



Cold Facts

Let's look at the cold, hard Facts about cold water immersion. Many studies have been done to determine why so many drowning deaths occur as a result of falling into cold water. If you look at the statistics below, it seems that in a lot of cases these tragedies should not have happened given the fact that most were good swimmers and were within a short distance from safety - the shore, a boat, a dock, etc.

The CSBC "Will it Float" study authored by SMARTRISK

<http://www.smartrisk.ca/home/>

http://www.smartrisk.ca/researchers/publications/will_it_float.html



One question the study asked was: "Why not wear a lifejacket?"

- don't need a lifejacket if you can swim well.
- Wearing lifejackets is not required if a boater is skilled
- don't need to wear a lifejacket if within sight of shore
- wearing lifejackets only necessary if the boat is moving

Additional information and online videos showing the effects of cold water immersion are available at the link below

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Lifesaving Society Facts

In 2004, 410 people drowned in Canada, 130 were boating.

Cold Water

60% drowned in water under 10 degrees C

34% drowned in water between 10 – 20 degrees C

LIFEJACKETS

Only 12% were properly wearing a lifejacket

2% were improperly wearing a lifejacket

DISTANCE FROM SHORE

43% were less than 2 meters from shore/safety *

66% were less than 15 meters from shore/safety*

*shore, boat, dock, etc.

HOW THEY ENDED UP IN THE WATER

26% fell or were thrown overboard

48% were in a boat that capsized or was swamped

SWIMMING ABILITY

Non-swimmer = 29%

Weak = 15%

Average = 12%

Strong = 10%

Not identified = 34%

<http://www.coldwaterbootcamp.com/pages/cfv2.html>

Lifejackets

The key to survival in cold water immersion is wearing a lifejacket whenever you are on or near the water. The goal is to keep your head and face out of the water while you either try to rescue yourself or wait for rescue to arrive. Here, we'll examine the different types of flotation equipment, what kind of protection each has to offer and also discuss how to maintain and test your devices to keep them in reliable and good condition.

Lifejackets fall into various categories depending on their usage for different levels of activity. Choosing the right one is usually a matter of personal preference, but the thing to remember is that it's best to have a device that will automatically keep your head and face out of the water and floating face up, especially if you become unconscious.

Standard Lifejacket (inherently buoyant)

These come in a variety of styles and colors that range from bright red or yellow to camouflage. If you need to be rescued, you'll need to be spotted and the brighter the color, the better the visibility, especially from a distance.

Some lifejackets are designed to be comfortable enough to be worn whenever boating and some models are purpose built for specific activities like waterskiing, canoeing or riding personal watercraft (sea doos or jet skis).

Other considerations are pockets or compartments to carry signaling devices and a VHF radio. Legally, your lifejacket should carry Canadian Coast Guard approval and be properly fitted for your size and body weight.

Children should be specially fitted according to their size and weight with a children's lifejacket that has a collar and rescue handle as well as groin straps to keep the device securely in place.

Lifejackets with a 'collar' behind the head are designed to roll an unconscious person over onto their back and keep the head out of the water and face up. If the lifejacket is not equipped with a collar, it is NOT designed to keep an unconscious person on their back, their head out of the water, and face up.

Properly fitted inherently buoyant lifejackets will provide some thermal protection.



Inflatable Lifejackets

Light weight, comfortable and easy to use, the inflatable lifejacket provides a full range of movement and can be worn over other protective clothing. They are available in a manual configuration with a pull cord as well as an automatically activated model which inflates as soon as you enter the water. Inflatable lifejackets are equipped with a 'collar' designed to roll an unconscious person face up and keep the head out of the water. To be legally used, an inflatable lifejacket **must be worn** while aboard the vessel.

Inflatable lifejackets provide little or no thermal protection.



Floater Coats

Offering good flotation and better thermal protection from cold temperatures, the floater coat provides buoyancy and will help delay the onset of hypothermia. There are also pockets and compartments in which to keep signaling devices or a VHF radio and other survival items.



