

National Center for Cold Water Safety

Guide To Cold Water Paddling Gear

By Moulton Avery
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Why You Need Cold Water Gear

With very few exceptions, immersion in cold water is immediately life-threatening if you're not wearing thermal protection like a wetsuit

or drysuit. The biggest danger is inhaling water and drowning - even if the water is flat calm and you know how to swim.

If you go paddling when the water temperature is below 70F, cold water gear is essential to your safety. Here's a chart of [average monthly water temperatures for coastal areas](#) in the United States.

The purpose of cold water gear is to keep you warm while paddling, but more importantly, to protect you from [cold shock](#), [incapacitation](#), swimming failure, and [hypothermia](#) in the event of a capsize. Here's a short video you can watch about cold water safety: [Cold Shock, Incapacitation and Swimming Failure on Vimeo](#)

Manufacturers go out of their way to advertise the stability of kayaks, but the reality is that any kayak can capsize - even really stable sit-on-top fishing kayaks. When that happens on cold water, the only thing that really matters is whether you're properly dressed for immersion.

There are a lot of different outdoor clothing products on the market, and this guide will help you choose gear that's appropriate for cold water paddling.

Drysuits

By itself, a drysuit offers as much insulation as a shower curtain. In order to protect yourself from cold water, you have to wear layers of clothing underneath the drysuit. That clothing insulates you by trapping a layer of warm air around your body.

The thicker the layer of air, the more insulation it provides. The key point here is that Thickness equals Warmth. In other words, the colder the water, the thicker your insulation has to be - and you need a lot more insulation in 40F (4.4C) water than you do at 55F (12.7C).

One of the big virtues of a drysuit is that you can add or subtract layers depending on the water temperature. It's a lot easier to do that before you start paddling because unlike hikers, kayakers have to go ashore to change layers. That's why [swim-testing](#) your gear before each paddle is so important.

Burping Your Drysuit

Having too much air in a drysuit can make it feel cumbersome.



The solution to excess air is to “burp the suit” by pulling the neck seal open with a finger while squatting down or wading into the water. This forces air out through the neck.

However, when you “burp” excess air out of a drysuit, you compress your layers of clothing and reduce the insulation that they provide. That’s another good reason to [swim-test](#) your gear. You may find out that you need to burp the suit less or else add more insulation to compensate for the burping.



Raingear vs Immersion Gear

Raingear is fine for trail hiking in wet weather, but offers no protection once you're in the water. That's because it's waterproof but not watertight. Manufacturers and retailers often blur this distinction and make it sound like there's no difference between drytops, semi-drytops, and paddling jackets, but they definitely aren't equal when it comes to cold water safety.

The difference between a drytop and a semi-drytop is that the latter has a neoprene gasket at the neck rather than a latex one. Neo gaskets aren't as watertight as latex and may leak some - or a lot - around the neck.

A "paddling jacket" or "splash top" is made out of waterproof material, but it's definitely not watertight. It works fine as raingear, or to shed an occasional splash of water, but it's totally inadequate as immersion protection - because if you capsize, water immediately floods in.

Wetsuits

The amount of insulation a wetsuit provides depends entirely on the thickness of the neoprene. If the water temperature is 50F (10C), a 2mm wetsuit will protect you from [cold shock](#), but it won't delay [incapacitation](#) for very long. If you wear a wetsuit, be sure it provides you with enough protection for the conditions in which you paddle.

Do Wetsuits Work In Very Cold Water?

A lot of people will tell you that wetsuits don't work in very cold water. That's nonsense. Long before we had drysuits, safety-conscious paddlers wore wetsuits - even when paddling on freezing cold water.

The bottom line is thickness. The neo has to be thick enough to handle the water temperature. Ask any surfer who heads out on Lake Michigan or Lake Superior in winter.



Video: [Ice Beard Surfers Of Lake Michigan](#)

Why Size and Fit Are Important

In order to work properly, wetsuits must be snug-fitting. A snug wetsuit allows only a very thin layer of water to enter. Once that space is filled up, the layer of water prevents any additional cold water from entering the wetsuit.

The water in the wetsuit then warms up to the temperature of your skin - about 91F (32.7C). Contrary to popular opinion, that layer of

water doesn't warm you. But because it's the same temperature as your skin, it doesn't feel cold or conduct heat away from your body.

A loose-fitting wetsuit allows cold water to flush in and out of the suit, destroying your insulation and robbing you of precious body heat. You should avoid wearing any item of clothing under a wetsuit. It's not designed for that, and adding an undergarment may compromise the fit and allow cold water to more easily enter the suit.

