast cancer rates when comparing different countries. Imagine, then, what 26–63 percent lower blood estrogen and eight to nine fewer reproductive years of blood estrogen exposure could mean," as they found in the China Study. The sad truth is that most women simply are not aware that breast cancer may be preventable if we eat foods that will keep estrogen levels under control. Less than 3 percent of all breast cancer cases
can be attributed to family history.

Plant foods are amazing. "One of the more obvious characteristics of plants is their wide range of bright colors. . . The link between nicely colored plant foods and their exceptional health benefits has often been noticed . . . The colors are derived from a variety of chemicals called antioxidants. These chemicals are almost exclusively found in plants. They are only present in animal-based foods because animals eat them and store a small amount in their tissues."

Plants take energy from the sun and transform it into life through the process of photosynthesis. "This complex process is driven by the exchange of electrons between molecules . . . The electrons zooming around in the plant that are changing the sunlight into chemical energy must be managed carefully. If they stray from their rightful places, they may create free radicals, which can wreak havoc in the plant." The plant manages these reactions and protects itself by putting up a shield around dangerous reactions that sponges up these substances. The shield is made up of antioxidants that intercept and scavenge electrons that might stray from their course. . . What makes this relevant for us is that we produce low levels of free radicals throughout our lifetime . . . Being exposed to the sun's rays, industrial pollutants and improperly balanced nutrient intakes creates a background of unwanted free radical damage . . . Free radicals are nasty . . . We do not naturally build shields to protect ourselves against free radicals . . . Fortunately the antioxidants in plants work in our bodies the same way they work in plants."

The China Study found that when levels of vitamin C in the blood were low, families were more likely to have a high incidence of cancer. "Low vitamin C was prominently associated with higher risk for leukemia and cancers of the nasopharynx, esophagus, breast, stomach, liver, rectum, colon and lung." In addition, "90-95 percent of exposure to harmful chemicals comes from consuming animal products."

I strongly recommend reading *The China Study*, by T. Colin Campbell, Ph.D. and Thomas M. Campbell II. There is no way to cover the immense amount of invaluable information contained in this book. It could save your life. Many of us have lost a loved one to cancer or have witnessed someone's battle, and many of us live in fear of developing the disease ourselves.

Now, after having done extensive research in the area of nutrition, I am not as concerned about making sure I buy organic products as I am about being vegetarian. The true testament is how you feel when you have changed your diet. Consuming organic food is a great improvement, but the problem is that many of the crops labeled organic are owned and operated by farmers using conventional methods. Agribusiness is no stranger to the wide array of marketing ploys and they, too, have jumped on the organic bandwagon. The only way to know for sure what you are consuming is to buy local or grow food for yourself. However, as we have just seen, not only do we produce carcinogens on our own, we are exposed to them daily; much of the recent research suggests that the only hope in the fight against cancer comes from changing our diets and stepping away from animal products. All the best to you! ☮

*Information contained in this article is from The China Study, by T. Colin Campbell and Thomas M. Campbell, II.*
Thoughts for the Month

- After transition skis/board will become flat before it goes on a new edge. How do you put the skis/board on new edge(s)? Do you pressure the new edge(s) into the snow or what? Does this have anything to do with a question from February issue: what do you do first, edge or pressure?
- Roughly how many skiers had ACL injury this winter season up to now in the US?
- What is the motto of the PSIA?

Elaborations on last month’s Thoughts for the Month.

Chatter:

You probably do not have it if you:
- are skiing slow
- are skiing on low edges and skid a lot
- have dull edges
- pivot at a point close to the tips of the skis

You probably have it if:
- you ski on high edges
- you ski dynamically with too much weight on your arches or even further back your foot
- you are skiing steep terrain and overloading the tails of your skis
- your body is too vertical coming into a transition
- your skis are of small turn-radius and you do not ski dynamically on a steep terrain
- your center of mass is going against the direction of the skis’ travel creating too much force for the skis to withstand, and so their edges let go

What is chatter: towards the end of a turn tails of the outside ski (and sometimes inside ski as well) skip down the slope a few inches, try to grab on, fail and skip again. Below see a photo of the tracks skis leave on the snow when chatter is present.

Cause of chatter: skis cannot withhold the pressures, ski is overloaded, center of mass is travelling too much in a different direction than the skis and skis cannot provide enough resistance.

Ways to eliminate chatter: decrease counter rotation to get a stronger position, put more weight on the balls of your feet so that the entire ski resists the pressure instead of only tails, try to tip-toe down the hill and spray snow with the entire ski and not just the tails, try spraying the snow to the side of the trail instead of down the fall line, flow down the hill where flexion and extension is perpendicular to the slope, steer with both feet instead of just riding on the equipment, plant your poles further down the hill and, if not too steep, keep elbows lower then wrists, set your platform before the transition. And most importantly, shed your speed on top of the turn instead of at the bottom. That means, if the snow is firm, let your skis drift laterally just a bit right after the transition, then you will be able to carve the rest of the turn cleanly and avoid excessive tail overload resulting in a chatter at the end of your turn. In racing these are called “comma” turns. Just think about it, doesn’t it make sense to do most turning when you are going the slowest, which is just passed the transition?
Snow Spray:

Skiers (and snowboarders) spray snow behind them because of the boards’ side cut. The snow gets on top of the board at its waist and later slides off the tail. When the tail is bend up, snow goes up. More bend up, higher it goes. Faster the person goes, higher the spray goes. Twin tips are a murder to ski behind. So, if you want to play “follow the leader” game with your students you should not use twin tips, or go very slowly. I wonder if ski patrollers can take a sled down when skiing on twin tips. Wouldn’t that be quite a ride for the injured on the sled?

Funny Turn

HOW DO PEOPLE KNOW?

On March 19, I was with Doug MacLeod standing on top of Sugar finishing the conversation that we started on the chair ride when a group of 4 skiers came up to us from behind. One of them said that we looked like good skiers and we should go down first so they will not be in our way. Doug and I looked at each other wondering how they could tell from behind that we had gold PSIA pins. How could those people be so perceptive? It’s like a pro violinist can tell about quality of another violinist just by the way they carry their case, but these people hardly looked like pro skiers. So, Doug turned to them and asked them how they could tell about our abilities and the answer was: “You have your own skis, so you must be good.” That sure was new to me, but OK, I will buy it.

By Witold Kosmala
YOU KNOW YOU'RE A SKI OR BOARD INSTRUCTOR WHEN...

- you know you get much more respect in uniform and you abuse that fact
- when you found out you get 50% off food, including waffle house, it made your year and you immediately thereafter gained approximately 10 lbs at the very next opportunity
- when you wake up in the morning to go to work, you don't bother with hair or make-up, you just put on a beanie and go
- you get to the mountain an hour before you have to be there so that you have time to take a few runs before you get stuck on the beginner slopes all day

Mike Hicks, thank you for amusing us with these statements. We can all relate to them. Mike was a ski instructor at Whitetail Resort, PA now for 19 years and going strong. He is an awesome skier and a wonderful person. Mike is a PSIA Alpine, Level III certified trainer for his ski school.

ANYTHING FUNNY ABOUT THE PICTURE BELOW?

I skied like this just a year ago all over Mammoth Mtn., CA, but not by choice. As you know, this season I moved up into 2 matching boots (only on the outside), but still with a partially numb left leg, places with absolutely no feeling in my right leg and hip, and very restricted motion in some joints. We won’t talk about pain, twitching nerves, nor the way calf muscle feels being in the place of the shin. But, alive and constantly counting blessings.

Witold

Picture Citations:
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