

Layering

It's getting cold out there. Hypothermia can go from quite uncomfortable to downright dangerous. The following article covers thermal protection: <https://www.teamriverrunner.org/wp-content/uploads/2018/09/Thermal-Protection.pdf>. One of the best ways to beat the cold is layering. Layering solves many issues:

- Sweat build-up – wicking allows moisture to evaporate and be carried away
- Heat regulation – you can add/subtract as conditions change throughout the day
- Protection from getting wet – the outer shell
- Protection from wind – the outer shell

Keeping things simple, let's look at three basic layers.

Base Layer

The base layer are your undergarments closest to your skin. This provides comfort and wicks away moisture quickly before it gets a chance to build up. Hikers have more options than paddlers, we need durability and fast moisture transfer. The preferred material is Polypropylene or similar synthetics. Base layers need to be snug fitting, so they are stretchy material. These come in several weights: light, midweight, or heavyweight. Choose the weight that best matches the weather conditions, usually midweight or heavyweight for this time of the year. Lightweight works great as a rash guard in the summer. Polypropylene is easy to wash and quite affordable.

Steer clear of cotton, it just gets soggy and doesn't work well in paddling clothes.

Insulation Layer

This is also a breathable fabric, big & fluffy. A favorite garment for dry suits is a Union Suit with a convenient zipper in front. This layer is typically some sort of Polyester Fleece material. These also come in different weights to match weather conditions. Ideally, we want to keep the insulating layer dry. This is done with some sort of vapor barrier worn on the outside.

Most systems trap air within the fibers. Fibers are often fleece but wool (or wool blends) works as well. Another great material is Polarguard (often found in synthetic sleeping bags). Some shells are lined with Polarguard and they are fantastic (two layers in one).

For those with a limited budget, wetsuits are far less expensive and much more durable than dry suits. Another advantage is if they tear, they still work. Nearly all Search & Rescue squads use wetsuits for this reason. Wetsuits work by trapping water in their spongy neoprene fabric. They really work best when wet, not dry. A common practice is to start the trip with a kayak roll to soak the material. The body will then heat the trapped water acting like a wearable radiator. Another tactic I've personally used with wetsuits is taking a hot shower with the wetsuit on. I know that's cheating but it sure works quite well when available.

You can enhance heat retention with the same wicking layer as described above and it makes the wetsuit much more comfortable.

Outer Layer

We have two distinct goals for the outer layer:

- Wind Protection

Layering

- Water Protection

There are several choices here. The most expensive option is a breathable shell like Gore-Tex, Tyvek, etc. These fabrics require much more maintenance such as proper washing and periodic refurbishing the Durable Waterproof Repellent (DWR). Avoid washing with common detergents as this can clog the pores making it vapor proof (moisture can't escape). I use a product called Tech Wash from Nikwax. Most of these shells have latex gaskets for the neck and wrists. These need to be treated with Formula 303 Protectant – spray on and wipe with a soft cloth. A major downside to a breathable shell is wind resistance. In windy conditions, you will really feel it. You can mitigate somewhat with a thicker insulating layer.

Another option is a non-breathable shell, like coated nylon. These are quite affordable. They stop wind dead in its tracks and provide superior warmth. Unfortunately, they also prevent moisture escaping from the inside, so your insulating layer will become damp.

Trip Leaders

As a very frequent trip leader, I pack extra garments in my car that I know I won't use personally. Before the shuttle I pay close attention to young children and thin people – both demographics are very prone to become hypothermic. As a medium size male, my clothes fit a very wide variety of individuals. If I observe a potential clothing issue, I'll offer a: splash top, neoprene layer, or polypropylene garment set. I also bring extra headwear, pogies, and gloves. Heck, they might not look pretty but they certainly will be warm. On the river, I pack a skull cap in my PFD pocket and a storm hood in my dry box. I wear pogies, so I also pack Glacier Gloves in my dry box as well which can be loaned out. Trip leaders (and participants) should get in the habit of preparing a [Float Plan](#), this will help you determine what clothing to take for comfort and safety. Sometimes I send the weather forecast to the trip participants with some comments on proper clothing for the trip.

Conclusion

Layering is an effective tool in hypothermia prevention. Decent layering systems give you some flexibility in adjusting heat retention to avoid over or underheating. There are many options for staying warm and comfortable on cold paddling trips, you don't necessarily need a \$1,000 dry suit which is cost prohibitive for many. Take time to understand how layering works and experiment a bit – everyone is different. The [Thermal Protection](#) article has lots of links for headwear, gloves, pogies, dry suits, wetsuits, etc. Spring & Fall are fun times of the year to paddle and when most small streams are runnable. Weather conditions can change quickly in the mountains - be prepared.