If your wetsuit doesn't keep you warm enough when you're out of the water, you should wear something on top of it. If it doesn't keep you warm enough when you're in the water, you probably need thicker neoprene.

Chilled on The Beach

Some neoprene sheds water, and some soaks it up like a sponge. If your neo absorbs water, evaporation of that water from the surface of your wetsuit can chill you on a cool or cold day. Evaporation is why so many people get cold in a wetsuit while standing on a beach or paddling a sit-on-top kayak - especially if there's a breeze.

The solution is to stop both the windchill and the evaporation. Any item of clothing that's water resistant will do this and help to keep you warm. Wearing rain pants over the lower half of your wetsuit is also effective at eliminating windchill and evaporation when paddling a sit-on-top.

In an emergency, a plastic contractor garbage bag will also do the job. You can quickly cut out a face hole or an opening for the head. They're also durable, and they don't take up much room in a drybag.

Farmer Johns

The problem with Farmer John wetsuits is that they offer no protection for your arms and shoulders.



Farmer John Wetsuit

[Here's a classic case:](#) Big strong guy gets quickly trashed by 50F water - even though he's wearing a 7mm farmer john with a wool sweater and a paddling jacket.

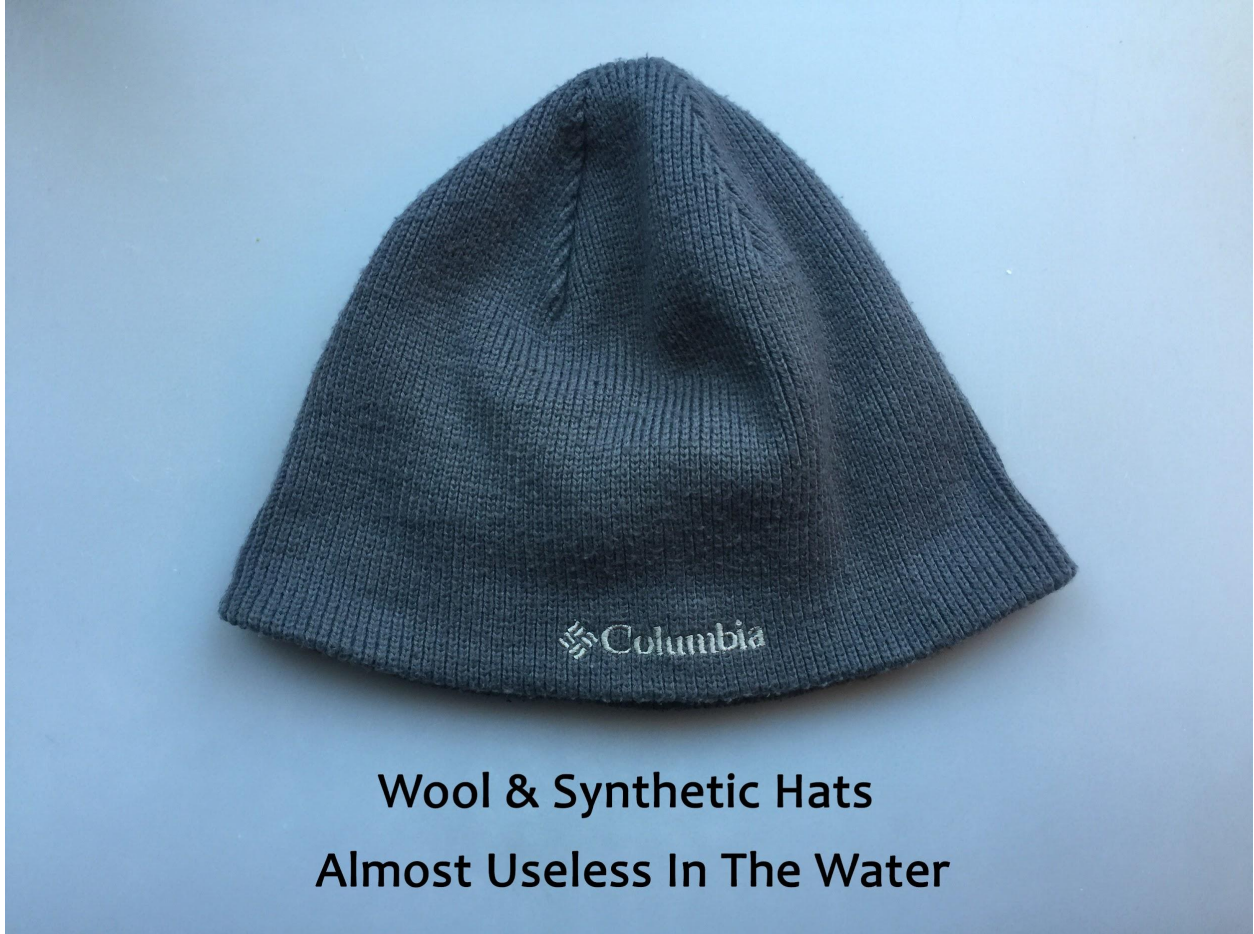
If you're going to wear a farmer john, [swim-test it](#). If you find that it's not enough protection, you can wear fleece on top of it and cover that with a drytop. Just make sure that the waist seal on the drytop is watertight.

