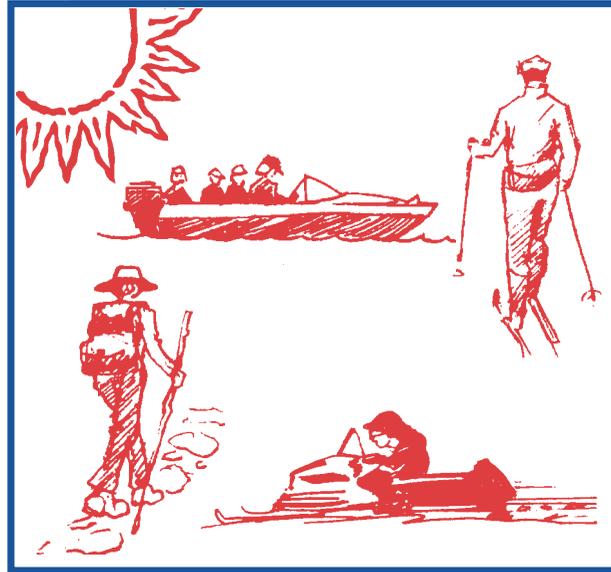


NorthWestern Energy

**Freezing**  
*to Death* on a  
**on a**  
*Sunny Day*



*Montana Fish,  
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**NorthWestern**<sup>™</sup>  
Energy

## What is Hypothermia?

Hypothermia is a serious medical condition that occurs when your body temperature falls below 95° (F). Hypothermia, from the Greek words “hypo” (below) and “thermic” (temperature), occurs when your body loses heat faster than it can produce it, causing the body's internal (or core) temperature to drop.

Water, food, and body heat are essential to maintain human life. While humans can go without water for days and do without food for several weeks, they cannot do without warmth for more than a few hours.

Each of us is affected differently depending on our physical condition, body size, and age. Infants and the elderly are especially susceptible to hypothermia, as are people who are ill, on medication, or have been drinking alcohol. Hypothermia is a danger to anyone who works or plays outdoors.

## What is the Cause?

Four factors contribute to hypothermia:

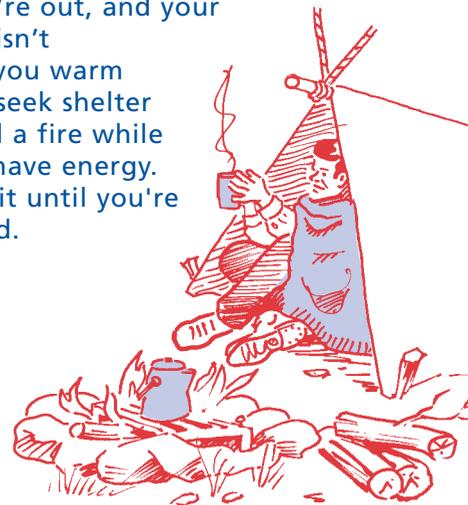
1. **Cold** — As temperatures decrease, the danger of hypothermia increases. Hypothermia most often occurs when temperatures are between 20° and 50° (F). Do not underestimate the danger of these temperatures, especially when combined with other factors.

Dress properly for the day's activities. If you're going to be outdoors on a cold, wet day, stay warm and dry by wearing fabrics that insulate and wick moisture away. Fabrics made of wool and polypropylene are good. Avoid wearing cotton because it retains moisture. Use a wind-proof outer layer. And, don't forget a hat. More than

25 percent of your body's heat can escape through your head.

2. **Moisture** — Staying dry is critical if you are involved in outdoor recreation. Wetness against your skin, whether it is from working up a sweat, getting caught in foul weather, snow melting on you, or a plunge into cold water, increases the likelihood of your body losing a dangerous amount of heat. Clothing can lose up to 90 percent of its insulating value when it gets wet.
3. **Wind** — Wind, combined with cool temperatures, has a chilling effect on exposed skin. Even a light wind will carry heat away from the body.
4. **Fatigue** — When you are very tired, you may not have enough energy to stay warm. Lack of food and drink also lowers the body's ability to produce heat. Our bodies use food to produce heat, and we often overlook the importance of drinking water in cold weather. Dehydration is a frequent contributor to the development of hypothermia.

