



Thermal Strategy

"STORING YOUR WARMS"

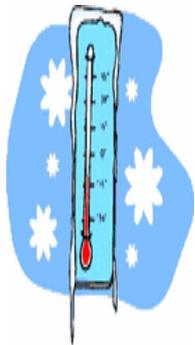


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I came up with this expression many years ago as a kid growing up in the Northeastern U.S. in Yonkers, New York. I am sure it sounds funny to you, but one by one people who become familiar with this will start to say it too.

As snow people, we are around cold temperatures a lot. The important thing is to stay comfortable. Once you get cold it is hard to get warm. It's better to stay warm or even get a little too warm. It is important to dress right but it is also important to **store your warms**. What I mean by this is anticipating changes in temperature and making the appropriate adjustments. This originated when I would have to go out in the bitter cold. Therefore I would get extra-warm before I went out. That way the cold would almost be a welcome relief from the extra hot. I think most people can relate to blasting your car heater before you get out into chilly conditions.



Store your warms if it looks like a storm is coming in, the wind comes up or if you lose the sun. Do it BEFORE you get cold. It's not hard, it just takes common sense.



For example I was up at Alpine Meadows the other day at 3pm. The front bottom side of the mountain was in the sun and warm but looking uphill I could see shade near the top. By anticipating that once in the shade (and 1800 feet higher) it would be cooler, I zipped up my vents, snugged my collar and *stored my warms* BEFORE it got cold.

CONSIDERATIONS

Layering

The recommended way to dress for snowsports is by layering.

The *first layer* (next to your skin) should be a highly wickable, breathable base layer. **The moisture generated by your body sitting on your skin is largely responsible for making you cold.** There are many sophisticated fabrics on the market, which move the moisture away. Polyester seems to be the most popular, but you may also find long underwear, which is polypropylene, silk, or other fabrics. Most tops start at about \$15 and increase based on quality and features. I like the zippered ones because you can modulate your warmth level better.



The *Middle layer* should be also breathable and have some lofting ability. By that I mean trapping air to act as insulation. In nice warm ski weather you may skip this layer altogether. Fleece is one of the best materials to use. It is lightweight, does not restrict motion too much and feels great. Another great material is a relatively new breed of fabric like Gore-Tex Windstopper. This material is breathable but resists air blowing through you by sandwiching a

membrane in between the fabrics. A vest of this material will keep you cozy and keep your arms very mobile. You can zip it up to store your warms, or unzip for cooling. If you want to get really fancy the Gore company is making products called Airvantage. This includes an inflatable bladder in a vest, which can be inflated or deflated to adjust your amount of insulation, what a concept!



The *outer layer* should be waterproof and wind and ideally still have some breathe-ability. The windproofness reduces convective heat loss. By waterproof we really mean water-resistant. There is an inverse relationship between breathe-ability and waterproofness. A rubber rain suit is very waterproof, but does not breathe. You will sweat inside and get wet and miserable. The best fabrics like Goretex XCR are light, breathable and relatively waterproof. Unfortunately it is also expensive. A fabulous Mountain Hardware shell like this can cost you over \$400.00. Many companies have their own version of a breathable but waterproof fabric.

Invest in a good pair of *ski socks*. They use great wicking and insulating fabrics. Some use different panels to adjust for pressure and wear in your foot. Snowboard specific ones have a forward lean to them. Don't wear cotton or some crappy ones. If your feet are uncomfortable you won't have a good time. Make sure your boots fit properly and do not impair your circulation.

Chairlifts

When you're skiing, you are active and you'll probably be warm. Open some vents or zippers. When you are riding the chairlift, that's when you'll cool down. You'll get cooler because a) the lift is elevated, with more wind exposure b) the lift is moving creating its own wind chill factor (especially on high speed chairs) and c) you are inactive. Incredibly slow lifts which are high off the ground can be real chillers. This is a great time to zip up, put up your hood and store your warms. Any of that moisture next to your skin will become much more noticeable. Don't let yourself get cold.



Ski Areas

By knowing something about the ski resort you are at you can better predict changes in temperature. At some places it is tricky, for example at the gargantuan Heavenly if you ride up the gondola at Stateline, you may not know what the temperature or wind is at the top, almost 3000 feet higher.

Some ski areas have a particular pattern of sunshine during one part of the day. Some have more wind in certain facings. Each one has its own microclimate. Your best bet is to either know from experience or ask a local, or ski patroller. Be prepared.



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There is vastly more contact with the snow with snowboarders. Wet makes you cold. Avoid **Frostbutt** by using waterproof pants. There are shorts available that look like bike shorts with closed cell foam padding which keeps your tush warmer and provides some padding too. Also you need much



better more water resistant gloves to keep the hands warm. Use hand warmers and liners.

