

HYPOTHERMIA

If you are outdoors enjoying your favorite sport, you presumably do not intend to jeopardize your life. Hypothermia may be a new word to you, but it is the only word that describes the rapid, progressive mental and physical collapse accompanying the chilling of the inner core of the human body. Hypothermia is caused by exposure to cold, aggravated by wet, wind, and exhaustion. It is the number one killer of outdoor recreationalists.

COLD KILLS IN TWO DISTINCT STEPS: EXPOSURE AND EXHAUSTION

The moment your body begins to lose heat faster than it produces it, you are undergoing exposure. Two things happen:

1. You voluntarily exercise to stay warm.
 2. Your body makes involuntary adjustments to preserve normal temperature in the vital organs, and you start shivering.
- Either response drains your energy reserves. The only way to stop the drain is to reduce the degree of exposure.

THE TIME TO PREVENT HYPOTHERMIA IS DURING THE PERIOD OF EXPOSURE AND GRADUAL EXHAUSTION

HYPOTHERMIA

If exposure continues until your energy reserves are exhausted:

1. Cold reaches the brain depriving you of good judgment and reasoning power. You will not realize this is happening.
2. You will lose control of your hands.

This is hypothermia. Your internal temperature is sliding downward. Without treatment, this slide leads to stupor, collapse, and death.

AVOID EXPOSURE

1. **STAY DRY.** When clothes get wet, they lose about ninety percent of their insulating value. Wool loses less as does many of the new synthetics. Cotton and wet down are worthless.
2. **BEWARE OF THE WIND.** A slight breeze carries heat away from bare skin much faster than still air. Wind drives cold air under and through clothing. Wind refrigerates wet clothes by evaporating moisture from the surface. **WIND MULTIPLIES THE PROBLEMS OF STAYING DRY.** If you have been in the water and you are wearing a T-shirt that is wet remove it and you will retain more heat. Direct sunlight on the skin helps in the warming process.
3. **UNDERSTANDING COLD.** Most hypothermia cases develop in air temperatures between 30 and 50 degrees. Most outdoor enthusiasts simply can't believe such temperatures can be dangerous. They fatally underestimate the danger of being wet at such temperatures. Fifty degree water is unbearably cold. The cold that kills is cold water running down your neck and legs, and cold water removing body heat from the surface of your clothes.

TERMINATE EXPOSURE

If you can not stay dry and warm under existing weather conditions, using the clothes you have with you, do whatever is necessary to be less exposed.

1. BE SMART ENOUGH TO GIVE UP REACHING THE PEAK, OR WHATEVER YOU HAD IN MIND.
2. Get out of the wind and rain. Build a fire. Concentrate on making your camp or bivouac as secure and comfortable as possible.

NEVER IGNORE SHIVERING

Persistent or violent shivering is a clear warning that you are on the verge of hypothermia. **MAKE CAMP OR GET BACK TO YOUR VEHICLE.**

BEWARE OF EXHAUSTION

Make camp while you still have a reserve of energy. Allow for the fact that exposure greatly reduces your normal endurance. You may think you are doing fine when the fact that you are exercising is the only thing preventing your going into hypothermia. If exhaustion forces you to stop, however brief:

1. Your rate of body heat production instantly drops by fifty percent or more.
2. Violent, incapacitating shivering may begin immediately.
3. You may slip into hypothermia in a matter of minutes.

APPOINT A LEADER

Make the best protected and experienced member of your party responsible for calling a halt before the least protected member becomes exhausted or goes into violent shivering.

DETECT HYPOTHERMIA

If your group is exposed to WIND, COLD, OR WET, think hypothermia. Watch yourself and others for the symptoms:

1. Uncontrollable fits of shivering.
2. Vague, slow, slurred speech.
3. Memory lapses or incoherence.
4. Immobile, fumbling hands.
5. Frequent stumbling.
6. Drowsiness (to sleep is to die.)
7. Apparent exhaustion and/or inability to get up after a rest.

TREATMENT

The victim may deny he/she is in trouble. Believe the symptoms, not the person. Even mild symptoms demand immediate treatment.

