Hypothermia and Cold Water Survival

By Harv Mastalir

Yesterday, March 2nd, after what seemed like an eternity (which was actually just since November), the reservoir was finally free of ice (mostly). The first paddle of the year felt GREAT! I dropped my thermometer into the water and found that the water temperature was 34°F. Probably a good time to think about hypothermia....

Your body looses heat 25 times faster in water than in air of the same temperature. As you loose heat your core temperature drops. This is hypothermia. Water temperature, body size, amount of body fat and movement in the water will all affect the onset of hypothermia. Hypothermia can occur in 70°F. water.

Sudden immersion in cold water creates an initial reflexive gasp which could prove fatal if your head is under water at the time. After that everyone experiences hyperventilation in response to the cold water. At this point it is important to remain calm. Consciously control your breathing as much as possible. Of course the more clothing and insulation you have on, the less the shock will be to your body. If you can enter the water more gradually it will help as well, but sometimes we don't have much choice.

The key now, is to get out of the water. If you are doing a paddle float reentry, climb on top of your inverted kayak while you are rigging your paddle. The idea is to get as much of your body out of the water as possible. You will be glad at this point that you have those neoprene gloves, so that your hands will still work (sort of). Once you have reentered your kayak, attached the spray skirt and pumped your cockpit free of water, you will be ready to paddle to shore with a story to tell. But what about those who can't get back into their boats?

Stay with your boat! It is much easier for rescuers to find a floating kayak than a swimming kayaker. Swimming will also cool your body 35% faster than remaining still. According to the Coast Guard, an average adult has a 50/50 chance of surviving a 50 yard swim in 50°F. water.

The 50-50 Rule

According to the Coast Guard, an average adult has a 50/50 chance of surviving a 50 yard swim in 50• F water.

As an example, Yellowstone Lake rarely gets above 50 to 55°. The air temperature may be 75 or 80° in July, but the water is still dangerously cold. When I paddle Yellowstone, I always wear my wet suit. Dress for immersion in the water, not the air temperature!

Assuming the HELP position (Heat Escape Lessening Position) will double your survival time compared to treading water. The help position is with your knees tucked up to your chest with your arms wrapped around your legs and your hands clasped together. Keep your head out of the water. If there is more than one of you, huddle together in the help position. A calm and positive outlook will increase your chances of survival.

How do you recognize hypothermia in your paddling companions? First, watch for the "Umbles"-- stumbles, mumbles, fumbles and grumbles, which show signs of changes in motor coordination and a change in the level of consciousness. Hypothermia is progressive, that is, the body goes through several stages before it lapses into unconsciousness.

If the shivering can be voluntarily stopped it is not hypothermia. Ask the person a question that requires higher reasoning in the brain (count backwards from 100 by 9's). If the person is hypothermic, they won't be able to do it. Other symptoms include numbness in limbs, loss of dexterity (can't zip up their parka), clumsiness and pain from the cold, slurred speech, irrational behavior (undressing, unaware that they are cold), "I don't care attitude" and of course violent shivering. Their core temperature may have dropped to 93°. The first aid at this point is to prevent further heat loss and help the person rewarm. Additional dry clothing, a warm fire, warm sweet drinks (NO alcohol!, caffeine or tobacco), food and increased level of exercise will rewarm a person with mild to moderate hypothermia.

At a core temperature below about 93 ° the hypothermia becomes severe. The shivering will occur in waves--violent and then a pause, with the pauses getting longer until the shivering may cease entirely. The victim may appear drunk; very clumsy, falling to the ground with slurred speech. They may deny they have a problem and resist help. The skin is pale or blue and puffy and the pupils are dilated. The pulse rate decreases. The victim is in serious trouble. Treat the victim as for shock: lay them down, elevate their feet slightly and keep them immobile. Avoid jarring the victim. Rough handling may cause cardiac arrest. Apply warm packs to the neck, armpits and groin. Do not heat the extremities. The victim should be wrapped completely in several sleeping bags. Transport the victim immediately (but gently) to a hospital.

