Winter Traveller's Guide

Finnish Institute of Occupational Health

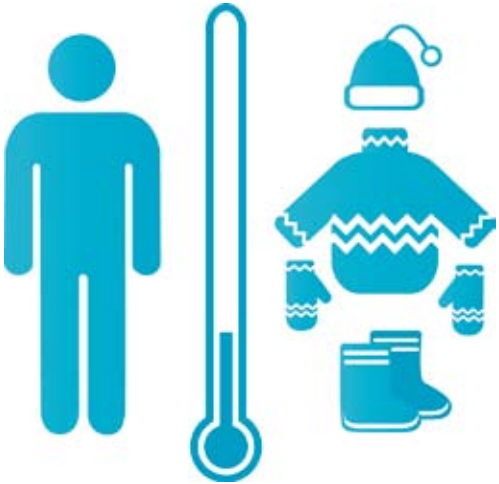
Authors:
Kirsi Jussila
Sirkka Rissanen
Venla Räisänen
Susanna Mäki
Helena Mäkinen
Hannu Rintamäki

Pictures: Erno Bärlund, Zeeland Helsinki Oy
Layout: Arja Tarvainen, Finnish Institute of Occupational Health
English language editing: Centria University of Applied Sciences
and Finnish Institute of Occupational Health

ISBN 978-952-261-263-2 (print)
ISBN 978-952-261-264-9 (pdf)
Imprint: Edita Prima Oy
Helsinki 2013

This publication was partly funded by the European Social Fund,
and it is part of a project called Protection and Safety of Tourists and Tourism Workers.
www.ttl.fi/tourismandsafety

Finnish Institute of
Occupational Health



Winter Traveller's Guide

CONTENTS

Winter travelling in Finland

Winter – the time of kaamos (polar night) and northern lights.

Kaamos (polar night)

In winter time you can experience a very exotic period to the north of the Arctic Circle. This period of no sunlight is called kaamos, or the polar night. In the northernmost part of Finland kaamos lasts nearly two months, from November to January. Close to the Arctic Circle there are a few days just before Christmas when the sun does not rise at all. Kaamos does not mean total darkness, as the snow reflects light from the moon and the stars. The days get lighter as the spring approaches, and in February days have five to seven hours of light.

Northern lights (Aurora borealis)

In the northern Finland night sky you can see the extraordinary northern lights. They are at a height of 100 km and caused by the collision of energy-charged particles of solar winds with the Earth's atmosphere. The northern lights mostly display green shapes but they can also be very colourful, varying between different shades of green, red and blue. The best way to enjoy the star-lit sky and northern lights is to stay overnight in a laavu (lean-to) or in a glass-roof igloo. Northern light safaris are also available.

The many effects of the cold

People easily get cold if their clothing is insufficient or if they stay still. First the skin and limbs get cold; the person gets goose bumps and starts to shiver. If the shivering continues for long it means that the core parts of the body are also getting cold. When muscles shiver they produce heat. If the body gets cold, it also raises blood pressure, but this is something people usually cannot sense.

Winter

In Finland, winter begins when daytime temperature stays permanently below 0° C. The coldest temperature can be close to -40° C. During daytime the temperature is usually -15 ... -25° C. On top of fells and in open spaces, wind adds to the force of the cold. On the fells the temperature can vary by up to ten degrees. Starting in March the sun can make the days warmer even if night time temperature is still very low.

Snow

Snow is made of water crystals. When the temperature is below zero, the snow is light and loose; when the weather is milder, the snow is damp and easier to mould. In this milder weather you can make snowballs, build snowmen, snow castles or even snow sculptures. On roads and paths the snow often gets hard, or icy and slippery. In spring-time when the snow starts to melt it can solidify to form a hard surface that you can walk on.

Extremities feel the cold first

The face, fingers and toes usually get cold first. If hands and fingers are wet, they get cold more easily. Depending on the temperature of the skin this can feel neutral, cool or cold: everybody feels coldness differently. If skin temperature lowers drastically, one feels cold pain. If the skin is numb, it must be immediately warmed. Short exposure to cold pain is not harmful but longer exposure can cause lowering of body temperature. You can combat the cold by moving actively. If you feel unpleasantly cold, you should add more clothing, go indoors or stay close to a fire.

Beware of cold metals

If you handle metal with bare hands, your hands and fingers get cold quickly. Frostbite is possible. In temperatures lower than -5° C, wet skin can even adhere to metal, but this will not happen if the skin is dry.