Floater Coats / Pants / One Piece suits

For the best protection from the cold as well as excellent flotation, the combination of a Floater Coat and Floater Pants or a one piece Survival (Immersion) Suit will offer one of the best solutions for dealing with the effects of Cold Water Immersion. These are designed with plenty of room for emergency equipment such as flares, sound signaling devices, VHF radios or other survival items.

CARE AND MAINTENANCE:

All types of flotation equipment should be checked before and after the activity season for normal wear and tear.

STANDARD LIFEJACKETS AND FLOATER SUITS

Check all seams and stitching as well as the fabric to make sure there are no tears or worn areas that may fail in an emergency. Make sure that all straps, buckles and clasps are functional.

It's also a good idea to check the buoyancy in a pool at the beginning of the season to make sure that the flotation materials are in good condition. The effects of sun and long periods of storage in adverse conditions can help deteriorate inner foam cores as well as the outer components.

INFLATABLE LIFEJACKETS

Perform a complete inspection of inflatable lifejackets by first checking the cartridge and activation assembly. Many units will have an indicator that shows "green" when the unit is armed and ready.

Automatic inflatables should be checked in the same manner with the addition of verifying that the dissolvable pellet is intact or replaced if necessary.

It's important to visually inspect the CO2 cylinder on inflatables to ensure that it has not been fired. Using the manual inflation tube, inflate the lifejacket and leave it inflated overnight to ensure its integrity. If it loses air then it should be inspected and repaired or replaced. If it stays inflated, then deflate the lifejacket and repack the unit according to the manufacturer's instructions

IMPORTANT !

When not in use, store your lifejackets in a cool, dry place out of direct sunlight.

When in use aboard your boat, the best place to store it...is to wear it!

<http://www.coldwaterbootcamp.com/pages/PFDsv2.html>

Prevention and Rescue

The best case scenario for Cold Water Immersion is to "reduce or prevent the risk". If you're boating in cold water, it's as simple as making sure not to overload your boat, avoiding situations where you may fall overboard and, of course, making sure that everyone is wearing a Coast Guard approved lifejacket to protect in the case of an unforeseeable emergency.

Without thermal protection you can lose body heat 25 times faster in water than in air with similar temperatures and that can be increased by a factor of up to 10 with movement like swimming or moving water.

The best choice in flotation equipment for Cold Water Immersion is a type that will offer the maximum thermal protection such as a floater jacket and pants or a one-piece survival suit. If you do find yourself in cold water, in addition to having proper flotation, there are some things you can do to delay the onset of Hypothermia. Drawing your legs up close to your chest and wrapping your arms around them in a tuck position will help conserve body heat. If you're in a group, huddling together as close as possible will also help conserve body heat.

HYPOTHERMIA DEMYSTIFIED

Hypothermia can be divided into Mild, Moderate and Severe stages. These stages are defined by the "State of Alaska Cold Injuries Guidelines for Wilderness Emergency Care". The following chart lists the signs and symptoms used in the classification of these three stages.

Classifications of Hypothermia	Core Body Temperature	Patient's ability to rewarm without external heat source	Clinical presentation of Hypothermic Patient	
Normal	Above 95°F 35°C	N/A	Cold sensation shivering	
Mild	95-90°F 35-32°C	Good	Physical impairment • Fine motor • Gross motor	Mental impairment • Complex • Simple
Moderate	90-82°F 32-28°C	Limited	Below 90°F (32°C) shivering stops Below 86°F (30°C) consciousness is lost	
Severe	Below 82°F 28°C	Unable	Rigidity Vital signs reduced or absent Severe risk of mechanically stimulated ventricular fibrillation (VF) (rough handling)	
	Below 77°F 25°C	Unable	Spontaneous ventricular fibrillation (VF) Cardiac arrest	

