



Wilderness Clothing

Wilderness Travel Course 2020

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The Best Outdoor Clothing Is:

- **Functional:** Easy to use. Adjusts to weather and activity.
- **Lightweight & compressible.**
- **Allows freedom of movement.**
- **Versatile:** Mix & match layers. Clothing that multi-tasks.
- **Appropriate for climate & weather.**
- **Feels Right:** Meets your personal preferences.



Patagonia, Chile

The Best Outdoor Clothing Is Also Appropriate for Conditions:

- Seasonal Climate
 - Research region
- Local Weather Conditions
 - Get altitude-specific weather reports
- Be ready for anything!
 - For the worst the weather can do
 - In case you are stuck overnight



Importance of Regulating Body Temperature

- Body metabolism and exertion generates heat
 - Replenish with food & water
- Climate and weather steals heat
 - Wind, cold, rain, elevation
 - Clothing balances body heat and environment
 - Light Clothing:
Allows Heat Loss
 - Insulating Clothing:
Retains Heat



Patagonia, Argentina

Hyper/Hypothermia

- Body temperature elevates/drops to a non-functional level.
- Continually check your comfort by adding or removing layers.



Clothing Concepts

- **Fabrics and Materials**

- Natural and Synthetic

- **Layering**

- Base Layer
 - Moisture Management
- Insulating Layer(s)
 - Warmth
- Shell (Protection)
 - Ventilation
 - Durability

- **Other**

- Gloves
- Hat
- Socks



Introduction to Fabrics & Materials



- **Natural / Organic**
 - **COTTON** (Plants)
 - *Not for cold weather*
 - **WOOL** (Sheep, Lama, Goat)
 - *Good Insulation: Gloves, Hats, Socks, Shirts, Pants, etc.*
 - **DOWN** (Duck/Goose)- Space Fill Insulation
 - *Compressible, Light, Warm*
 - *For Sleeping Bags, Parkas, Vests, even Pants*
 - *Useless When Soggy or Wet*
 - *Always Contained within a Synthetic Shell*
 - **SILK** – (Worm) Tight Weave, Smooth, Tactile

Fabrics:

Cotton

- Holds water like a sponge.
- Does not keep you warm when wet!
 - *OK in hot weather.*
 - *Deadly when Cold*
- Wet cotton socks cause serious blisters.



Wet Jeans

Fabrics & Materials

Synthetics

– **NYLON/POLYESTER (Petroleum Base)**

- **Many Forms:**
 - **Fabric : Woven & knit**
 - **Fleece: Different weights**
 - **Batting: Space-fill insulation**

– **INNOVATIONS**

- **Laminates, Membranes,
Coated Fabrics**

**Manufacturers have Fancy
Names**



Fabrics & Materials

Read Labels!

- **HANG TAGS**

Many proprietary names:

Fabric – Thermax, Coolmax

Fleece – Polartec, Synchron

Batting – Holofil, Primaloft

Hard to distinguish hype from useful information

- **LABELS AS PART OF GARMENT**

No confusing proprietary names



Be a critical shopper!

NEW A. B. **SAVE \$16.05+ (40%+)**

COLUMBIA SPORTSWEAR Top and Vest (Women)

Layer the vest over the top for extra warmth. **Closeouts.**

Top and Regular Vest

Size: **XS**(2) **S**(4-6) **M**(8-10) **L**(12-14) **XL**(16-18)

A. Crawl Stretch Thermal Waffle Knit Top allows movement and holds heat. Flatlock seams with contrast stitching throughout and a two-way comfort stretch eases mobility. Stylish, exaggerated cuffs. Length 26". Cotton/2% spandex. Columbia Sportswear's Active Fit. Sri Lanka.

Color: (02)grill, (03)winter white, (04)shimmer, (05)posey, (06)corange, (07)greenscape

#3348C Top Reg. \$36.00 **\$19.95**

B. Catalina Crest Vests are perfect for layering over long sleeve tees for a little added warmth and protection. Anti-pill finish. Polyester. Columbia Sportswear's



The Layering System

Why?