Frostbite

Low temperatures and wind can cause frostbite to the face or ears. Frostbite is first just a light spot on the skin, thus it is good to look at your co-traveller's face every now and then. The best way to warm frostbite is by first pressing it lightly with warm hands. Once the skin is warm it must not get cold again or the damage to the skin will get worse.
If the frostbite is large or blistering, you should consult a doctor. Facial creams or lotions do not protect the skin against the cold but if you use them, you should let them absorb for at least 30 minutes before going out, to avoid having wet skin.

Hypothermia

Hypothermia (core temperature of the body decreasing to below 35° C) is caused by exposure to cold water, prolonged wearing of wet clothes or not moving for a long time due to a seizure, accident or exhaustion.

The symptoms of hypothermia include confusion, not knowing the time or recognizing one's surroundings, and strong muscular shivering which may stop as the hypothermia worsens. If there is reason to suspect hypothermia, it is essential that the person does not get any colder, and the body should be slowly warmed. A doctor must be contacted.

Cold is enhanced by

- wind
- wet garments, either by sweating or external moisture
- touching cold surfaces
- non-movement or too little activity

Wind chill index (WCI)
to estimate the co-effect of wind and temperature *(Osczevski & Bluestein, 2005).* See also the website of the Finnish Meteorological Institute.

measured air temperature, °C

wind chill index

wind, m/s	0	–5	–10	–15	–20	–25	–30	–35	–40	–45
1	-1	-7	-12	-18	-23	-29	-34	-40	-45	-51
2	-3	-8	-14	-20	-26	-32	-38	-43	-49	-55
4	-4	-11	-17	-23	-29	-35	-41	-47	-54	-60
6	-6	-12	-18	-25	-31	-37	-44	-50	-56	-63
8	-7	-13	-19	-26	-32	-39	-46	-52	-58	-65
10	-7	-14	-20	-27	-34	-40	-47	-54	-60	-67
12	-8	-14	-21	-28	-35	-41	-48	-55	-62	-68
14	-8	-15	-22	-29	-35	-42	-49	-56	-63	-70
16	-9	-16	-23	-29	-36	-43	-50	-57	-64	-71
18	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72
20	-9	-17	-24	-31	-38	-45	-52	-59	-66	-73

very cold | danger of frostbite | great danger of frostbite

Heat production and activity

Appropriate clothing protects against the cold. If the clothing is not warm enough, you should stay active to keep warm. If your clothing is appropriate and you are active, you will not get cold. In cold weather you should constantly keep moving to keep warm, as muscle movement generates heat. Compared to just sitting down, walking and driving a snow mobile generates three times more heat; snowshoe walking even four times more.

Snacks and drinks

If you stop to have a break, you should have a snack and drink something warm (+25° C), even if you are not hungry or thirsty. The snack can be chocolate, raisins or nuts, if no meal is prepared. Having a snack also helps keep you alert.

Cold tolerance and individual differences

Some people tolerate cold better than others. If you are in good physical condition, you can move more and thus generate more heat for the body. If you are accustomed to cold weather, you do not get cold so easily. Large-sized people have more mass and fatty tissue that also insulates against the cold. Old people do not endure cold as well as young people. Some diseases also lower cold endurance, for example, diabetes, heart diseases, and asthma. Some medicines may also change the way the body reacts in cold weather. People usually adapt to cold weather in a few weeks and hands adapt already in a few days.

Winter clothing

Choosing garments

Look at the weather report and choose your clothes according to the coldest time of the day if you plan to stay outdoors for the whole day. Garments give very little comfort and protection if they are wet or sweaty. To avoid sweating you should pick your garments to suit the activity.

Breaks and clothing

Pack extra garments with you to wear during breaks, such as warm mid layer clothes or an extra jacket.

Functional winter clothing consists of adjustable layers. If you are wearing too few items, the body starts to get cold. If you are too heavily dressed and move actively, you may sweat so much that all your clothes become wet.

Children can easily catch cold and it is an adult's responsibility to check their clothing.

Layered clothing enables you to adjust your clothing depending on the activities and outdoor temperature. Clean clothes are warmer than dirty ones; dirt blocks the structure of the textile and prevents moisture from transferring from the skin.

Your guide can inform you further of proper, sufficient clothing in different weather conditions and when doing winter sports.

The inner layer

The inner layer keeps the skin dry and warm. It transfers moisture from the skin to the outer layers. Good materials are polyester (PES), polypropylene (PP), wool (WO), silk (SE) and two-layer materials. The skin feels dry when you use materials that transfer moisture such as polyester or polypropylene, and when the outer layer is wool. You should not wear cotton in cold conditions as it has a cooling effect when wet.