If you're out, and your clothing isn't keeping you warm enough, seek shelter and build a fire while you still have energy. Don't wait until you're exhausted.



## Recognize Symptoms

Be alert for these warning signs:

- **Shivering** - the body's way of producing more heat.
- **Slurred speech** - difficult to understand.
- **Dazed behavior** - may be forgetful or careless.
- **Numb hands and feet** - clumsy, stumbling.
- **Weakness** - slower pace, fatigue.
- **Short attention span** - confused thinking; slow to respond.



Someone suffering from hypothermia may deny being in trouble. Believe the symptoms, not the victim. Even mild symptoms demand immediate treatment.

## Hypothermia in the Elderly

The elderly are at definite risk for hypothermia—even indoors. Problems with circulation, some medicines, and certain illnesses may reduce the older person's ability to resist hypothermia, resulting in body temperatures dropping below the normal 98.6° (F). As we grow older, our blood circulation tends to slow down. Slower circulation means not enough warm blood flows through our bodies.

Also, the older we get, the less sensitive we are to cold weather. So, our body temperature could drop to a dangerously low level without us really being aware of it. In addition, older people don't seem to shiver very effectively, which is one of the ways the body warms itself up.

Hypothermia occurs more often in men than women. The risk is higher if a person does not eat a balanced diet, has just been in an accident, or has heart disease. Others at risk include people with thyroid disorders and liver problems.



To help prevent hypothermia, remember these tips:

- Dress in layers. You'd also be wise to wear a warm hat during the winter months.
- Set your thermostat to at least 70 degrees during cold weather.
- Avoid extensive exposure to breezes and drafts.
- Keep plenty of nutritious food and warm clothes and blankets on hand to help ward off the winter chill.
- Eat hot foods and drink warm drinks several times during the day.
- Ask a family member or neighbor to check on you often.
- Ask your doctor if any medicine you're taking increases your risk of hypothermia. Some drugs make it difficult for your body to stay warm. Drugs that may cause a problem include barbiturates, benzodiazepines, chlorpromazine, reserpine, and tricyclic antidepressants.

## Clinical Symptoms of Hypothermia

Stage	Core Temperature	Signs & Symptoms
<b>Mild Hypothermia</b>	99° - 97°F	Normal, shivering can begin.
	97° - 95°F	Cold sensation, goose bumps, unable to perform complex tasks with hands, shiver can be mild to severe, hands numb.
<b>Moderate Hypothermia</b>	95° - 93°F	Intense shivering, loss of muscle coordination, movements slow and labored, stumbling pace, mild confusion, may appear alert. Use sobriety test, if unable to walk a 30-foot straight line, the person is hypothermic.
	93° - 90°F	Violent shivering persists, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, difficulty speaking, signs of depression, withdrawn.
<b>Severe Hypothermia</b>	90° - 86°F	Shivering stops, exposed skin blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness.
	86° - 82°F	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.
	82° - 78°F	Unconscious, erratic heartbeat and respiration, pulse may not be palpable.
	78° - 75°F	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.

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If your temperature is 96 degrees or less, you feel sluggish, or you recognize that you're having trouble thinking clearly, call for assistance to get to your doctor or to an emergency room. As a senior citizen, you need to be more vigilant to avoid hypothermia..

### Take Action Now!

If you suspect that a person has hypothermia, prevent further cooling by following these steps.

