

# Olympia Mountaineers Basic Snowshoe Course, 2025

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## Dress for Success!

Clothing as a system for high-exertion winter activities.

“There’s no such thing as bad weather, only bad clothes.” – Norwegian saying.

Successful clothing for cold weather travel is a system, comprised of three distinct layers with three different sets of functions:

- A shell layer which protects us from wind, rain, snow, abrasion, and which is the outer shell of our cocoon of body temperature.
- One or more insulating layers, or mid-layers, typically composed of fibers and air space between fibers, which slows the loss of body heat to surrounding atmosphere;
- A base layer on the skin, which starts moving moisture caused by perspiration away from the body. This layer should also protect skin from chafing with other clothing during sustained repetitive movement.

Winter weather presents hazards to humans. Foremost is cold, which can directly injure tissues (frost nip and frost bite), and which can take away our energy in the form of lost body heat, consuming resources otherwise needed for muscle and brain activity, which can impair physical and mental performance, and cause hypothermia and, eventually, death.

Winter mountain travel is an energy-intensive activity, sometimes expending >5,000 calories in one day. Muscular activity can generate enough heat to “work up a sweat” even in cold temperatures.

Ideally, clothing will keep us warm and dry. The challenge for clothing for winter travel is clothing that protects us from a heat-robbing external environment, while allowing us to work hard without becoming soaked by our own perspiration.

A key for avoiding hypothermia and staying comfortable in cold weather is staying dry. Body heat turns water into water vapor. If our clothing is wet, it robs our body heat as the water evaporates.

How might we get wet?

- External sources:
  - Precipitation: rain, sleet, snow.
  - Contact transfer: rainwater or snow from branches and other surroundings.
  - Solution: waterproof (but breathable) outer layer.
- Internal sources:
  - Perspiration due to muscular exertion.

- Solution:
  - Skin-layer fabrics that carry moisture away from the skin and which allow efficient evaporation while we are still producing all that heat.
  - Ventilation, so that water vapor from perspiration is released directly into the surrounding atmosphere. E.g., zippers and buttons.
  - Breathable outer clothing, allowing water vapor to pass into surrounding atmosphere from inner clothing, while keeping liquid water (rain, melting snow) from passing through to our inner clothing. E.g., vapor-permeable coated nylon fabric, Gore-Tex, etc.

A closer look at the layers:

### **Shell layer:**

Rip-stop **nylon** and other abrasion-resistant synthetic fabrics are favored. Vapor-permeable but waterproof coating or lining such as Gore-tex to keep out water from outside, but to let out water vapor from perspiration.

“Must-have” features:

- Water- and wind-stopping;
- Breathable.

Jacket:

- Attached hood;
- Full length zipper front with storm flap;
- Underarm zippers (“pit zips”) for ventilation (don’t buy one without this);
- Pockets
- NOT insulated (that’s a different layer – don’t combine them into one).

Pants:

- Full-length side zips, for getting them on and off over boots, snowshoes, skis or crampons.
- Most pants side-zip up starting at the bottom cuff and finishing at the waistband. Then top and bottom zippers may be operated independently. Velcro should hold top closed around waist, and top zipper may be opened a few inches for ventilation.
- Bib overalls or suspenders may help keep pants from getting pushed down by the hip belt of your pack. Side clip style suspenders are recommended. Put the clips on the Velcro side closures to keep them closed. Also avoids having to take off outer top layers if dropping pants for toilet.

The shell layer protects against precipitation, contact with wet or snowy branches, wind, abrasive surfaces, etc. When these are not an issue, temperature permitting, the shell layer may be kept in the pack, and water vapor is more freely dissipated through the insulating mid layer.

Two-layer rain jackets and pants have an abrasion-resistant nylon outer layer, and a vapor-permeable inner layer. They are economical (\$100-\$200 retail) and I used them for years. I would usually be wet by the end of a long day. Three-layer shell jackets and pants have a vapor-permeable layer (Gore-tex or other proprietary material) sandwiched between a nylon outer layer and inner layer. I bought one last winter. You can spend well over \$500 for the best ones. I bought a Patagonia Torrentshell jacket from REI on sale for under \$110, retail price \$179. I am very happy with it, and stay dry.

### **Insulating (mid) layer:**

Best for activity: **synthetic fleece** or pile, such as Polartec. Available in various weights and thicknesses. Lightweight, helps wick away water vapor, rather than hold it. **Down** is lightweight and compresses well for packing. But it tends to lose its loft and insulating qualities when wet from water vapor and is not a good choice when actively perspiring. Keep it dry in your pack for rest stops or camp. Down garments are available with water repellent fabric and water-resistant treated down fill, which helps retain insulating properties in damp conditions. **Wool** is a good insulator, and works even when wet. But it does not dry as quickly as synthetic fleece or pile. It is bulky and heavy for packing. Wool is very flame-resistant and woolen glove liners are excellent for working around a camp stove.

### **Base layer:**

Synthetic or wool blend underwear such as Patagonia Capilene, REI house brand, Polartec, Arc'teryx, Stoic, Terramar, Coldpruf, to name a few. Some people love soft merino wool, but others find it uncomfortable. Smartwool is 52% merino wool, and the remainder synthetics. Among all-synthetic fabrics, polyester-spandex blends are common. A ¼ length zip front is a very nice feature for ventilation. Thumb holes in the cuffs help keep sleeves from riding up during activity, or while putting on a layer over the base.

Bibliography, sources, references:

*Mountaineering: The Freedom of The Hills*, Tenth Ed., Part I, Section 2, "Clothing and Equipment"

<https://www.lifeinnorway.net/no-bad-weather-only-bad-clothes/>

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<https://sites.google.com/site/rwmsinfo/background>

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