Critical hypothermia occurs when the victim's core temperature drops to about 82 • or below. At this point the victim is unconscious and may appear dead. There is little or no apparent respiration (possibly 1 breath per 30 seconds). The pulse will be

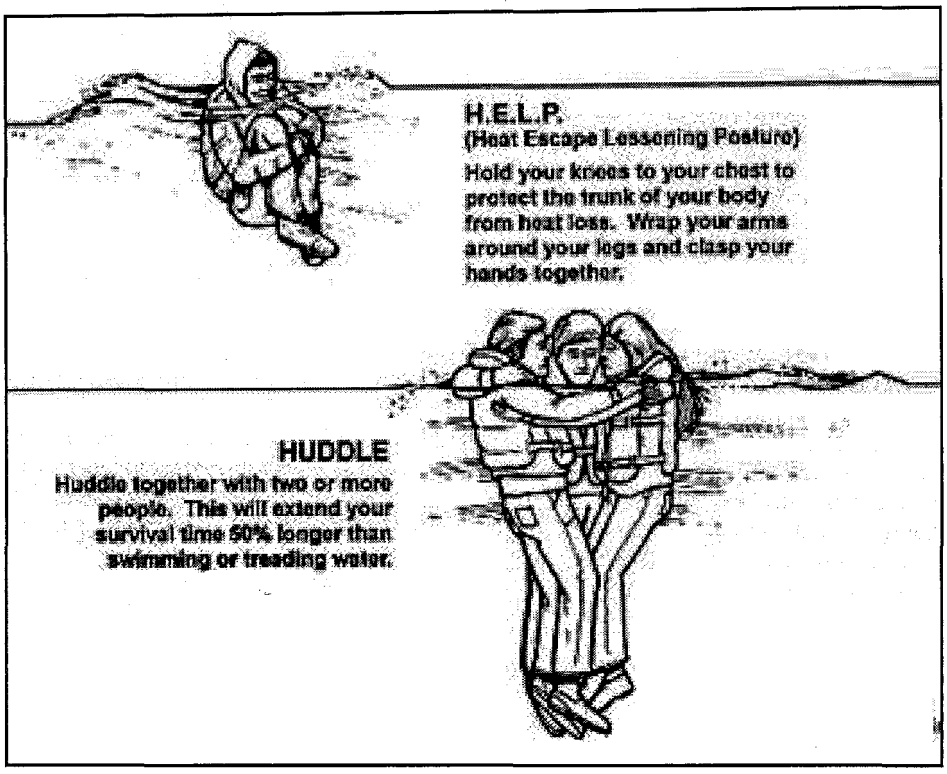
slow (as low as 2 to 3 beats per minute) and weak, or it may be impossible to find a pulse. As a rescuer, you will need to determine if there is any pulse. Your best bet is at the carotid artery in the neck. You should check for up to one full minute. If there is any pulse, do NOT give CPR. This could cause cardiac arrest. If there is no pulse, begin CPR. You will have to continue this throughout the rewarming process. People with hypothermia have been given CPR for up to 3 1/2 hours and have recovered without any neurological damage. If there is a pulse but no breathing, start ventilation (mouth to mouth) immediately. This will also assist with rewarming by blowing warm air into the lungs. It is said that a hypothermia victim is never cold and dead, only warm and dead. Hospital treatment includes rewarming before the pronouncement of death.

The key to preventing hypothermia is dressing for immersion in the water, not the air temperature. As an example, Yellowstone Lake rarely gets above 50 to 55°. The air temperature may be 75 or 80° in July, but the water is still dangerously cold. When I paddle Yellowstone, I always wear my wet suit.

This discussion is not to scare you away from paddling in cold water. If you are aware of the dangers, you can take steps to protect yourself and increase your margin of safety.

For a discussion of what to wear for cold water paddling, read the articles in the January, 2001 RMSKC Newsletter.

Huddle for Survival



Hypothermia Chart

Water Temperature in Degrees F (Degrees C)	Exhaustion or Unconsciousness	Expected Time of Survival
32.5 (0.3)	Under 15 min.	Under 15 to 45 min.
32.5 to 40 (0.3 to 4.5)	15 to 30 min.	30 to 90 min.
40 to 50 (4.5 to 10)	30 to 60 min.	1 to 3 hrs.
50 to 60 (10 to 15.5)	1 to 2 hrs.	1 to 6 hrs.
60 to 70 (15.5 to 21)	2 to 7 hrs.	2 to 40 hrs.
70 to 80 (21 to 26.5)	2 to 12 hrs.	3 hrs. to indefinite
Over 80 (Over 26.5)	Indefinite	Indefinite