1. Get the victim out of the wind and rain.
2. Strip off all wet clothes.
3. If the victim is only mildly impaired:
 - A) Give him/her warm drinks. (Only small amounts)
 - B) Get him/her into dry clothes and a warm dry sleeping bag. Well-wrapped warm (not hot) rocks or canteens placed in the crotch and under the arms anywhere the main arteries are close to the surface of the skin, will hasten recovery.
4. If the patient is semi-conscious or worse:
 - A) Try to keep him/her awake. (Do not give hot liquids by mouth.)
 - B) Leave him/her stripped. Put him/her in a sleeping bag with another person (also stripped) to transfer heat. If you can put the victim between two donors, skin to skin contact is very effective treatment.
5. Build a fire to warm canteens and rocks for warming the victim.
6. Transport the victim as soon as possible to the closest hospital for monitoring. It takes a very long time to warm the inner core and only a rectal hypothermia thermometer is long enough to find out what the inner core temperature really is. DON'T DELAY!

HYPOTHERMIA IN WATER

Loss of body heat to the water is a major cause of deaths in boating accidents. Often the cause of death is listed as drowning; but, often the primary cause is hypothermia. It should also be noted that alcohol lowers the body temperature around two to three degrees by dilating the blood vessels. Do not drink alcohol around cold water. The following chart shows the effects of hypothermia in water:

WATER TEMPERATURE / EXHAUSTION / SURVIVAL TIME

32.5 degrees.....	Under 15 min.....	Under 15 TO 45 min.
32.5 to 40.....	15 to 30 min.....	30 to 90 min.
40 to 50.....	30 to 60 min.....	1 to 3 hrs.
50 to 60.....	1 to 2 hrs.....	1 to 6 hrs.
60 to 70.....	2 to 7 hrs.....	2 to 40 hrs.
70 to 80.....	3 to 12 hrs.....	3 hrs. to indefinite
Over 80.....	Indefinite.....	Indefinite

PFD's (personal flotation devices / better known as life jackets) can increase survival time because of the insulating value they provide. In water less than 50 degrees you should wear a wet suit or dry suit to protect more of the body.

SOME POINTS TO REMEMBER:

1. While in the water, do not attempt to swim unless to reach nearby safety. Unnecessary swimming increases the rate of body heat loss. Keep your head out of the water. This will increase your survival time.
2. Keep a positive attitude about your rescue. This will increase your chances of survival.
3. If there is more than one person in the water, huddling is recommended.
4. Always wear your PFD. It won't help if you don't have it on.

BODY HEAT LOSS

The body loses heat in five ways: Respiration, Evaporation, Conduction, Radiation and Convection.

RESPIRATION: Heat escapes when air is exhaled. This can be reduced by covering the mouth and nose area with wool or a bandana.

EVAPORATION: Perspiration evaporates from the skin and moisture from the lungs contributes to heat loss by the body. Control the amount of evaporation by wearing clothing that can be ventilated or taken off. Wear clothing that will not absorb water, but will breathe. So you can control the cooling effect of evaporation.

CONDUCTION: Sitting on the ground, snow, touching cold equipment, or being rained upon are all examples of how heat can be lost through conduction. If you become wet a large amount of body heat is lost rapidly. Perspiration or rain should never be allowed to saturate your clothing which can reduce their insulating values. Wear clothing that will keep you warm even if it is wet, such as wool or some of the new synthetic materials (polypropylene, polarguard, fiberfill, quollofil) have good wet characteristics. Sit or sleep on a closed-cell insulating pad.

RADIATION: Radiation causes the largest heat loss from uncovered skin, particularly the head, neck, and hands. It is important to cover these areas in keeping warm and preventing further heat loss.

CONVECTION: The primary function of clothing is to keep a layer of warm air next to the skin, but allows water vapor (perspiration) to pass outward. The body continually warms this layer of air close to the body. A wet suit uses this same theory, but when a person falls into the water you are chilled for a few moments before the water next to your skin is warmed by your body. A dry suit has less initial shock because water does not get inside to start with so the clothing you wear under the dry suit captures the air to retain your warmth. Heat is lost rapidly with the slightest breeze unless you wear a nylon or gore-tex shell over your clothing to prevent the warm air from being lost. The cooling effect of wind chill is equal to that of much lower temperatures due to the increased evaporation and convection. You must have wind protection and good insulating value (dead air space) for your clothing to retain your body heat at a safe level.