The mid layer

The mid layer adjusts the thermal insulation of clothing depending on the weather or activities. Good materials are wool, fleece and synthetic fur. 1-3 mid layers of clothing are sufficient.

The outermost layer

The outermost layer protects against cold, wind and moisture. The garments should be loose-fitting so that the layers underneath are not pressed and there is enough air inside the clothing. The outermost layer should be one size larger than one's normal size. Good materials are fabrics and fur that protect against moisture and wind. Warm lining materials are down feather, cotton wool and synthetic fur. Visibility is enhanced by using colours and reflectors.

Wind decreases the thermal insulation of clothing, as it transfers heat away from the clothing. This is why you should tighten cuffs and hems when it is windy.

Head protection

Head protection is important in cold weather, as most heat is lost from an uncovered head. The head should be protected against cold, wind and moisture. Make sure to protect the ears and face because they get cold most easily. You can adjust your clothing by using a scarf, hood, face guard, earmuffs or a headband.

Hand protection

Hand protection consists of different layers. Wear thin gloves underneath and thicker ones on top, so that you never need to have bare hands. Mittens give more protection than gloves. Remember to take an extra pair of gloves with you so that you can change them if they get wet.

Feet protection

Feet protection is most effective when you wear two pairs of socks. Wear socks made of synthetic materials underneath, and woollen socks that have good thermal insulation on top. Cotton is not a suitable material in cold weather because of its cooling effect when it is wet.

Winter footwear

Winter shoes should be one size larger than summer shoes. They should have a thick outsole to protect against heat transfer from the feet to the ground and a high leg to protect the ankles. Insulation can be increased by using insoles made of felt or other insulating material.

Grip of footwear outsole

The outsole pattern should be deep, 5–8 mm. An outsole made of soft and porous material does not harden in cold weather and is not slippery. In cold weather the material that provides the best grip is thermoplastic rubber.

You can also wear spikes in your outsoles. This is especially recommended when moving on slippery surfaces and ice.

Safety of winter travelling

Fortunately, serious accidents are quite rare. The best way to avoid an accident is to prepare for activities in advance. You should pay special attention if the activity involves motor vehicles, animals, heights or high speed.

Get acquainted with the activity

Find out if the activity is suitable for you. Are there perhaps different groups for beginners and more experienced participants? How long does the activity take and what kind of physical condition is needed? Can you participate if you suffer from a disease or you are pregnant? A professional service provider will be happy to answer your questions.

Leave a note

When travelling alone, make sure to tell somebody your route and estimated time of arrival. Find out if there is mobile net coverage along your route. Bear in mind that there may be shadow regions. Keep a spare battery with you in a warm place, in an inside pocket for instance.

Check the weather

Make sure to read the weather forecast at least once a day and change your plans accordingly. Be brave and admit that you cannot or do not want to continue because of the weather. Acknowledge the changing weather when choosing equipment.

Follow instructions

Follow given instructions for your own safety and that of your friends. Do not go solo! If you participate in a guided tour, ask the guide beforehand what to do in the case of an emergency. Listen carefully and ask immediately if you do not understand.

Stay on the map

Be aware of your whereabouts on the map. Memorize some landmarks that will help in locating you quickly if needed.

SNOW MOBILE SAFARI

Snow mobile safaris can take anything from a few hours to a whole day.

Never drive under the influence of alcohol. Keep to speeds that allow you to stop the snow mobile within your visible distance. In darkness and on winding routes, visibility can be poor. Always ask the guide if you need more advice on how to operate the brakes or the accelerator. Remember that under soft snow there may be rocks and tree stumps.

Use a face guard and goggles. A helmet is required by law. The control bars and safety bars of the snow mobiles have heaters; use them to prevent your fingers and feet getting cold.

Children especially need warm clothing for a safari. Those travelling behind the driver or in a sleigh must have warmer clothing than the driver. Pack extra clothes and warmers. Use an insulating seat mat and a blanket if needed.

Clothing layers	Material and clothing details
Inner layer	Choose a material that absorbs moisture and stays warm, such as wool (WO), silk (SE) or two-layer material in which the inner material transfers moisture, such as polyester (PES) or polypropylene (PP) and the outer material is wool, for instance.
Mid layer	You should have 1-3 mid layers. In low temperatures the best suited are airy materials such as fleece, wool and synthetic fur.
Outermost layer	Choose warm and wind-resistant clothing that has a down or cotton wool lining. Overalls provide more thermal protection than two-piece suits.
Headgear	Wear a hood under the helmet and use a face guard. Use the visor of your helmet to protect the face. If your helmet has no visor, use goggles.
Gloves	Wear two pairs of gloves, thinner ones underneath and thicker gloves or mittens on top.
Footwear	Wear at least two pairs of socks, thinner ones underneath and thicker ones made of wool, for example, on top. Use thermal insoles. Choose shoes that are large enough and have thick outsoles.