- Functional & Easy to Use:
Adjusts to weather & activity
- Versatile: Mix & match layers;
use any combination

Three Layers

1. **BASE LAYER** – Moisture management
2. **MID LAYER(s)** – Insulates
3. **OUTER SHELL** – Weather protection



#1 Base Layer

Next-to-Skin:

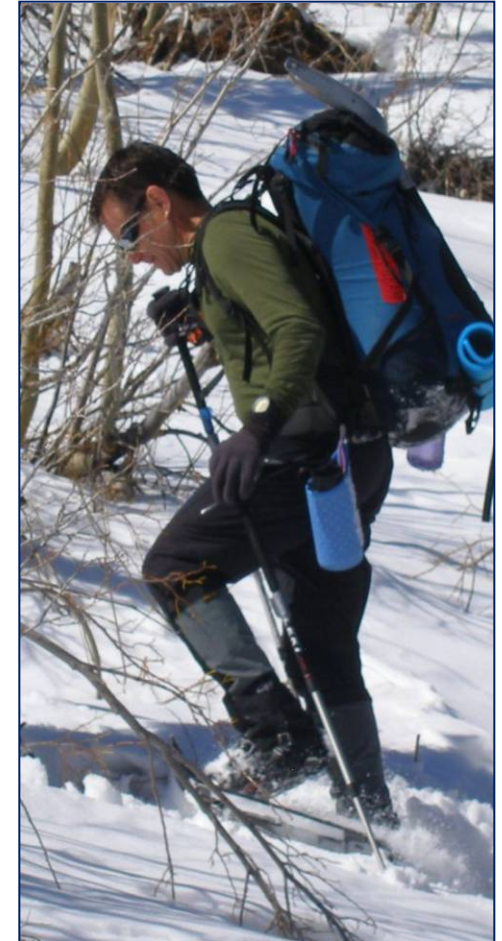
Moisture Management

- Dries quickly
- Will not chill you when damp
- Added warmth
- Light weight, Mid weight, Expedition Weight

Many Fabrics & Materials

- Natural fibers: Wool, Silk
- Synthetics: Polyester

Never Use Cotton



#2 Insulating Layer(s)

15

To keep you warm:

NATURAL FIBERS

- Wool
 - Reliable warmth
- Down
 - Best weight-to-warmth ratio
 - Most compressible
 - **Useless when wet**

SYNTHETICS

- Fleece fabric
 - Lightweight to heavyweight
 - Classic or wind resistant
- Polyester fill
 - Getting better all the time



Fleece Jacket

- **May use multiple layers**
 - Fleece shirt, Vest, Jacket

How Insulation Works

- **Insulating Material:**
Creates tiny dead air spaces.

Loft is more important than fill count. Looking like the “Michelin Man” is not a bad thing when resting and keeping WARM at camp.

- **Heat Source:** Your body heat
- **Outer Layer:** Keeps warm air inside
- **Think of insulation like a Thermos bottle**

Cotton does not insulate when wet



Jacket with batting or down

#3 Shell Layer: Weather Protection



Parka or Rainwear

- Weatherproof, Ventilates
- Waterproof vs. Water Resistant
- Windproof
- Adjustable for changing weather
- *Have jacket and pants*

Shell Layer: Breathable Fabrics



Most Expensive – Best ventilation:

Microporous Membrane or Fabric:
Gore-Tex, eVent

Mid-range price:

Coated Nylon: Some are breathable.

Inexpensive:

Non-breathable polyurethane-coated fabric.

Not for vigorous activity.



Shell Layer: Ventilation

Ventilation Features

- Zippers: **Two-way zippers, pit zips, core vents**
- Adjustable openings: **Velcro cuffs, drawstring hood & hem**

Other Features:

