

Cold Weather Camping

Your Body and The Cold

The body is a complex machine that depends upon chemical and muscular activity to sustain life. It works best when it is regularly fed, rested and kept at a steady temperature of 98.6°F. Understanding how your body reacts to slight internal temperature differences enables you to respond more quickly to changes in your comfort. Your body is always giving signals that tell you if you are too warm or too cold. If you are attuned to these, you can respond appropriately and remain comfortable for long periods of time, even in extreme conditions. Let's look at how your body loses heat:

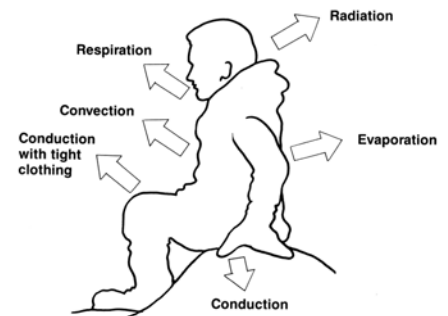
Mechanisms of Heat Loss

Conduction – heat loss from direct contact between a warm body and a cold one, i.e. setting on the ground.

Convection – heat loss to moving air or water, i.e. the wind strips heat from you

Radiation – heat loss via infrared radiation – Just as how you feel heat radiate from a hot stove so too do you radiate heat.

Evaporation – heat loss via the evaporation of water from your skin and also from the process of breathing in cold dry air and exhaling it as warm moist air.



How Weather Affects Heat Loss

Wind Chill. If there is not breeze at all, you could remain lightly clad and comfortable at 0°F for long periods of time. But let the air stir even slightly, and the calories for heat energy produced by your body will disappear quickly.

Water Chill. The thermal conductivity of water is 30 times as great as that of still air. This means that wet clothing can extract heat from your body much faster than clean, dry clothing. When your clothing gets wet, it no longer provides an insulation layer of warm air next to the skin, instead, it rapidly conducts heat away from your body and dissipates into the environment, and wet clothing is like a wick.

The Secrets of Keeping Warm.

People acclimated to winter conditions know the importance of eating properly, getting adequate rest, being in good physical condition, and having a positive mental attitude. Keep the following in mind:

Keep the body core warm. When you cool internally, your body reduces the amount of blood circulating to the extremities. It is important to keep activity rate and clothing appropriate for the weather conditions. This assures adequate warmth throughout your body.

Make sure blood circulates freely. Most of your heat is generated in your head, trunk, and muscles. The blood then warms your entire body by flowing unrestricted to the extremities. That's why it is important to avoid snug and tight-fitting garments, especially hand-and-foot wear.

Select the proper type and amount of clothing. Regulate your clothing according to your activity rate. This is the most effective way to ensure comfort.

Pay attention to internal signals. Don't wait until you are cold to put on more clothing. Act when you first begin to feel cooler.

Key to Warm Clothing & Sleeping – The C-O-L-D Key

C

Keep Clothing **Clean**. Dirt and grease clog the air spaces in the clothing and reduce its insulation value.

O

Avoid **Overheating**. Select the clothes that you need to stay comfortable, and even slightly cool. It is better to be cool than run the risk of perspiring and reducing the insulation value of your clothing. If you are too warm, loosen closures a few at a time; if you are still too warm, remove a layer. To keep from overheating while sleeping, ventilate your bag. Overheating in your sleeping bag produces perspiration just as when you wear the wrong clothing.

L

Wear **Layers**. Layers of clothing should be worn long and loose-fitting. Not only does this allow more freedom of movement, but lets your blood circulate freely, preventing frostbite. Select clothing that is the correct size and care for it so that it remains that size. Your bedding should be lightweight and large enough to accommodate you. If possible, use a Layered system.

D

Stay **Dry**. It is important to keep clothing dry outside as well as inside, do not get so warm that you start to perspire. Do not let snow collect on the outside of your clothing. The heat from your body melts it and some will penetrate even water-repellent fabric, reducing the insulation properties of the fabric. Keep your bag dry as possible by pumping all the warm, moist air out of the bag each morning and when airing and exposing it to the radiant warmth of the sun. Turn the bag inside out and check for frost. Then leave them open until they cool to the air temperature.