SLED DOG AND REINDEER SAFARIS

Dress warmly when going on a safari. If you travel in a sleigh, wrap a blanket around you and protect your hands and feet. Travellers generally need more clothes than the driver.

Do not get too close to the animals. They may behave unpredictably so stay alert at all times. Always ask the guide for permission if you want to pat them; dogs may bite or reindeer poke you with their antlers.

Steering sled dogs is physically demanding so the body generates heat. Stay in your own place in the line, do not overtake anyone. The guide will give you more instructions if you need.

Move and drink something warm during breaks.

Clothing layers	Material and clothing details
Inner layer	Choose a warm material such as wool (WO), silk (SE) or two-layer materials where the inner side is moisture-transferring material such as polyester (PES) or polypropylene (PP) and the outer side is wool, for example.
Mid layer	You should have 1-3 mid layers. In low temperatures the best choice are airy materials such as fleece, wool and synthetic fur.
Outhermost layer	In low temperatures the best choice is warm and wind-resistant two-piece clothing or overalls with a down or cotton wool lining. If the weather is windy and you do not sweat much, use clothing with membrane.
Headgear	Choose warm headgear that has a lining, make sure the ears are covered.
Gloves	Use a minimum of two pairs of gloves; wear the thinner ones underneath and the thicker gloves or mittens on top.
Footwear	Wear a minimum of two pairs of socks, the thinner ones underneath and the woollen ones or similar on top. Use thermal inner soles and spacious shoes with thick outsoles.

CROSS COUNTRY SKIING AND SNOWSHOE WALKING

Snowshoe walking and cross country skiing generate heat effectively. Choose the route to match your physical condition. You will quickly get cold if your clothes are sweaty and wet. In any longer activities your clothing should be such that you sweat as little as possible. When you are moving, you only need lighter clothing.

Wear clothing appropriate to the weather, route and exercise. Notice that you may feel a bit cool before starting off. Choose breathable clothing with adjustable vents. Prepare for breaks by packing an extra jacket, a thick woollen sweater or a fleece jacket.

Also pack an extra pair of gloves, something to drink and high-energy snacks, such as nuts or chocolate.

Clothing layers	Material and clothing details
Inner layer	Choose a technical inner layer, for example polyester (PES), polypropylene (PP) or wool blends.
Mid layer	Wear easily adjustable clothing that can be reduced if needed. Choose moisture absorbing and airy materials, such as fleece and wool.
Outermost layer	Use clothes that have an adjustable hem and ventilation options. In mild weather the best alternative is clothing with a membrane that protects against moisture and wind and is breathable. Sweating may be condensed and freeze inside the garment thus decreasing its breathability. In low temperatures clothing without a membrane is the best material.
Headgear	A good choice is a knitted hat.
Gloves	Use skiing gloves or mittens.
Socks	Wear moisture-transferring synthetic socks underneath and woollen socks on top.

DOWNHILL SKIING AND SNOWBOARDING

Use a helmet. This will protect your head from injury if you fall or bump into something. When snowboarding, use wrist guards and back padding.

The wrist guards absorb shocks when falling and thus prevent wrist injuries. The back protector or armour protects the back against injuries.

To protect the face against the cold use a face guard if the weather is very cold and windy.

If you rent the skis or snowboard, bear in mind that they may behave differently from your own. Therefore you should first get acquainted with them by testing their qualities on the slopes.

Remember to give way to people skiing in front of you.

Clothing layers	Material and clothing details
Inner layer	Choose a synthetic or wool blend, long-sleeved and long-legged, skintight undergarment.
Mid layer	Use 1-3 mid layers, depending on the temperature.
Outermost layer	Wear a jacket and trousers with a membrane that protect against the wind. The jacket must have a zip pocket or some other place to put the lift card. Choose a jacket that has adjustable vents in the sleeves and sides. Tighten the hem of the jacket to prevent wind from getting into it. Choose trousers that are meant for skiing with a high back, wind covers, and legs spacious enough for skiing boots.
Headgear **Face guard**	Wear a hood underneath the helmet. Use a face guard when the weather is very cold and windy.
Gloves	Wear long-sleeved gloves that protect the wrist. The gloves must suit the sleeves of the jacket. Good gloves are windproof, have a lining and an adjustable wrist, and provide a firm grip of the poles.
Socks	Wear synthetic socks that transfer moisture, and woollen socks on top of them.

