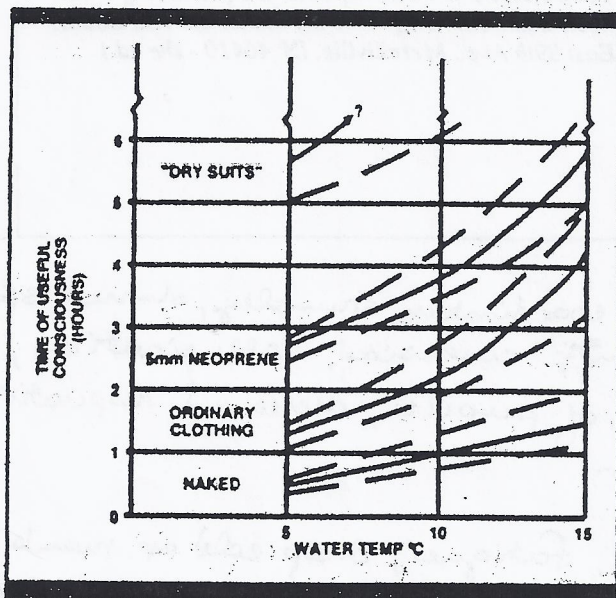


## Hypothermia... an Early Season Killer

by Dr. William W. Forgey, M.D.

With the rush to get back on the water after what, for many of us, is a long winter hiatus, there is often an inclination to overlook little things like air and water temperature. Read "Doc" Forgey and be forewarned. The author is a trustee of the Wilderness Education Association, adjunct faculty member at Western Illinois University, and the author of several books on outdoor medical problems including *Wilderness Medicine, 3rd Ed.*, *Basic Essentials of Outdoor First Aid*, and *Hypothermia, Death by Exposure*. — the ed.

**H**ypothermia (the cooling of the body temperature below 95 degrees F) is the most likely of the environmental injuries that will be encountered in the outdoors. And particularly for water sports enthusiasts such as canoeists, rafters and kayakers, concerns of acute, or immersion, hypothermia are well founded.



Acute hypothermia is the term applied to hypothermia which occurs in less than two hours. This generally means cold water immersion. If air temperature and water temperature add up to less than 100 degrees F, there is a risk of acute hypothermia when a person falls into the water. As a rule of thumb, a person wearing normal, everyday comfortable clothing who has been in water of 50 degrees F or colder for a period of 20 minutes or longer is suffering from a severe amount of heat loss. That person's thermal mass has been so reduced that he or she is in a potentially serious condition.

The most significant aid in preventing acute hypothermia, if one insists on canoeing with the open end of the boat down, is to wear additional layers of insulation covered with waterproof jacket and pants. As indicated on the

graph, survival time improves dramatically with the appropriate protective gear. Survival time for a person in an ordinary suit of clothes in 50-degree water is a little over one hour; that increases to almost three hours for the same person dressed in a neoprene outfit.

There are three primary ways in which death can occur during cold water immersion. As cold water will conduct heat at a rate 20 times that of air at the same temperature, the most common problem will be a continual cooling resulting in possible confusion at a core temperature of about 95 degrees; the final result will be drowning.

Other victims may abruptly drown from the reflexive involuntary gasping of ice water immersion. More rarely, the sudden shock of ice water entry may cause immediate cardiac death from ventricular fibrillation, a condition in which the heart soon stops functioning.

Survival time in cold water can be extended by wearing a proper personal flotation device (PFD). A Grade II PFD will rotate the wearer into an upright position, with the head back and out of the water, even when the wearer is unconscious. A Grade III PFD will keep the wearer upright once he is properly positioned.

In lakes or rivers without significant current, two body positions have been suggested to minimize heat loss. One, called H.E.L.P. (heat escape lessening posture) requires the victim to curl up, thus decreasing the exposed surface area. The HUDDLE position has been advocated for several persons floating in cold water. It allows slight heat preservation and provides an easier rescue target. Persons using either technique must abandon it if they find themselves going awash in waves. Every effort must be made to prevent water from splashing over the head as **COLD WATER ON THE HEAD CAUSES RAPID HEAT LOSS**. The H.E.L.P. and HUDDLE positions do not work in water with significant current.

