

## Most boating fatalities in Alaska result from drowning in cold water.

Cold water immersion can kill in several ways. Without a life jacket, most die **LONG BEFORE** they become hypothermic.

### 1. COLD SHOCK RESPONSE

Within three minutes of immersion:

- Gasping, hyperventilation and panic
- If not wearing a life jacket, a higher risk of drowning

### 2. COLD INCAPACITATION

Within 30 minutes of immersion:

- Cooling of arms and legs impairs sensation and function regardless of swimming ability
- If not wearing a life jacket, a higher risk of drowning

### 3. IMMERSION HYPOTHERMIA

After at least 30 minutes of immersion:

- Gradual cooling of the body's core temperature eventually results in loss of useful consciousness
- If wearing a life jacket, survival time may be extended

*Wearing your life jacket could be the single most important factor in surviving cold water immersion.*

## In Alaska, capsizing, swamping, and falling overboard are the leading causes of cold water immersion.

Capsizing and swamping are often caused by:

- Overloading or poorly secured or shifting loads
- Improper boat handling
- Loss of power or ability to steer
- Anchoring from the stern
- Wrapping a line around a drive unit
- Taking a wave over the transom after a sudden stop

Falling overboard is often due to slipping, loss of balance when standing, moving around the boat, or reaching for objects in the water.

Another cause of cold water drowning in Alaska is leaving a place of safety to swim for a drifting boat.



### Be prepared!

- Always wear a life jacket when in an open boat or on an open deck. Trying to put your life jacket on in the water is extremely difficult (if not impossible) and costs precious time and energy.
- Every Alaskan boater should carry (ON THEIR PERSON):
  - a communication device (i.e. hand-held water proof marine VHF radio, cell phone in a waterproof case)
  - emergency signaling devices (i.e. emergency locator beacon, whistle, mirror, small flares)



Waterproof VHF Marine Radio with GPS

Personal Locator Beacon



A cold water immersion event is a fight for survival.

If wearing a life jacket, the 1-10-1 principle may save your life:

**1** Minute - Get breathing under control

**10** Minutes (or more) - For meaningful activity

- Assess the situation and make a plan.
- Prioritize, and perform the most important functions first such as:
  - Locate other party members
  - Self-rescue
  - Emergency communication and signaling

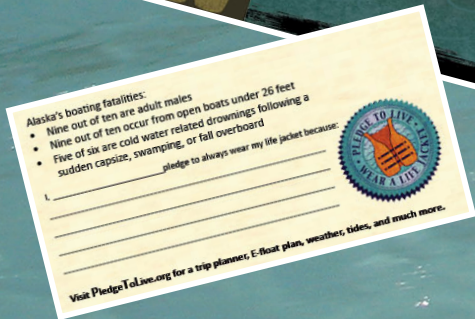
**1** Hour (or more) - Of useful consciousness  
Focus on slowing heat loss.

## For more information:

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Anchorage, AK 99501  
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[www.alaskaboatingsafety.org](http://www.alaskaboatingsafety.org)



Take the pledge at [www.PledgeToLive.org](http://www.PledgeToLive.org).



This brochure has been reviewed by the National Association of State Boating Law Administrators Education & Outreach Committee to ensure that the content herein adheres to the highest standards in quality boating safety information.



### LIFE JACKET SELECTION

All life jackets provide life-saving supplemental flotation in the water, but no *one* style is perfectly suited for all persons in all situations.

Read the life jacket label. Make sure it is U.S. Coast Guard approved, the proper size for the intended user, and appropriate for the activity.

See the life jacket selector at [PledgeToLive.org](http://PledgeToLive.org) for more information.



### Practice Safe Boating

- **Prevent capsizing** - Reduce speed in rough water, load carefully, secure loads from shifting, and adjust for changing conditions. Wait for poor weather to improve.
- **Prevent falls overboard** - Remain seated while underway, wear non-skid foot wear, and avoid reaching overboard for objects.
- **Equip the boat** - Boats should be equipped or designed with a reboarding device.
- **File a float plan** - Leave it with a friend or relative. Include a description of your boat and equipment, names of passengers, planned destination and route, expected return and when and who to call if overdue.
- **Brief passengers** - Everyone should know where all safety equipment is (and how to use it), and how to start, stop, and steer the boat.

# ALASKA'S COLD WATER KILLS!



## EMERGENCIES

### SURVIVING COLD WATER

Cold water immersion plays a significant role in a majority of Alaska's boating fatalities. Generally accepted by researchers to be water temperatures below 70 degrees Fahrenheit, cold water is virtually all water in Alaska.

#### *Causes of Cold Water Immersion*

The following are the leading causes of cold water immersion:

**Swamping/capsizing:** due to overloading, poorly secured or shifting loads, improper boat handling in rough water, loss of power or steerage, anchoring from the stern, wrapping an anchor, mooring or pot line around a drive unit, or taking a wave over the transom during a sudden stop.

