Clothing for Cross Country Skiing *By Vaughn McGrath Senior Coach*

Layering Your Clothing

What's the secret to staying warm and comfortable in the outdoors and winter? Layer your clothing with Base, Mid and Outer layers: they allow you to build a tiny microclimate that surrounds your body and the amount and thickness of the layer can be adapted (added or taken off) to moisture, wind, temperature, and exertion.

Base Layer

- *The inner-most layer is critical because it's in direct contact with your skin*.
- *Base layers (also known as underwear) should transport moisture away from the skin* and disperse it to the air or outer layers where it can evaporate. Because water is a good heat conductor, damp garments draw precious heat away from your body. Even in conditions above freezing, this rapid heat loss can cause a dangerous drop in your body's core temperature.
- *The best base layer materials are synthetics* (polypropylene, polyester & some new wool blends on the market now) that are light and strong, absorb very little water- moisture, and are quick to dry. Silk is lovely and cool against the skin when it's hot, but is not an excellent choice for winter conditions. Seamless or flat-seam garments lie flat and won't press into your skin under a pack. Base layers should fit snugly without being constricting.
- *Base layers are available in light, medium, and heavy weights*. Light layers suit aerobic activity where sweat dispersal is paramount (ski racing) and when the temperature is warm (usually close to 0C). Mid-weight underwear provides moisture control and insulation for stop-and-go activities (good for younger children). Heavy layers are best in very cold conditions, or when you're relatively inactive or skiing at a slower speed.

  NOTE: Cotton should not be used. And males should have wind shorts/briefs for racing with race lycra tights.

Mid-Layer

- *The mid-layer provides insulation and continues the transportation of moisture* from the inner layer. To slow heat loss, this layer must be capable of retaining the warmth generated by your body.
- *Wool and synthetics are well suited to this* because the structure of the fibres creates small air spaces that trap molecules of warm air.
- Good mid upper layers include: Ski vest, Pile Vest, Polyester top, track suit top,
- Good mid lower layers include: tights or similar, track suit bottom

NOTE: Cotton should not be used!

As with the inner layer, this layer should be snug but not constricting. A best practice for ski racers is to have a knee warmer – sock over the knees to keep them warm.

Outer Layer

- *The outer layer protects you from the elements* and should allow air to circulate and excess moisture to escape.
- For dry conditions, *a breathable (uncoated) wind shell or a smooth-surfaced soft shell* may be all you need. (ski jacket or similar material, race suit, warm up pants, polyester running pants, etc are good)
- Note: Children who are new to the sport, usually start out using a snow suit.

Choosing and Layering Socks

Blisters and sores can shut down a XC ski in very short order. But a well-fitting sock system, tailored to your activity can keep your feet dry and comfortable when you're cross country skiing on the trails.

Good-Fitting Socks Prevent Hot Spots

A good fit for socks is nearly as crucial as it is for shoes/ski boots. Your socks and ski boots are a system that should work well together.

- Socks should not change or modify the fit of your ski boots.
- If they're too big they will sag and bunch causing lumps, discomfort, and possibly blister-causing spots.
- If they're too tight they can restrict circulation and toe movement, which can lead to injury (e.g. black toenails) or cold feet.

Selecting Socks: There's Lots and Lots to Choice From:

Choosing the best pair of socks depends on the type of ski boots you will be wearing and the weather conditions you may encounter.

Liner socks can be worn alone during high-output activities like running the summer but not generally xc skiing. They can be used to help prevent blisters, they can be worn as the inner layer of a layering system. The thin fabric is designed to transport moisture outward to keep your feet dry, and comfortable. **(A very good idea to use in skiing)**

Lightweight socks are intended for use with very active xc skiers. They have medium-density padding in the ball and heel for extra cushioning, a thinner more breathable upper, and are perfect for layering with liners.

Mid-weight socks are well-cushioned all-around socks that work well for those that want a warmer sock combination. They are perfect for most XC activities and for wearing over liner socks.

Heavyweight socks are designed to provide maximum insulation for cold weather hiking and other winter sports. They feature well-insulated footbeds for increased warmth. Heavyweight socks are extra long to cover more of your lower legs. They can also be paired with liner socks. (Note: Usually used more in back country touring.)

Materials such as synthetics or wool wick moisture away from your feet are what you want to use in winter – Again NO COTTON socks. Socks with a blend of natural fibres and synthetics provide good moisture wicking and can function like a layered system. Wool has naturally high-tech moisture-wicking and insulating properties, and soft textured wools (such as merino) are ideal for high-performance socks.

Face and Head

Skiers need to have a good hat, or headband and ideally earmuffs for use with a hat. In addition a face warmer is needed for cold temperatures and/or race balaclava is also needed to protect the face from getting frost bite.

Gloves or Mittens?

All things being equal (fabrics, thickness, and insulation), mittens are warmer than gloves. Mitts trap body heat by keeping your fingers together and reducing evaporative heat loss. In frigid temperatures, a layered mitt system is the best choice for warmth. Gloves are best in warmer temperatures (mitts or gloves are often a personal choice)– best to have a ski glove with leather palm with breathable fabric on the top. Gloves come light-weight for temperatures around 0C to -5C to gloves for -5C and colder.