



Hypothermia: Killer of the Unprepared



Version 1.0 25 September 2020

❄️ **Hypothermia** = low (hypo-) temperature (-therm-) condition (-ia).

❄️ Hypothermia is when the body gets chilled – not just the skin and muscles, but **deep inside**.

❄️ Heat Balance/Thermal Energy:

❄️ Your body produces heat continuously by “burning” food. Food is important in keeping you warm.

❄️ Your heat production and heat loss must balance, to keep your body temperature in the range where cell chemistry works properly.

❄️ Use clothing and knowledge to keep your body core temperature normal, even in hypothermia weather.

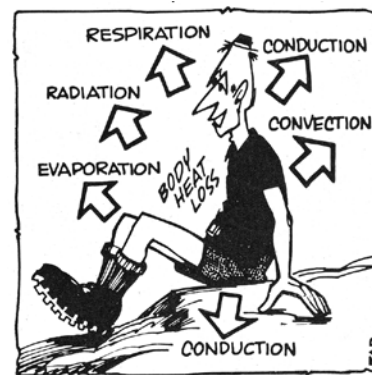
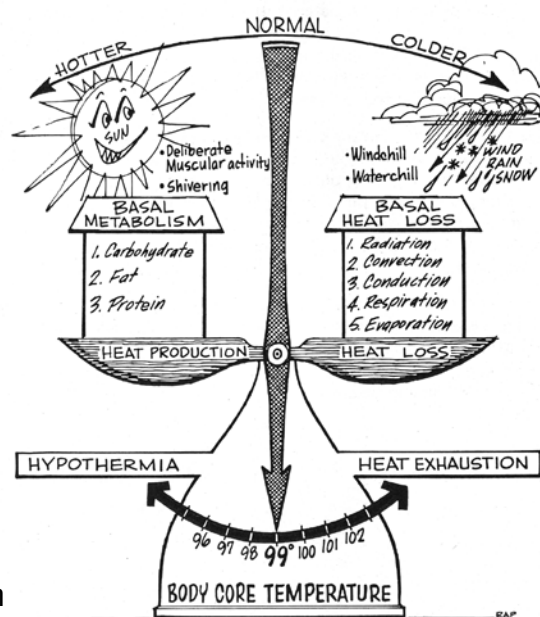
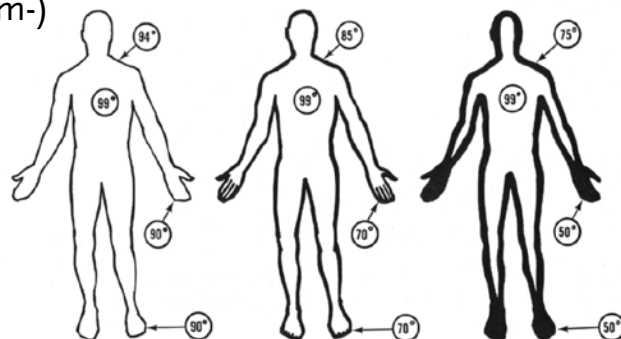
❄️ You **lose heat** from your body several ways:

❄️ **Cold Temperature: radiation** (like heat radiating from a hot stove) and **conduction** (like sitting on a cold rock).

❄️ **Windchill: convection**, as cold air blows by you.

❄️ **Wetchill:** you lose heat when you are wet: by **conduction** into and through the cold water in your clothes, and by **evaporation** as water on your skin turns to a gas.

❄️ Hypothermia is a particular problem at temperatures around freezing (32°F=0°C) with wind and rain: **cold temperature**,



continues next page...

Hypothermia: Killer of the Unprepared



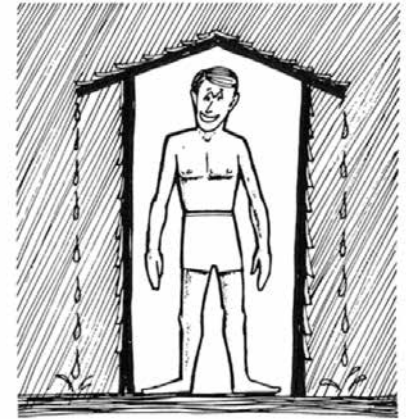
This work is licensed under the Attribution-ShareAlike 4.0 International License (CC BY-SA 4.0). To view a copy of this license, visit <https://creativecommons.org/licenses/by-sa/4.0/> or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California, 94105, USA.

Illustrations by Gene Fear.
Reproduced with permission.

...continued from previous page

windchill, and wetchill combined. This is called **hypothermia weather**, because so many underestimate it. Even in the summer, sudden storms with wind and rain can cause hypothermia at temperatures as warm as 60°F=16°C.

- ❄ In bad weather, clothing is your **life-support system**:
- ❄ **Waterproof** raingear protects you (somewhat) from wetchill.
- ❄ But even in truly waterproof raingear you will get wet. We all perspire, and clothes get wet from condensation, even in “waterproof-breathable” parkas.
- ❄ Most clothing, when it’s wet, conducts heat like water. How many times faster does water conduct heat than dry air? **240x!** Therefore your clothes must be **warm when wet!**
- ❄ And, as nice as down parkas may be (even so-called “waterproof” down), they are flat and cold when wet. Cotton clothes (such as blue jeans and flannel shirts) are even worse; they are essentially useless as insulation when wet. Only **wool** and some **synthetics** (Capilene, other fleece) retain some warmth when wet.



In cold-wet conditions, cotton kills!

- ❄ So, when going out, remember the **Three Ws**:

Waterproof Clothing Warm-when-wet Clothing
Windproof Clothing

- ❄ Always carry **two large plastic leaf bags**. These are light, cheap, and provide quick protection against wind and rain. Just stick them in your pocket.
- ❄ With what you have learned here, and with some simple and inexpensive clothing, you can be comfortable even in hypothermia weather.