Waders

Learn about the danger of using bibs / waders for thermal protection. Here's a [Special Report](#) on a recent close call and a fatality.

Protecting Your Head

Neoprene is the gold standard for protecting your head when cold water kayaking. Hats that work just fine for hiking are a bad choice for cold water or cold weather kayaking. They don't work well in cold rain, they come off easily if you capsize, and they provide very little insulation if you're in the water.



**Wool & Synthetic Hats
Almost Useless In The Water**

Neoprene Head Protection



Another advantage of neo head protection is that it prevents cold water from rushing into your ears - something that can cause vertigo (an instant loss of balance). This loss of equilibrium is a well-known cause of failed rolls and can be dangerous if you suddenly find yourself upside down and underwater.

Protecting Your Hands

Protecting your hands becomes critical as air and water temps fall. Once again, neo offers the best protection against cold water.

Even if you're wearing a top of the line dry suit with all the appropriate layers underneath, you'll be completely helpless in the water if your hands become numb and useless. This can happen in minutes.. If your hands are numb, you can't hold a paddle, attach a sprayskirt, operate a VHF radio or a cell phone.



Neo mittens are warmer than gloves, but they should be paired with a lightweight neo glove in case you have to remove them temporarily - for example to use your phone.

It's wise to avoid neo gloves that fit too tightly. They can reduce the flow of warm blood to your hands, and make it harder to keep them warm.

Pogies

If you insist on using pogies, wear a lightweight neo glove underneath them so you'll at least have *some* protection when you remove your hands.



[Classic case:](#) Guy wearing pogies with a perfectly good drysuit loses the use of his hands.