Staying Warm While on the Move

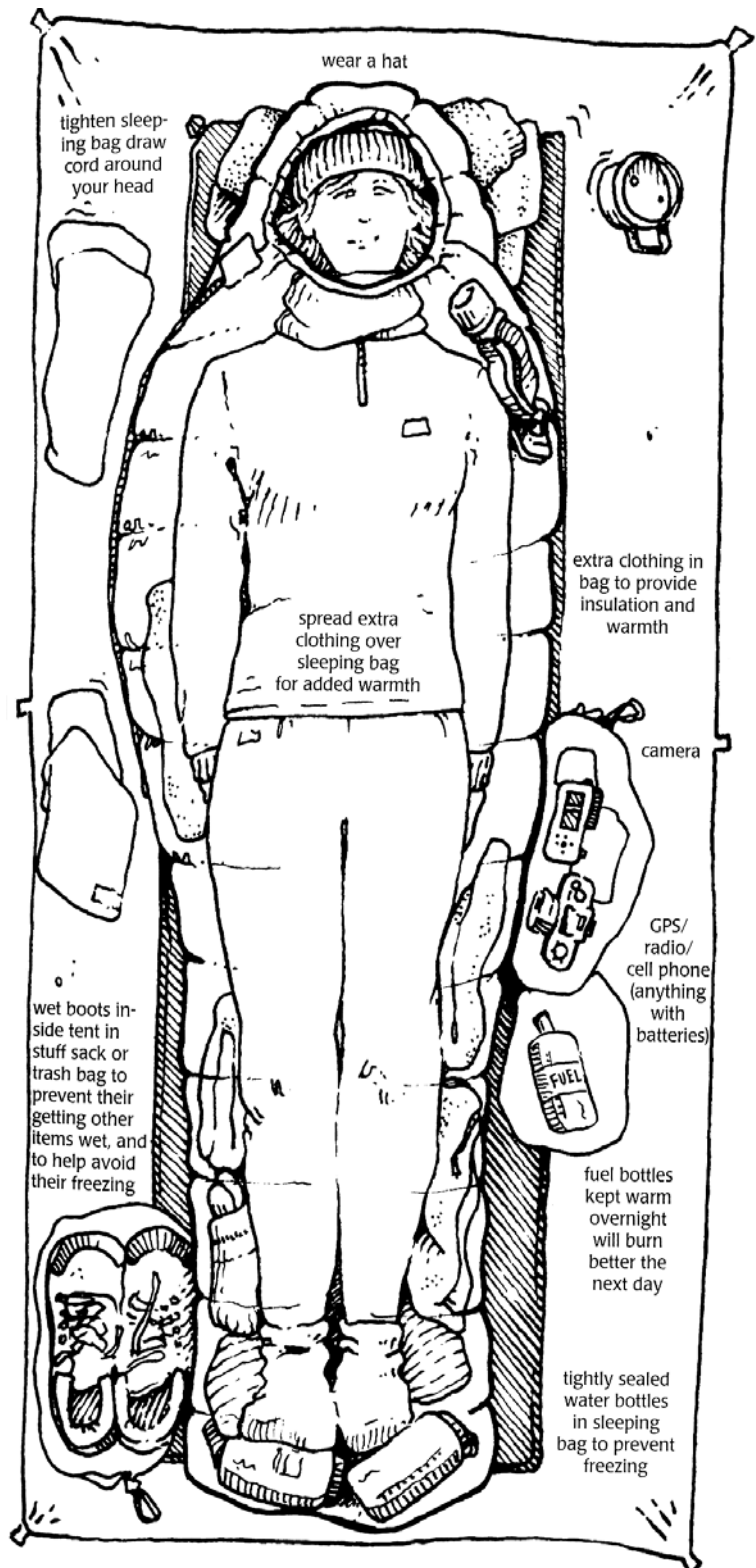
Adjust your clothing as needed to stay comfortably warm: not too hot or too cold. Remember the “3Ws” (wicking, warmth, and wind) of layering. The layer next to your skin should be polypropylene or similar material, which wicks away moisture. Next, pull on a fleece layer to trap body-warmed air. Finally, zip on a tightly woven, windproof layer that lets moisture out but keeps warmth in. In extremely cold conditions, add another layer. The Same “3Ws” apply to your hands, feet, and head.

- ◆ If you start feeling cold, don't continue hiking without adjusting your clothing or donning more items if necessary
- ◆ Don't over exercise. Ventilate by loosening or removing clothing as necessary.
- ◆ In cool weather you are likely to leave a campsite or trailhead wearing a warm top and maybe hat and glove. Once you start to warm up, stop and remove these items unless it is getting colder. Overheating leads to sweat-soaked clothes—even with modern synthetics – that will chill you when you stop.
- ◆ Putting on or taking off a hat makes a huge difference. You lose a massive amount of heat through an uncovered head, so donning a hat can warm you quickly
- ◆ Wind proof outer garments are imperative in cold winds. Keep windproof shells handy so you can quickly don them on breezy passes and summits. If you see clouds racing overhead or hear the wind roaring across a pass put on your windproof clothing just before you get there so you don't lose any heat.
- ◆ Don a warm top as soon as you reach a rest stop. Don't wait until you start to feel cool. Again, it's much easier to stay warm than to get warm
- ◆ Eating provides warmth. Keep a supply of quick-energy foods, such as hard candy handy. Have a snack when you stop to put on warm clothing
- ◆ Drink plenty of water and sports drinks. Dehydration can lead to headaches and cold extremities.
- ◆ You really can't get warm, don't push on, stop and make camp, get you your sleeping bag and have a hot drink and a hot meal.