**Ejection:** primarily caused by improper lookout, resulting in a collision with another boat, hitting a submerged object, or running aground. The risk of ejection increases when operating a boat in restricted visibility, such as fog and diminishing daylight.



**Falling overboard:** most commonly due to slipping, loss of balance while standing or moving around the boat, or reaching for objects overboard.

#### *Effects of Cold Water Immersion*

Most of Alaska's boating fatalities involve cold water immersion that, according to research, has three distinct stages:

#### 1. INITIAL REACTION — COLD SHOCK RESPONSE

- Within the first 1-3 minutes
- Involuntary gasping and hyperventilation can result in water inhalation
- Increased heart rate or blood pressure, panic, and vertigo may occur
- Higher risk of drowning if not wearing a life jacket

#### 2. SHORT TERM IMMERSION — COLD INCAPACITATION

- Within 10-30 minutes of immersion

- Localized cooling of extremities affects muscles and nerves, impairing their function
- Arms and legs become stiff and unresponsive; activities such as swimming, re-boarding a boat, using a radio or distress signal, or holding on to a floating object becomes difficult or impossible
- Higher risk of drowning if not wearing a life jacket

### 3. LONG TERM IMMERSION — IMMERSION HYPOTHERMIA

- After at least 30 minutes of immersion, body temperature will begin to drop.
- Gradual cooling of the body core will occur at a rate dependent upon factors including water temperature, clothing worn, body type, physical condition
- As core body temperature falls, hypothermia symptoms will range from mild to severe, eventually leading to unconsciousness
- Higher risk of drowning if not wearing a life jacket

#### *Prepare for Cold Water Immersion*

Most immersion events happen quickly and unexpectedly, so it is important to be prepared. Taking these simple steps will help ensure the best possible outcome:

- Always wear a life jacket when in an open boat or on an open deck. Trying to put your life jacket on in cold water is extremely difficult and costs precious time and energy.
- Carry emergency communication and distress signaling devices on your person. Such items as an emergency locator beacon, a small handheld VHF radio or cellphone, a whistle, and some visual distress signals may save the day.
- Unless the boat is designed so a person in the water can



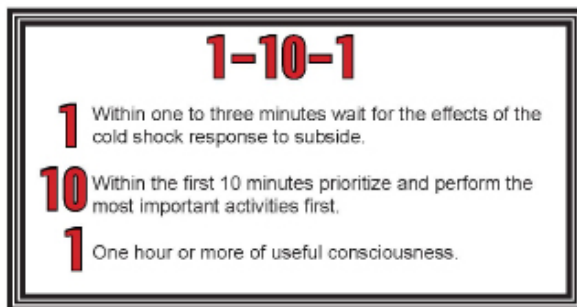
easily get back into the boat unassisted, equip the boat with a re-boarding device, such as a rope ladder, foot sling, or a swim platform.

- Carry survival suits when boating offshore. Make sure they are well maintained and readily accessible.
- Practice re-boarding your boat, donning immersion suits quickly, signaling, transmitting MAYDAY calls, rescuing a person overboard, and other cold water survival techniques described in this section. Drills are fun and build skill and confidence. See what kind of cold water survival classes are available at [www.alaskaboatingsafety.org](http://www.alaskaboatingsafety.org).

### **Surviving Cold Water Immersion**

Surviving cold water immersion depends on adequate flotation to prevent drowning and timely self-rescue or rescue by others. Wearing a life jacket, carrying a communication and distress signaling device, the ability to swim, a controlled entry into the water, surface conditions, length of time in the water, associated injuries or medical conditions, and alcohol use can all influence the outcome.

The phrase “1-10-1” is an easy way to remember what to do in the event of a sudden cold water immersion (Giesbrecht). This information does



not apply to all persons in all cases, but it does give a general idea of how long you have to rescue yourself, and reminds you not to panic. While time may be of the essence, you still can remain calm and take command of your rescue.

## **1 Minute**

The initial reaction, or cold shock response, usually passes within the first few minutes. Wait for the effects of cold shock to subside. According to Michael Tipton, an expert in the field of cold water immersion, resist the urge to fight the water. A life jacket is designed to float a person in the water on their back at a 45 degree angle. Float on your back and wait for

gasping and hyperventilation to subside. Understanding that this stage will soon pass may help reduce panic.

## 10 Minutes

Once breathing is under control, most people have at least 10 minutes to take the actions necessary for self-rescue or for obtaining rescue before incapacitation occurs. Do not waste time and energy removing shoes or clothing. Even small amounts of air trapped in clothing will provide some buoyancy and thermal protection. Perform the most important functions first:

- If not already worn, attempt to don life jackets or survival suits, and then assist others in doing so.
- Account for any other members of the party. Check around and under the boat.
- If not already deployed (and depending on the circumstances), activate an emergency communication or distress signaling device such as an emergency locator beacon, transmit a MAYDAY on a VHF marine radio, call 911, or call the U.S. Coast Guard by dialing \*24 on a phone. If in range of others, activate visual and sound distress signals.
- Get all persons as much out of the water as possible. Water transfers heat faster than air of the same temperature. For example, if the boat is not overturned, use the boat's reboarding devices and practiced techniques to get back in. If overturned, climb on top of the hull. If separated from the boat use any other available objects to get as much of your body out of the water as possible, even if it feels colder.