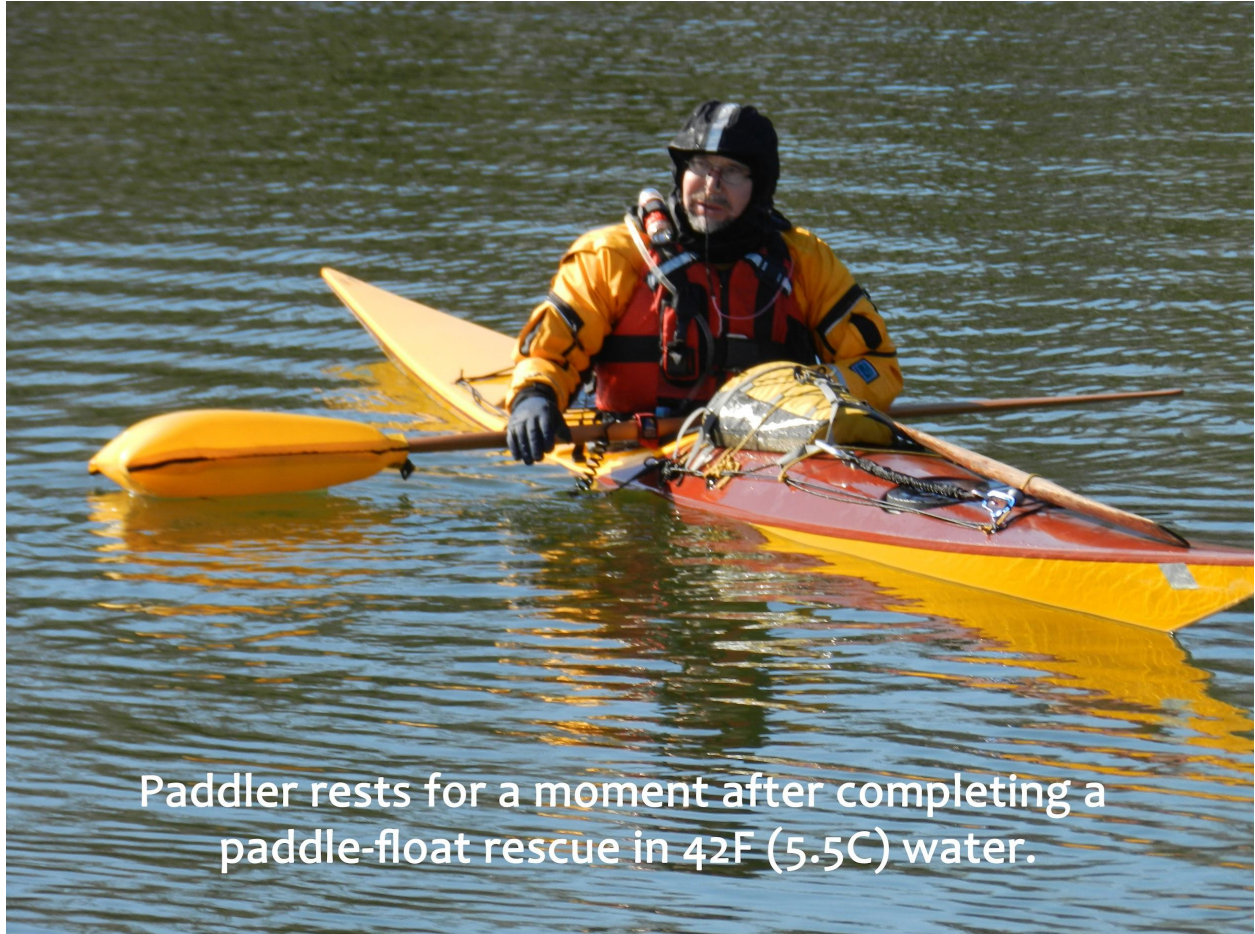
Testing Your Gear

No matter what cold water gear you choose to wear, you should [Swim-Test](#) it to make sure that it works.



Cold Water Safety Workshop, Annapolis, MD 2016
Participant Swim-Testing His Drysuit in 40F Water

You should also practice capsizing and getting back into your kayak in a safe environment.



Lab Experiment vs Real Life

Here's a [video](#) of volunteers trying to stay warm in 36F (2.2C) water while wearing different amounts of thermal protection.

When you watch it, bear in mind that all the participants are relaxed volunteers. They feel safe - unlike the terrified victims in real-life situations who don't know whether they're going to survive.

In real life, people without PFDs frequently drown within a minute of immersion in cold water, and [a PFD is no guarantee of survival.](#)

Bottom Line

Cold water immersion is always a race against the clock, and people lose body heat at different rates depending on body type and insulation. Thermal protection isn't a magic charm. What it does is prevent cold shock, and delay incapacitation and hypothermia. In other words, it buys you time. The issue is whether your gear buys you enough time to either fix your own problem or to be rescued.

Regardless of whether the water is 70F (15.5C) or 35F (1.6C), your **first goal** is to get back in your craft after a capsize without feeling chilled. Your gear should provide enough insulation to keep you functioning - physically and mentally - long enough for you to recover from the capsize and continue paddling as if nothing bad or unusual had happened. In other words, when you're properly dressed for immersion, a cold water capsize is no big deal.

One way to get a good reality-check on this is by spending 10 minutes in the water.

Your **second goal** is more complex: To wear enough insulation so that you can swim to shore or wait for someone to rescue you.

Remember: [You have to survive long enough to be rescued.](#)



What About Overheating?

When the air is warm, wearing a wetsuit or drysuit can cause you to overheat – unless you take steps to keep yourself cool. This problem is easy to address because you're surrounded by cold water.

[Keeping Your Cool In The Heat](#)

Five Golden Rules

The National Center for Cold Water Safety lists [Five Golden Rules](#) that all cold water paddlers should follow. In that section of the website, you'll find a blueprint for safe cold water paddling - plus twenty case

histories that contain a lot of practical information.

Support The Center

If you appreciate this information and the work we do on behalf of cold water safety, please make a donation to the Center. We're a small, non-profit 501(c)(3) organization and your support makes it possible for us to educate paddlers about the danger of cold water. On our web page, click on the Get Involved / Donate tab. You can either donate via PayPal, Debit, or Credit Card. [National Center for Cold Water Safety](#)

About the Author

Moulton Avery is Founder and Director of the National Center for Cold Water Safety. He's an expert on heat and cold stress, and an internationally recognized authority on cold water safety. He's been canoeing and kayaking for over 50 years, and promoting cold water safety for almost that long.

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