TREATMENT FOR MILD HYPOTHERMIA

- If there is no way to get to a medical facility within 30 minutes, a mildly hypothermic person should be rewarmed as follows. Shivering is a very effective process especially when well insulated. Shivering should be fueled by calorie replacement with fluids containing sugars. The sugar content is actually more important than the heat in warm liquids. Make sure that the person is capable of ingesting liquids without aspirating. Alcohol and tobacco use should not be permitted because they constrict blood flow.
- External heat can be applied to high heat transfer areas such as the underarms and sides of the chest. Active heating of the skin is beneficial as it increases comfort, preserves energy stores and reduces cardiovascular stress
- Light exercise such as walking produces heat but should only be attempted after a mildly hypothermic person is dry, has had calorie replacement and has been stable for at least 30 minutes. A warm shower or bath may be tolerated by an individual that is alert and mobile. However, this could be fatal to a moderate to severely hypothermic person and should be avoided in this case.

TREATMENT FOR MODERATE TO SEVERE HYPOTHERMIA

- This is a serious medical emergency requiring proper handling and treatment and in severe cases, immediate transport to a medical facility. There are some specific things you can do to help stabilize the individual prior to the arrival of paramedics.
- Great care must be taken in handling a moderate or severely hypothermic person. Extraction from the water must be as gentle as possible to avoid precipitating ventricular fibrillation. Arms, hands, feet and legs should not be rubbed or manipulated. The person should be placed in a horizontal position and wet clothing should be gently removed and the body insulated as best as possible using dry blankets, clothing or other protective materials. If shelter is available, keep the person protected from the elements and insulated from the cold ground or snow using sleeping bags, clothing, back packs or even evergreen boughs.
- If vital signs are present, the person should be rewarmed as previously described but not allowed to sit or stand until rewarmed. Under no circumstances should the person be placed in a warm shower or bath, no oral fluids or food should be given and no attempts should be made to rewarm with exercise, including walking.
- In any hypothermic individual, core body temperature continues to decrease after rescue. It is called 'afterdrop' and may last many hours in a moderate to severely hypothermic person when no shivering is present and metabolic heat production may be only 50 percent of normal. Even gradual warming of the heart will help avoid cardiac arrest and ventricular fibrillation.

Dr Gordon Giesbrecht coined the phrase 1-10-1 to describe the three critical phases of cold water immersion. Over many years, Gordon has researched the effects of cold water immersion on hundreds of subjects and has personally experienced those effects himself over 30 times.

1 - 10 - 1

1-10-1 is a simple way to remember the first three phases of cold water immersion and the approximate time each phase takes.

1 - Cold Shock. An initial deep and sudden Gasp followed by hyperventilation that can be as much as 600-1000% greater than normal breathing. You must keep your airway clear or run the risk of drowning. Cold Shock will pass in about 1 minute. During that time concentrate on avoiding panic and getting control of your breathing. Wearing a lifejacket during this phase is critically important to keep you afloat and breathing.

10 - Cold Incapacitation. Over approximately the next 10 minutes you will lose the effective use of your fingers, arms and legs for any meaningful movement. Concentrate on self rescue initially, and if that isn't possible, prepare to have a way to keep your airway clear to wait for self rescue. Swim failure will occur within these critical minutes and if you are in the water without a lifejacket, drowning will likely occur.

1 - HYPOTHERMIA. Even in ice water it could take approximately 1 hour before becoming unconscious due to Hypothermia. If you understand the aspects of hypothermia, techniques of how to delay it, self rescue and calling for help, your chances of survival and rescue will be dramatically increased.

http://www.coldwaterbootcamp.com/pages/1_10_60v2.html

<http://www.coldwaterbootcamp.com/pages/home.html>

This graph estimates times for fatal HYPOTHERMIA to occur depending on gender and body mass.



Short, fat females at 32.3% body fat
Short, fat males at 28.1% body fat
Tall, lean females at 19.9% body fat
Tall, lean males at 14.3% body fat