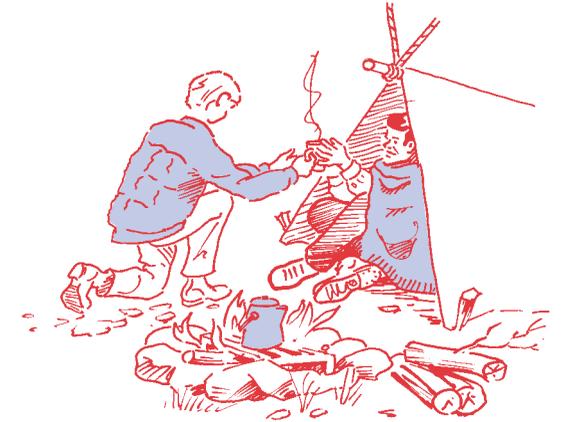
- Always seek medical help as soon as possible.
- Get to a warm shelter out of the wind and rain.
- Replace wet clothing with dry clothing.
- Prevent further heat loss.
- Wrap the victim in multiple sleeping bags or blankets.
- Warm the victim using heated blankets, a hot water bottle, canteens filled with hot water, warm rocks wrapped in towels, or even the body heat of another person.\*
- Offer warm, not hot, liquids to conscious victims only! Sugary drinks, such as *diluted* Tang® or Jello®, are helpful.
- Keep the victim in a horizontal (flat) position.
- Try to keep the victim awake and talking.



\* Wearing dry clothing, get into a sleeping bag with the hypothermic person dressed in lightweight dry clothing. If someone is truly hypothermic, don't put him/her naked in a sleeping bag with another person.

### Things to Avoid

- Never offer alcohol. It is a vasodilator that will increase peripheral heat loss.
- Avoid caffeine, a diuretic that will result in water loss, increasing dehydration.



- Do not massage or rub the victim's skin. As tissue begins to freeze, ice crystals are formed within the cells. Rubbing the skin may cause the ice crystals to tear cells.
- Avoid jostling or rough handling of the victim as this could cause cardiac arrest or physical shock to internal organs.
- Do not give the victim medications such as aspirin or other painkillers.
- Do not permit the victim to smoke. Smoking reduces blood flow to the hands, feet, and skin.

### Coping With Cold Water

When working or recreating on or near water, follow these suggestions in case you find yourself in cold water:

- Wear a life jacket. It will help you float and will provide some insulation. Choose a bright colored one so you are visible.
- If your boat overturns, get out of the water if possible. Cold water robs the body of heat 25 times faster than air. Climb on top and hang on. Get as much of your body out of the water as possible. Never try to swim to shore unless you are very close. Distances over water are deceptive and objects generally appear closer than they are.
- Do not discard clothing. It will act as insulation.
- Do not move more than necessary. Swimming and treading water use up valuable energy and greatly increase heat loss.
- Once you get out of the water, seek treatment for hypothermia and get medical attention.

If you are wearing a life jacket, you can reduce the effects of hypothermia by crossing your ankles, crossing your arms over your chest and drawing your knees to your chest. Then lean back. This is called the H.E.L.P. position.

Heat

Escape

Lessening

Position



**HELP POSITION**

If more than one person is in the water and all are wearing life jackets, the "huddle" is recommended. Huddling close, with chests side by side, preserves heat. A group is easier for rescuers to spot and the closeness can improve morale as well.



**HUDDLE POSITION**

Water temp. (F)	Exhaustion or unconsciousness	Survival time
32.5°	Under 15 min.	Under 45 min.
32-40°	15-30 min.	Under 90 min.
40-50°	30-60 min.	Under 3 hours
50-60°	1-2 hours	Under 6 hours
60-70°	2-7 hours	Under 40 hours
70-80°	3-12 hours	?

**Avoid the Risk**

- Do not get wet. Put on rain gear before you need it. If you do get wet, change into dry clothes immediately.
- Wear or carry adequate clothing. Dress in layers and wear a hat to reduce heat loss.
- Eat right and drink plenty of water. Do not get fatigued. Being rested and well fed is a good defense against hypothermia.

- Avoid using drugs that affect the central nervous system (e.g. pain killers, sleeping pills) and drinking alcohol. These can impair your judgment and decrease the ability to recognize that you are cold.
- Carry a survival kit. Be prepared in case of an emergency or unexpected stay overnight.
- Tell someone your plans. Let them know where you are going, what you are doing, and when you plan to return.
- Monitor children, the elderly, or those who may not recognize signs of hypothermia.

**A Closing Note**

At NorthWestern Energy, we are committed to providing our customers with energy-related safety information. Likewise, Montana Fish, Wildlife & Parks urges you to follow these safety guidelines so you don't put yourself or the lives of others in danger.