ICE FISHING

Ask the guide about the thickness of ice and possible streams.

Choose warm garments that protect against the wind. Wear headgear that covers the ears. Protect hands and feet well. Wear shoes with thick, firm outsoles. You may get cold as you sit in an open, windy place for a long time.

Carry ice claws with you, for example hanging around your neck. If the ice breaks under you, dig the claws into the ice and use them to pull yourself from the water.

If you fall into the water, use your backpack to float. Tighten the backpack well around your waist. Pack your belongings into watertight plastic bags before putting them into your backpack.

ICE SWIMMING

Ask a friend to come with you.
Do not go ice swimming alone.

First warm the muscles by, for example, walking. Be careful, the path and the steps might be slippery.

Protect your feet and use some headgear if you want to. If you first go to the sauna, cool down for a short while before going into the water.

Do not jump into the water. Use the steps.

Do not hurry; take your time to feel the water.

Do not panic if you have difficulties breathing because of the cold water.
This is quite normal and only lasts a few seconds.

Consult your doctor if you have a disease or are doubtful about the effects of ice swimming.

STAYING OVERNIGHT IN AN IGLOO

It is possible to stay overnight in an igloo made of snow. Inside the igloo the temperature is approximately -5° C even if the outside temperature is -20° C. Staying overnight in an igloo is not hazardous if you are healthy and have the proper gear.

Tourist centers often provide sleeping mattresses, a reindeer skin and a sleeping bag.

Wear long-sleeved, long-legged, warm under garments and headgear, gloves and socks.

Crawl into the sleeping bag, tighten the string of the bag located roughly around your shoulders and close the sleeping bag so that only a small hole for breathing is open. This way there will be no moisture inside the sleeping bag caused by breathing.

If your sleeping bag is large enough, you can remove excessive clothing later without opening the bag. Store the clothes you are not wearing in a warm place inside the sleeping bag.

Take something warm to drink with you in a thermos flask.

Enjoy the winter, polar night and snow.

STAYING OVERNIGHT IN WILDERNESS HUTS

Open wilderness huts

Open wilderness huts are free of charge. They are meant for temporary rest and overnight stays (1–2 nights) for individuals travelling on foot. Groups and travellers on paid tours can only use the hut during the daytime.

Open wilderness huts have a stove for heating and a set of dishes for food preparation. Bring your own sleeping bag and mattress.

There may be many dwellers at the same time so you have to take others into account. Give room to newcomers.

Reservable wilderness huts

Reservable wilderness huts are locked and subject to a fee. The huts must be reserved for a specific time, which cannot be exceeded. Reservable huts have the same equipment as open huts.

Huts must be kept clean and tidy and all rubbish must be disposed of.

Sometimes the weather may change so rapidly that you have to stay longer in a wilderness hut than planned. Therefore always bring an extra supply of food with you and an extra battery for your mobile phone.

EMERGENCY

Even the most skilled and experienced winter traveller may sometimes face an emergency. Most typical injuries are caused by snow mobile crashes, falling on slippery surfaces and straining some part of the body.

In case of emergency

- ✔ **Remain calm; you have to be able to act**
- ✔ **Evaluate the situation**
- ✔ **Call 112 (emergency number in Finland)**
- ✔ **Administer first aid**
- ✔ **Keep injured people warm**

List of supplies

- adjustable layered clothing
- extra clothes for breaks
- extra gloves
- map
- compass or navigator
- mobile phone and extra battery; keep in a warm, dry place
- first aid supplies, space blanket (thermal blanket)
- matches or lighter, keep in a watertight bag
- something to drink in a thermos flask
- high-energy food; chocolate, raisins, nuts

Notes

This guide will help you prepare for travel in the Finnish winter.
It provides information on the special features of the Finnish winter
and the weather, and the best ways to enjoy them.

You can enjoy the winter in many different ways. Join an action-packed snow mobile safari or enjoy Finnish nature skiing or walking on snowshoes. A sled dog safari, a reindeer safari or ice fishing are unforgettable experiences.
Why not stay overnight in an igloo?

You can better enjoy the Finnish winter if your clothing is appropriate;
wear layered clothing and protect the head, hands and feet.
The colder it is, the more important it is to stay active.
Choose winter activities that appeal to you most.

Leverage from the EU 2007–2013

European Union
European Social Fund

Finnish Institute of Occupational Health