

## Planning Ahead

Wear a PFD and clothing that permits safe cold-water immersion. (We test our gear in cold water by walking in/out in the presence of friends). Note the water temperature!



Layers of outdoor clothing that keep us warm on land (wool, polypropylene, etc.) are instantly converted to ice-cold dead weight when immersed in cold water. Such clothing is only useful when worn inside a waterproof shell (jacket, pants, drysuit) having neoprene or latex gaskets at ankles, waist, wrists and neck.

Fleece-lined lightweight wetsuits are comfortable alone or over "polypro" shirts and longjohns for water temperatures down to about 50 °F (many brands with moderate prices). For boating on colder water, neoprene wetsuits combined with a "drytop" or a full drysuit are the only way to go. On cold water, boaters must wear PFDs at all times, even aboard anchored boats.

Will your boat float if it is swamped? Carry a bailer or hand pump, VHF radio, spare dry clothes and a boat horn. Attach a whistle or horn to your PFD. Know the latest weather report. Leave a float

plan with someone. Watch the boats around you! On cold water, we are depending on one another for prompt rescue in case of an accident.

## BUY TIME - DRESS to SWIM !



When help arrives, our goal is for you to be found at the surface, alive and fully functional.

**References:** "Survival in Cold Waters" by Dr. C.J. Brooks:  
<http://www.tc.gc.ca/marinesafety/TP/Tp13822/menu.htm>

**For additional information please visit:**

<a href="http://www.AmericanCanoe.org">www.AmericanCanoe.org</a>	<a href="http://www.cgaux.org">www.cgaux.org</a>
<a href="http://www.coldwaterbootcamp.com">www.coldwaterbootcamp.com</a>	<a href="http://www.nasbla.org">www.nasbla.org</a>
<a href="http://www.safeboatingcouncil.org">www.safeboatingcouncil.org</a>	<a href="http://www.uscgboating.org">www.uscgboating.org</a>
<a href="http://www.ussartf.org/survival_sea.htm">www.ussartf.org/survival_sea.htm</a>	<a href="http://www.usps.org">www.usps.org</a>

Photos produced with appreciated assistance of MASKGI and the Maine Department of Marine Resources-Marine Patrol, Living Reel Productions, First Coast Guard District - Boston and U.S. Coast Guard Sector Northern New England - Portland, Maine.

**COLD WATER + NO PFD = NO CHANCE !**

Brochure PDF: ([www.enter.net/~skimmer/coldintro.html](http://www.enter.net/~skimmer/coldintro.html))  
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## COLD WATER BOATING Sudden Immersion, Cold Shock and Hypothermia



**COLD WATER + NO PFD = NO CHANCE !**

The fine, breezy days of spring and fall are the best of days for many open boaters. Duck hunters are often on the water in the coldest months of the year. Cold water boating carries serious risks for unprepared mariners. Even in summer, sudden immersion in cold water (< 68 °F) can be fatal regardless of the air temperature or your ability to swim.

With fewer boats on the water in the off-season, prompt rescue is unlikely. In many cases, victims not wearing life jackets or personal floatation devices (PFDs) disappear before even nearby boaters can reach them. When accidents happen, we must either save ourselves, or call for help (VHF, cellphone, horn, flares) and survive until help arrives. Cold-water boaters must be as self-sufficient as possible.

### What happens in cold water?

Cold water cools the body 4 times faster than air at the same temperature. Immersion in turbulent water, or attempted swimming, may double that rate of heat loss. Without a PFD, survival time can be reduced to minutes. Strong swimmers have died before

swimming 100 yards in cold water. In water under 40 °F, such victims have died before swimming 100 feet.

## Cold Shock

Immersion in cold water causes a powerful gasping reflex. If momentum drives the victim underwater, water inhaled due to such gasping may cause unconsciousness and/or drowning within minutes.

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

Within a few minutes in cold water, hands, arms and legs become numb and useless. The victim will now be unable to swim, climb out of the water into an upright boat, or even hold on to a capsized boat. Without a PFD, the victim drowns long before core hypothermia develops.

## Hypothermia

Hypothermia (core body temperature 95 °F) develops more slowly than the immediate effects of sudden cold-water immersion. Survival tables show that an adult dressed in average clothing may remain conscious for 30 minutes at 40 °F and perhaps 1 hour in water at 50 °F. Any movement in the water accelerates heat loss. Without thermal protection, the victim, though conscious, is soon helpless due to swimming failure. Without the PFD, drowning is unavoidable.

Shivering occurs as body temperature drops from 97 °F down to 90 °F. Muscle rigidity and loss of manual

dexterity, physical helplessness, and loss of mental capacity occurs at about 93 °F. Unconsciousness occurs at a core temperature of about 86 °F. Death follows at a core temperature of about 80 °F.

## Treatment of Hypothermia

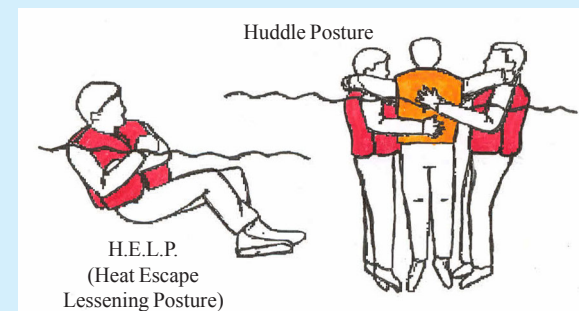
**Mild hypothermia:** Victim is shivering, but coherent. Get victim into dry clothes and moved to a place of warmth until recovered. Give warm sweet drinks, but no alcohol or caffeine. If unsure about status, treat case as *Moderate hypothermia*.

**Moderate hypothermia:** Victim may seem rational or irrational with deteriorating coordination. Shivering may decrease or stop. Victim must be kept horizontal (face up) and immobile (see Post-Rescue Collapse, Ref. 1). **Victim must be handled gently;** give no food or drinks. Replace wet clothing above and below, head to toe, 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.

**Severe hypothermia:** Victim may resist help or be semi-conscious or unconscious. Shivering may have stopped. Removed from water, victim must be kept horizontal (face up) and immobile (Ref. 1). **Victim must be handled gently.** Replace wet clothing with dry covers (including head and neck) to stop further heat loss. As for **moderate hypothermia**, do not stimulate arms and legs in any manner. Seek medical attention immediately.

**Victim appears dead:** Little or no breathing or pulse, body rigid. Assume victim can be revived. Handle as above. Look for faint (carotid artery) pulse or breathing for 2 minutes. **If any trace is detected, do not give CPR.** It can cause cardiac arrest. Medical help is imperative. If pulse and breathing are totally absent, CPR should be started immediately.

## Once in the Water



This advice assumes that you are wearing a PFD, but are not dressed for cold water immersion. Try to get back in or on your boat immediately. If you are floating in the water, 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). Swim only if safety is nearby.

## How Fast can it Happen?

On Memorial Day, 1996, two brothers (10 and 18 years old) were being towed in high winds when their canoe capsized in 50 °F lake water (Adirondacks). 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. Divers recovered his body 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.

Dressing for immersion buys time to work out a rescue in case of an accident. Warm weather does not reduce the danger of cold-water immersion. Instead, wearing lighter clothing on warm days increases risk. **Do not** consider air temperature when estimating the risk of cold water immersion!