- **Hood integrated into collar**
- **Visor on hood**
- **Zippered pockets**



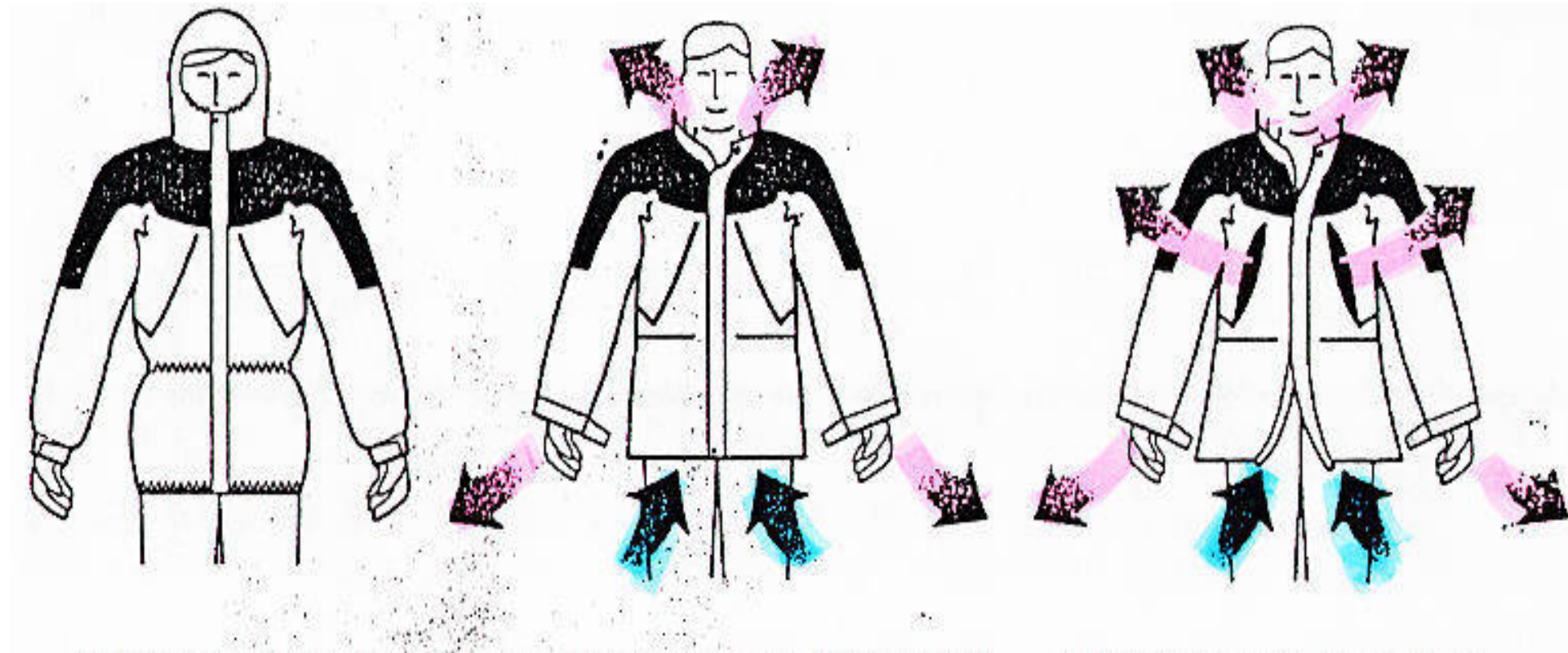
Ponchos:

Not recommended!





VENTILATION



Moisture & Ventilation



- **A WORD ABOUT SWEAT**

- Sweat happens!!!
- Wet clothing is colder than dry clothing

- **Try to minimize sweating**

- **Constantly adjust clothing**
- **Remove layers**
- **Use ventilation features of clothing**
- **Slow down**

***TO STAY WARM,
YOU MUST STAY DRY***

Moisture & Ventilation

23

- **WET** outside / **WET** inside
 - Outside Jacket: Cold Rain or Snow
 - Inside Jacket: Warm Sweat
- **Without Ventilation:**
 - Sweat Vapor Condenses
when it hits the **COLD**
inside surface of the jacket
- **Shell layers ventilate 2 ways:**
 - Breathable fabrics
 - Ventilation features





You may not need all three layers...

BUT ALWAYS CARRY THEM!

Peru



Same conditions – Many options

Gloves

- **Thin or Thick**
Wool, Synthetic, Primaloft, etc.
- **Waterproof Overmitt**
Coated Nylon, Gore-Tex
- **Tactile Dexterity**
 - **Open finger-tips**
 - **Glove liners**



Hats

- For warmth
- For sun protection
 - Brimmed hat
 - Bandana / Buff
- Insulation
 - Beanie
 - Thick Woolen
 - Synthetic, Fleece, Primaloft
 - Balaclava
- Waterproof/Wind Stopper
 - Coated Nylon, Goretex
 - *Hood of your outer shell*
- Feet Cold? Put on a Hat/Beanie!