### The Swim/Don't Swim Decision

Staying with or near a floating boat may be the best choice, especially if the event was witnessed or emergency communication was successful. Even if capsized or swamped, a boat may offer supplemental flotation and is far easier for potential rescuers to spot than a person in the water. Swimming in cold water can reduce survival time, and the average person will lose more heat faster by swimming than by remaining still. Distances can be deceiving when on the water, and safety can look closer than it really is. According to Professor Dr. Michel B. Ducharme, situational factors should be considered when making the swim/don't swim decision:

- Whether or not a life jacket or survival suit is worn
- Whether a place of safety is close (less than 800 yards away or 45 minutes swimming time based on fitness level and

swimming ability

- The likelihood of rescue by others; i.e., the event was witnessed or others are aware of and responding to the emergency
- The ability to get in or on top of the boat or other object to get some or all of your body out of the water
- Whether you would be abandoning a place of relative safety to try to swim
- Whether calm or moving water (e.g. a river)
- Physical ability and medical condition of the party members



*The “huddle” position helps preserve heat, keeps you together to better be spotted by rescuers, and can be a way to aid an injured person in the water.*

### Swimming in open water:

Use a “head out” breaststroke or modified backstroke, using just forearms and lower legs. Keep upper arms and elbows close to the sides of chest, upper legs close together and knees slightly bent. Move in an even and sustained pace and conserve energy.

### Swimming in rivers or other moving water:

- Point feet downstream with knees bent slightly and feet up to avoid foot entrapment.
- Maintain body at a 45-degree angle to the current, with head pointing to the bank you are trying to reach. The force of the current on the upstream side of your body will help to ferry you toward that bank.
- Use a modified backstroke. Use your feet, arms, and legs to fend off rocks and other objects.
- If necessary, be prepared to quickly flip onto your stomach and into a head-first position to scramble over strainers or other obstacles to keep from becoming pinned against them by the current.

## 1 Hour

Even in very cold water, a person may have 30 minutes or more before their core body temperature begins to drop. If unable to self-rescue, the priority may now become slowing the rate of heat loss to extend useful

consciousness and survival time. Keep movement to a minimum. Protect areas of high heat loss (e.g., head, neck, armpits, groin, sides of the torso) as much as possible.

If in open water, some life jacket designs will allow a person to use the “Heat Escape Lessening Position” (H.E.L.P.). Grasp the shoulders of your life jacket by crossing your arms, or place hands in arm pits and cross lower legs and raise your knees as close to your chest as possible while still maintaining position in the water.

Small groups can form a tight huddle by intertwining arms so bodies work together to possibly slow heat loss. Small children and injured or unconscious persons can be placed in the center of the huddle to be supported by the group.

In any case, be prepared to activate visual and sound distress signals when potential rescuers are in range.

### **Person Overboard Response**

1. Have everyone put on a life jacket (if they are not already worn).
2. Keep eyes on the victim at all times. If possible, assign a person on the boat to serve as the lookout.
3. Immediately throw supplemental flotation (i.e. life ring, seat cushion, horseshoe buoy), ideally with attached floating line, to the overboard person.
4. Approach the person from downwind or downstream if possible. To avoid the risk of striking the victim with the boat, when close enough to reach for the person, use an oar, paddle, or other item to pull them to the boat. Or, use a throw ring or cushion with a line attached to pull the person to the boat.
5. Do not go into the water for the victim, except as a last resort.
6. Direct passengers as necessary to assist and to balance the boat, then assist the person in getting out of the water. All engines should be stopped if pulling a victim in over the stern.



*Designate a lookout while launching a rescue effort, so they can keep eyes on any victim falling overboard while the boat driver maneuvers closer.*



7. Treat the victim to your level of training.

### **Treating Immersion Hypothermia**

The goals for treating immersion hypothermia patients are:

- Handle gently because cold heart muscle and vasculature of severely hypothermic patients are vulnerable to physical exertion, jarring, or moving from a horizontal to vertical position too quickly.
- Provide basic life support as necessary.
- Prevent further heat loss by removing wet clothing, drying victims off, and putting them in dry clothes and a sleeping bag or blankets and vapor barrier. Shivering is good.
- Secure transport to medical care for moderately to severely hypothermic patients.

A person found unconscious in cold water, even if they appear dead, may still have a chance for survival. If the victim was known to be submerged for an hour or less (or if the time of submersion is unknown), providing basic life support to your level of training and obtaining medical help quickly could save a life.



*Approach victims in the water carefully. Use caution transferring them into the boat to avoid further injury or capsize.*

## **CARBON MONOXIDE POISONING**

Carbon monoxide (CO) poisoning, the leading cause of accidental poisoning death in America, has been identified recently as a serious