

Hypothermia

Hypothermia is a condition where your body core temperature is too low to sustain your health. Hypothermia is a process of body heat loss, and sometimes a rapid one, that progressively debilitates your physical and mental abilities. Any temperature less than 98.6 degrees could cause it, but usually it occurs at temperatures that we consider "cold" (50 degrees F and less). Most cases of hypothermia tend to occur at temperatures from 30 degrees F to 50 degrees F. However, environmental and physical conditions such as wet, wind, and exhaustion can cause hypothermia at higher temperatures and aggravate the severity of the condition at lower temperatures. Hypothermia can range from a level of discomfort to death and should never be ignored. Prevention is doubly important since hypothermia can quickly start to affect your brain's capacity to think straight. When heat loss threatens your body temperature's equilibrium, your body's demand to protect its vital core can result in as much as a 99% decrease in blood flow to the toes and fingers. Ultimately, your body will decide to shut your brain down to a state of unconsciousness in order to keep vital heart functions. Hypothermia is dangerous and difficult to treat, but easy to avoid.

Dressing properly for the outdoors is the single, most important prevention measure to avoid hypothermia. Being properly dressed for the outdoors can easily be accomplished if you think of it in three levels. First, you must dress appropriately for the main activity that you expect to be doing. Second, you must allow for varying degrees of exertion. And third, you must allow reasonable flexibility for unexpected changes. While many new "miracle" fabrics are advertised as being able to "do it all", the simplest and best solution is to dress in layers. This allows you to make adjustments in activity level or weather conditions to keep yourself comfortable and safe.



Our bodies can withstand a relatively broad temperature range (35 degrees F to 105 degrees F), but we are most comfortable when we are at homeostasis. Homeostasis is when your body produces and loses heat at the same level.

If you are participating in a low energy producing activity such as sitting quietly, you will produce less heat and will require more insulation (clothes). Conversely, if you are enjoying a high energy activity such as cross-country skiing you will produce excess heat and moisture and will need to shed some of that insulating clothing to allow them to escape.

The idea behind layering your clothing is that you can adjust your insulation to fit the activity and conditions that you are encountering. Remember, that the total range of your layering capability should include all the activities and levels of exertion that you expect to be doing, plus a buffer for unexpected conditions.

The most commonly encountered unexpected condition is precipitation, usually an unanticipated rain or wet snow. Moisture will quickly sap body heat and can severely reduce the effectiveness of the clothing that you have on. Wet conditions can increase the rate of your heat loss many times over.

The second commonly encountered unexpected condition is wind. Wind alone can reduce your heat by a substantial degree, but when combined with wet it can become severe and can quickly turn an uncomfortable outing into an dangerous one. Known as wind chill, this situation can be extreme in its effect often increasing heat loss by hundreds of times.

The most dangerous aspect of wind and wet is that it can create dangerous situations at seemingly mild temperatures. On a relatively nice spring or fall day with a temperature 50 degrees F, getting wet and being exposed to a 20 mph wind can be equal to a temperature of 32 degrees F. You will need to be dressed for freezing weather. Rain gear is effective as a barrier against both wet and windy conditions and should be a constant companion on any extended outing.

In its simplest form, layering your clothing consists of 4 layers. The base layer next to your skin should be light and not capable of readily absorbing moisture. Any of the plastic based cloth materials commonly available, such as polypropylene, are excellent. Moisture absorbing cotton is a poor choice.

The mid or insulating layer should be able to capture and hold air and also should allow moisture to pass through. The "dead air" provides insulation that maintains warmth while the moisture passes on through without dampening your clothes. The thickness of the insulating layer (or the numbers of layers) will be determined by the severity of the weather and are adjustable by adding or removing layers. The shell or outer layer should provide additional insulation and a moderate ability to block air. This will hold some of the undesirable moisture in, but is balanced by its wind blocking ability.

The final layer is not always used, but is necessary when you do need it, and that is a rainproof layer. It can also double as a windproof layer and can not only keep you dry, but warm as well. Wet clothes will quickly sap heat away from your body. The rate is 240 times faster than air! Depending on your clothing, when it's wet you can lose 90% of its insulation value.

While layering addresses your body core and limbs, don't forget your feet, head, and hands. A proper hiking shoe is best for outdoor excursions and is not easily replaced with athletic or casual dress shoes. Sturdy and adequate hiking boots provide the tread and foot protection needed on the trail. Most boots will keep your feet warm as long as you are active and your feet are dry. For extremely cold or wet conditions, rubber or felt pack boots may be a better choice.

Hats need to be functional rather than fashionable, and go a long way in protecting you from sun, wind, rain, and cold. Figures vary for heat loss through an uncovered head but 50% heat loss at 40 degrees F is an accepted standard.

Unprotected hands sap heat from your whole body and when in contact with cold tools and rock can cause rapid heat loss. There are many styles of gloves and mittens. The important factors are that they do not fit tightly enough to restrict circulation and that they permit enough dexterity to allow you to do what you need. Generally, mittens are warmer than gloves.

Nobody expects to get lost, but with an eye toward preparedness, an extended hiker or hunter may find themselves in a position to survive a night in the wilds. Depending on variable factors such as season, weather, exhaustion level, age, skills, etc., you will need a few things to help you survive.