People who have been immersed over one-third of their expected survival time, as in the above chart, are suffering from profound acute hypothermia. Immersion victims suspected of being profoundly hypothermic should not be allowed to move around, as this will increase the blood flow to their very cold skin and cause a significant core temperature drop, one that is so great as to be potentially lethal. If this same person is simply wrapped as a litter case and not provided outside heat, there is real danger of cooling below a lethal level due to the profound amount of heat loss.

The importance of treating these people, even though they appear so normal they can walk, carry on conversations and in all respects act as if they are not injured, has been stressed repeatedly.

In 1980 16 Danish fishermen were forced to jump into the North Sea when their fishing boat floundered. They were in the water about one and a half hours before another boat was able to reach them and lower a cargo net. All 16 of the men were able to climb aboard via the net; all 16 were wrapped in blankets and walked down to the galley to obtain hot coffee and to warm up. And all 16 died of hypothermia.



The ideal treatment for such a victim is immediate hot water (110 degrees F) immersion. This is the technique employed extensively in the North Sea where the British have had vast experience with cold water immersion as the result of boating and oil rig accidents. Lacking a convenient tub of hot water, if the patient can stand and you can build a fire, do it! Have them stand comfortably near it. A roaring fire can replace a massive number of calories.

It is also important to prevent further heat loss. Wet clothing must be removed and replaced with dry clothing. At the very least, wet clothing should be covered with rain jacket and pants and, in turn, covered with more insulation. If possible, it is probably best to avoid undressing the victim while exposed to the environment - remove their wet clothing with them inside a sleeping bag or other sheltered area if at all possible.

Treat acute hypothermia victims gently. Very cold people can suffer cardiac rhythm problems if they are jarrd around. If they are being carried during an evacuation, avoid bumping them along the ground or dropping them from a stretcher.

Minimize afterdrop. All immersion victims will have a continued core temperature drop, even after their rescue from the cold water. Afterdrop is related to the rate of cooling which was taking place before the rewarming process began. It is an equilibration phenomenon.

Afterdrop is a serious problem in the treatment of acute (immersion) hypothermia. The amount of drop can be decreased by adding sufficient heat so that the equilibra-

tion process at the core is minimized. Prevent these victims from running around. Exercise causes increased circulation to the cold skin. Then the cooler blood rushes back to the core and increases the afterdrop problem.

Deepening hypothermia will lead to a semi-comatose state and worse. The victim needs to be evacuated to help. Wrap to prevent further heat loss, then transport. Chemical heat packs, warm water bottles, etc., can be added to the wrap to offset further heat loss, but care must be taken not to burn the victim.

If evacuation is not feasible, then heat will have to be added. Huddling two lightly clad rescuers with the victim in an adequate sleeping bag may be the only alternative. During cold weather trips it is best to assure that two trip members are carrying bags which can twin, thus providing the means to huddle three people in a bag. Individual mummy bags are too small to implement this technique.

All persons considered to have suffered profound acute hypothermia should be seen by a physician. This is a very dangerous condition that requires adequate field management by you and then, as quickly as possible, evacuation to a medical facility.

*(For a free monograph briefly describing the differences between chronic and acute hypothermia [including onset, diagnosis and treatment] write the author c/o ICS Books, 107 East 89th Ave., Merrillville, IN 46410 - the ed.)*

Signs & Symptoms ; slow pace, poor coordination, stumbly, slurred speech, irrationality & poor judgement, amnesia, hallucinations, blue or puffy skin, dilatation of pupils, decreased respirations, weak irreg pulse & stupor

victim feels muscle tensing, fatigue, deep cold or numb feeling, intense shivering, disorientation, poor coordination

Prevention - dress, food, avoid fatigue, water proof matches & space blanket, thermal packs, isometric exercise in confined space, shelter from wind/rain.