Staying Warm in Bed

- ◆ Your sleeping bag will absorb several hundreds calories of body heat during the first few hours of the night to bring it up to sleeping temperature. So, do jumping jacks or take a hike before bed – anything to raise your core body temperature to start the night warm.
- ◆ Use two sleeping pads under your sleeping bag. A self-inflating foam mattress together with a closed cell foam pad makes a warm, comfortable combination.
- ◆ Sleep on top of your parka and insulated pants. Put your gloves, socks, boot liners, and tomorrow's clothes inside the sleeping bag.
- ◆ Wear warm, loose-fitting layers to bed. Always wear a hat. Booties worn with clean dry socks help keep feet cozy.
- ◆ Vent your tent. Leave one door partially open at the bottom and a second door or window open at the top, this minimizes frost buildup.
- ◆ Slip a hot water bottle inside your bag, but be sure the lid is on tight.
- ◆ Flare open boots as wide as possible so you can slip them on more easily in the morning when they're frozen.
- ◆ Keep some high-energy food handy for midnight snack.
- ◆ Be careful not to breathe inside your bag. Humid breath can lead to frost buildup.
- ◆ When nature calls, don't hold it. Keeping a fluid at body temperature uses up energy better spent warming your body.



Staying Warm in Camp

- ◆ Chose a campsite sheltered from the wind. Because cold air sinks, a hillside campsite will be warmer than one on the valley floor. An eastern exposure will give you direct morning sun.
- ◆ Change into dry, warm clothes as soon as possible to keep from getting chilled.
- ◆ Stand on your sleeping pad (only if it's a closed cell foam pad) to keep cold from seeping up from below.
- ◆ Chop, slice, dice, and remove excess packaging from foods before you leave home. This reduces the number of chores that require you to remove your gloves. Keep food preparation simple
- ◆ Insulated cups or cup wraps keep drinks hot longer.

Freezing Temperatures.

When the temperature drops below freezing you may need to wear all your clothes to keep warm. If you're still cold get in your sleeping bag. So you can use your arms, pull the bag up under your armpits and tighten the top draw cord so it stays there.

During the night try the following if you feel cold:

- ◆ Have a hot drink before going to sleep
- ◆ Use your sleeping bag hood and shoulder baffle
- ◆ If you wake up feeling chilly, don't dry clothing, include socks and a hat.
- ◆ Spread extra clothing, such as a down jacket or rain jacket, over your sleeping bag for added insulation
- ◆ If you only have a three-quarter length insulation mat put clothing under your feet

Protect your water supply from the cold. Bring water bottles into the tent and insulate them with clothing or put them in the bottom of your sleeping bag. If you're sure they won't leak, tighten lids securely and then turn the bottle upside down so any ice forms at the bottom, not the top. You can also empty water into your pots in the evening and then thaw it over the stove in the morning.

Wet gear, particularly boots, can freeze overnight, bring boots into the tent, in a stuff sack or trash bag so they don't dampen anything else, and cover the bag with spare clothing, you can also store the boots in your sleeping bag – this ensures they won't freeze. Place frozen boots in the sun in the morning; they should thaw fairly quickly. If it is not sunny, place a bottle of hot water in each boot to thaw them a little. If you have to wear frozen boots, don't put them on until you're about to start hiking. It isn't pleasant, but they'll start to thaw fairly quickly once you start moving. If you stand around in them, your feet will get cold.

Protect battery-operated gear, as well. Batteries don't work well when cold. Store these items inside they tend, off the ground. If the batteries seem weak, take them out and store them in a pocket for a while or put them on a rock in the sunshine.

THE COLD-WEATHER BOTTOM LINE

1. *Produce Heat.*

Exercise using the body's larger muscle groups; eat calorie –dense foods, esp. carbs, frequently thru out the day; Locate south-facing microclimates for max-sun exposure, hydrate using warm/hot fluids with dissolved hard candy or other sugars when available.

2. *Decrease heat loss.*

Wear proper clothing especially in the head, neck and torso areas: replace wet clothing with dry; create or find shelter from the elements, decrease surface area while increasing volume; avoid or insulate the body from cold surfaces.

3. *Avoid becoming exhausted (60 percent rule).*

Working at 60 percent allows the body to burn fat reserves instead of using up glucose and glycogen stores. Get adequate sleep and rest.

4. *Reduce internal and external constriction.*

Avoid ingesting of vasoconstricting substances (tobacco, alcohol, caffeine containing beverages) tight clothing, equipment, and footwear.

5. *Stay hydrated.*

During warm to hot liquids if possible; urine should appear "clear"

6. *Stay aware of what's happening.*

Be conservative. Don't take unnecessary chances.