

covered with dry clothes, coats or blankets to stop further heat loss. Obtain professional medical attention immediately.

3. Severe hypothermia (shivering may have stopped. Victim may resist help or be semi-conscious or unconscious). Removed from water, victim must be kept horizontal, face up, and immobile. Victim must be handled gently. Cover torso, thighs, head and neck with dry covers to stop further heat loss. Arms and legs must not be stimulated in any manner. Cold blood in extremities that suddenly returns to the core may induce cardiac arrest. Seek medical attention immediately.

4. Victim appears dead. Little or no breathing or pulse, body rigid. Assume victim can be revived. Look for faint pulse or breathing for 2 minutes. If any trace is found, do not give CPR. Medical help is imperative. If pulse and breathing are totally absent, CPR should be started by trained medical personnel.

Planning Ahead

Wearing clothing that permits safe cold water immersion *is the only way to combat the risk posed by cold water boating*. Such gear can be found in windsurfing shops, and various canoe/kayak shops. Diving suits (1/4 inch neoprene) are too stiff to permit sustained paddling.

The common advice to wear layers of clothing (wool, nylon, polypropylene) is misleading. These fabrics are warm when damp in air because of air trapped in the fibers after they have been wrung out. They do not, by themselves, significantly retard heat loss in cold water. They provide effective insulation when worn inside a drysuit.

Clothing routinely used by coastal kayakers includes neoprene boots, gloves, and hat/hood (with a chin strap). A neoprene farmer-john or “fuzzy rubber” wetsuit (2.5-3 mm) worn with a drytop pullover jacket is an effective combination. Drysuits are more flexible, more expensive, and are essential on the coldest days of winter. This apparel must be topped off by your PFD. Attach a boat horn to your PFD.

Carry dry clothing in a waterproof bag. Take food and a stove with you. Make sure you have all standard kayaking equipment on board including a pump, spare paddle, tow line, weather radio, flares and etc. Your objective should be complete self-sufficiency. All group members must be able to do assisted rescues. Paddlers not dressed to swim are a danger to themselves and those with whom they paddle.

Tell someone where you are going and when you will return. Inform them of your return. Finally, watch the boats around you. Out on cold water, you are depending on one another for prompt rescue in case of an accident.

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Cold Water Web Sites:

<http://www.enter.net/~skimmer/coldwater.html>

<http://www.tc.gc.ca/marinesafety/TP/Tp13822/menu.htm>

Note: Many of us prepare for cold water boating by testing our wetsuit/drysuit outfits in cold water. We do this at a site where we can walk in and walk out in the presence of friends. We also practice rescues and rolling in cold water to assure that we will be fully functional in the cold water environment.

OFF-SEASON BOATING, COLD SHOCK, & HYPOTHERMIA



Half of the bay on the east side of Eastern Neck Wildlife Refuge, Chesapeake Bay, was covered by a thick, white sheet of ice. A narrow lead afforded us passage to open water. It was sunny, 38 ° F, light breeze and early afternoon. We saw mergansers, scaup, bufflehead, redheads, canvasbacks and a great crowd of whistling swans. In the distance, we heard the “Ow-ow-a-let” calls of oldsquaws. That special day, powerboats were frozen into their marinas and we were alone in a pristine wilderness.

Paddling on cold water (60 ° F or less) carries great risk. In case of an accident, there may be no quick rescue unless you or your paddling partners are able to do it. If you are not dressed for immersion, even near-by boaters may not be able to save your life. On cold water, our clothing (PFD and wetsuit/dry suit) must enable us to remain at the surface and fully functional. We must be

prepared (trained and equipped) to carry out our own rescues.

What happens in cold water?

Water removes heat from the body 25 times faster than cold air. About 50% of that heat loss occurs through the head and neck. Immersion in turbulent water or attempted swimming may double that rate of heat loss. Survival time can be reduced to minutes. Strong swimmers, without thermal protection, have died before swimming 100 yards in cold water. In water under 40 ° F, victims have died before swimming 100 feet. Immersion in cold water causes a series of traumatic responses that rapidly incapacitate and kill boaters who are not wearing protective clothing.

Cold Shock

Immersion in cold water causes a powerful gasping reflex. If the victim is under water, due to lack of a PFD, water may be inhaled resulting in rapid drowning.

Exposure of the head and chest to cold water causes sudden increases in heart rate and blood pressure, which may result in cardiac arrest.

Uncontrolled rapid breathing (hyperventilation) follows the initial gasping response and may also lead to unconsciousness. The victim must attempt to recover a normal breathing rhythm as rapidly as possible.

Swimming Failure

Soon after entering cold water, hands, arms and legs become stiff and devoid of feeling. The victim rapidly loses the ability to swim, climb out of

the water into an upright boat, or hold on to either a capsized boat or a life line thrown by a rescuer. Without a PFD, the victim drowns long before core hypothermia has developed.

Hypothermia

Hypothermia (reduced core body temperature) develops more slowly than the immediate effects of cold shock. Survival curves show that an adult dressed in average clothing may remain conscious for an hour at 40 ° F and perhaps 2-3 hours at 50 ° F. The crisis is more serious than these numbers suggest. Any movement in the water greatly accelerates heat loss and shortens survival time. Without thermal protection, as noted, the victim is soon helpless. Without a PFD, drowning is unavoidable.

Shivering occurs as body temperature drops from 97 ° F down to 90 ° F. Muscle rigidity and loss of mental capacity occurs at about 93 ° F. Unconsciousness occurs when the body's core temperature reaches about 86 ° F. Death occurs at about 80 ° F.

Once in the Water

Try to get back in or on your boat immediately. Do not leave the boat. If you are not wearing thermal protection and can not get out of the water, stay as still as possible. Fold arms, cross legs, and float quietly on the buoyancy of your PFD until help arrives (Heat Escape Lessening Posture; H.E.L.P.). If 2 or more people are in the water, put your arms around one another. Stay still and close together (Huddle posture). Your ability to survive will depend on luck and how you prepared yourself before going out. Without a life jacket (PFD), you may drown and abruptly sink from sight. If you are dressed for the possibility of immersion, a rescue, with the help of your paddling partners, should not be difficult.



H.E.L.P.
(Heat Escape
Lessening Posture)

HUDDLE
to maintain
body heat

Now your survival depends on the timely arrival of outside help !
Improve your odds—Dress to swim !

How Fast can it Happen?

On Memorial Day, 1996, two brothers (10 and 18-years-old) capsized their canoe in 50 ° F lake water (Adirondacks). They were being towed in high winds. The younger brother, wearing a PFD, was promptly rescued. Minutes later, the older brother, wearing blue jeans, a light shirt and no PFD, could not be found. His body was recovered by divers the next day . He was not able to hold on to the capsized canoe for even the few minutes it took to save his younger brother.

Treatment of Hypothermia

1. Mild hypothermia (victim shivering but coherent). Move victim to place of warmth, remove wet clothes, give warm, sweet drinks; no alcohol or caffeine. Keep victim warm for several hours.

2. Moderate hypothermia (shivering may decrease or stop). Victim may seem irrational with deteriorating coordination. Victim should be kept lying down with torso, thighs, head and neck