Vents

Generally the more expensive models of jackets and pants have better materials, sealed seams, and vents. These vents, found under your armpits, and sometimes in other places too. They are a great way to change your heat and moisture by zipping and unzipping. Again try to anticipate whether you will be getting colder or warmer and make the appropriate change. If you have a helmet with changeable venting, open when warm, close if you think it might get chilly.



Head and Neck Gear

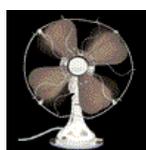
It is said 50% or more of your heat is lost from your head and neck. This is a strategic area to keep warm. Many people use hats, gaiters, or balaclava (*pictured* not to be confused with baklava, a Greek dessert) to control their warmth. Some of these fold quite small and you can stick them in a pocket if hot, or have them available if conditions change. I keep one with me to put under my helmet if necessary. Keep your ears covered too.

Goggles

Do goggles keep you warm, you betcha. This covers that part of your head we call the face. Try taking them off in the wind; you'll see what I mean.

Portable Warmers

Disposable hand, toe and body warmers are great things to carry. They take up little space. These are available at most ski and sporting goods stores cost \$1-3. They are activated once you open the package and expose them to air. Generally they work well for 4-8 hours. If they cool off, shake them a little. This exposes more of the material to air which gives off an exothermic (heat producing) reaction. There are electric foot and hand warmers as well. They are battery powered and my understanding is that they are effective only as long as there is a charge. Check the duration and compare it with the interval you need them for.



To Stay Warm, Stay Cool

The idea here is to not get too hot, because then you will sweat. That moisture is what makes you eventually cold when you are in the shade, higher up, when the wind blows, or when you are skiing fast. DO NOT wear cotton. Yeah I know it's comfortable for pajamas, but it does not breathe well, dry well, and loses its insulating ability as soon as you get wet. Wool is somewhat better especially the newest soft milled stuff. Use the great new technology fabrics to minimize bulk and maximize comfort. The concept is the same as above, anticipate the changing conditions, and adjust yourself before the environment does. Replace your electrolytes throughout the day by drinking. Alcohol consumption supposedly makes you colder, guess you have to dance a little harder.

In the Lodge



Most ski resorts have some kind of a lodge. This a great respite from the cold, snow, and wind. If possible try to dry off. I almost always notice that after stopping, and getting warm, I seem to be colder when I get outside.

This is probably from the decreased physical activity and vasodilation (opening of surface blood vessels) that occurs in the warm lodge. That's why I store some extra warm before heading back into the storm. It's not a bad idea to change your socks, gloves, undershirt, or anything that may be wet.

Other Storing Warm Ideas

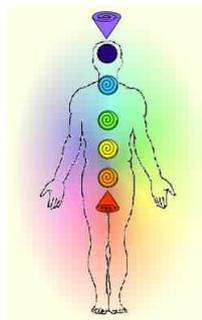
If you know it's cold out, raise your body temperature before going out, take a bath, a hot shower, have hot soup, drink tea, sit in your car with the heater on high, hug a warm friend, exercise, get your core body temperature up. Hand dryers in rest rooms can fill your shirt or jacket with hot air and help you store warm. I stick my hand held open sleeve in front of my car heaters vent filling my shirt or coat with warm air. I've heard of sprinkling cayenne in your socks to warm your toes. Black or dark clothing heats up more when in the sun. Once warm, you have more options for zipping/unzipping or removing garments. Those microwaveable rice filled heat packs are great for warming up your body.

Did I mention the hot tub!



Physiology

Thermogenesis is a term for heat production. Our bodies constantly take food burn it in your cells and produce heat. Fuel is therefore a requirement for your body to produce heat so don't forget to eat. Some people are more 'hot-blooded' than others. Generally if you have more insulating fat, you are warmer. A common complaint with weight loss is getting cold easier. If you are chronically cold, have your doctor check your thyroid. The thyroid controls your metabolism. Hypothyroidism (low thyroid) can make you cold often, even when others feel fine. Poor circulation can especially make your extremities cold. Certain conditions like Raynauds syndrome can cause painful vasoconstriction (narrowed blood vessels) in the hands. Diabetics may also have problems in the hands and feet. *If you have a problem staying warm, be especially conscientious and dress properly.* It is felt that some supplements can increase thermogenesis and circulation. Among them is capsicum (cayenne), caffeine, Niacin (B3), vitamin E. Ephedra, which has been recently banned, is a thermogenic agent.



Ultimately the point is to be comfortable. My clinical experience also tells me that having your body temperature drop makes you get ill easier. By thinking about it ahead of time you can dress right, anticipate strategize, and repeat after me.....

STORE YOUR WARMS!!



***Don't miss my summer article
Store Your Colds***