Nepal



Socks

- Inner Liner Sock
- Outer, Insulating, Cushioning Sock
- Wool or Synthetic

GOAL: wick the moisture away from your feet to dry quickly

No Cotton Socks



A Word About Wind

30

Conditions that are cold and windy cause additional problems:

- Wind-chafing
- Blowing dust, sand or snow
- Dry nose & throat
- Wind Chill

Suggested Solutions:

- Wear your shell
- Use a Buff or bandana
- Use hard candy or throat lozenges
- Use sunglasses or goggles/gloves



Nepal

Wind Chill Chart

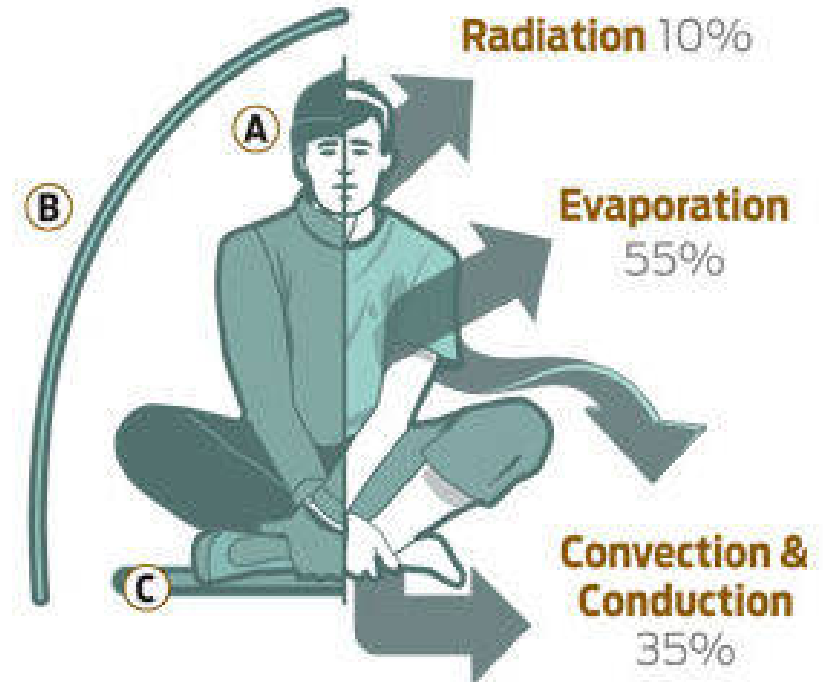
Hypothermia can happen in temperatures well above freezing.

Wind Speed MPH	Temperature (°F)										
	50	40	30	20	10	0	-10	-20	-30	-40	-50
	Equivalent Chill Temperature										
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125
35	27	11	-4	-20	-35	-49	-67	-83	-98	-113	-129
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132
above 40	little additional effect										
Danger of Freezing Exposed Flesh if Dry and Properly Clothed:											
Little Danger				Great				Extreme			

Maintaining Body Heat

How Heat is Lost:

- **RADIATION** – Bare skin
 - > **Cover Up Skin, Insulate, Use a hat**
- **CONVECTION** – Wind
 - > **Use WINDPROOF Clothing, Shell**
- **CONDUCTION** - Contact with cold surface
 - > **Stay DRY, Use Sitpad, Gloves**
- **RESPIRATION** - Breathing In-Out
 - > **Good Conditioning, Slow Down**
- **EVAPORATION** - Sweating
 - > **Use Layered Clothing, Slow Down**



Clothing Selection Summary

- Fabrics and Materials
- The Concept of Layering
- Moisture Management
- Insulation
- Ventilation
- Know what Conditions you are likely to encounter:
 - Climate
 - Season
 - Altitude
- Learn/Know your preferences
- Read the Labels
- Marshall's, Ross, Target also good places to find appropriate hiking clothing - CHEAP!!
- As well as online sources



**BE SAFE AND
STAY COMFORTABLE!!**



Nepal

MODELS

Special Thanks to our Models

Krista Muscarella

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Jason Seieroe

Stephanie Smith