

STANDARDS IN SPORT: POLAR EXPEDITIONS

Polar expeditions push adventurers to the 'limits of human endurance', but whether for research, charity or merely fun, it is their high-tech apparel that keeps them safe.

Journey to the ends of the earth

Ben Saunders describes the sense of achievement after completing a 2,900km South Pole trek, which claimed the lives of Captain Robert Scott and his team a century before, as "impossible to comprehend". He completed the journey with Tarka L'Herpinier in 105 days, securing the world record for the longest polar journey on foot. "It has been a mammoth undertaking that has tested the bounds of our bodies and minds each and every day," he said at the end. "Tarka and I feel a combination of awe and profound respect for the endurance, tenacity and fortitude of Captain Scott and his team."

On such a journey, the right clothing and equipment can mean the difference between life and death. Theirs were custom made by the UK-based Mountain Equipment, which added pockets to their sleeping bags to keep batteries warm, and tailor-made their jackets with new breathable material. Although the company focuses on mountaineering and climbing, Polar trips share many of the same needs when it comes to performance. "Because it's such a specialist niche, you'll find a lot of the equipment that gets used on North and South Pole trips comes from the world of mountaineering," explains Mr Saunders. "There are a few important differences though, and one of these is fabric. There's not a lot of

Fjällräven Polar takes place far above the Arctic Circle in Norway and Sweden. For four days, participants drive dog sleds through the wilderness, from Signaldalen on the Atlantic coast across the subarctic tundra to the forests near Jukkasjärvi – a distance totalling about 300 kilometres.

 Fjällräven



rain in Antarctica – it's the driest continent in the world – so having a waterproof membrane is superfluous. And even in sub-zero temperatures, we're generating a lot of heat pulling a 200kg sledge, so breathability becomes the most important factor."

There are no steadfast rules for clothing and equipment when it comes to polar expeditions, merely guidelines, but these are followed religiously. Because of the pristine nature of the landscape, there are other kinds of regulation. For instance, the Norwegian Polar Institute requires that anyone planning activities at the North or South Pole must inform them of their plans at least a year before. Visits must also be carried out in accordance with the Antarctic Treaty (1959), which encourages environmental stewardship. "All equipment, including clothing, communication gear, navigation equipment, first-aid kits and logistics equipment must be in prime condition," says the treaty. "The expedition must carry an adequate supply of spare parts. The equipment must also function efficiently under Antarctic conditions." At least one of the participants must be proficient in advanced first aid.

A number of brands specialise in these items – particularly the Scandinavians such as Bergans of Norway, 66 degrees North and Fjallraven, which organises annual Polar expeditions, as well as The North Face and Montane, among others. Others like to test their gear in the extreme conditions to prove they are fitting for harsh climates. "Nothing is left to chance in the development of our expedition clothing," says Bergans of Norway. "Even colour selection has a function. To ensure maximum visibility, we use red as a primary colour and have added black panels."

Importance of layering

The key to staying warm – and ultimately, alive – is layering, not only because it will trap air, an insulator, but also because it helps to vary the clothing depending on the activity. "What we don't want people to do, especially when they're travelling, is to get too warm," says Paul Ward, who has spent time in Antarctica as a researcher. "If you get too warm you sweat; when you stop, sweat freezes and you get cold."

The outfit begins with a thermal baselayer: a top and leggings. Next are salopettes, which are more insulating than trousers, and a fleece top, to trap air. Depending on the activity, a windsuit can be worn over these, then down salopettes and finally a down jacket with a hood. Bergans' windproof and water-repellent microfibre or waterproof and breathable jackets reach to the thighs and feature ventilation zips to air them as well as several large pockets. The jackets have two large breast pockets with zips positioned



Bergans Expedition Down Parka in signature primary red and black panels.

 Bergans of Norway

above the sleigh belt or hip strap on the pack.

It is vital that all areas of the body are covered by at least two layers, especially those from which heat escapes more readily, such as the neck and head. Neck gaiters are worn, plus at least one hat. Fleece hats with ear flaps are useful for protecting the ears, or balaclavas or 'gorilla masks', which give the extra advantage of warming the air slightly before it reaches the lungs. A windproof hat is worn on top, and a hood trimmed with fur. Sunglasses with high UV protection or goggles with a neoprene face mask underneath protect the face.

Extremities – fingers and toes – need to be well protected as they will be the first to succumb to frostbite. Layering is key here, too: a thin glove is worn underneath in case the traveller need dexterity to perform tasks. On top of the first glove are mittens, which are better than gloves as they allow the fingers to move inside, and are often worn to the mid-arm. All zips have long pulls to ensure easy operation. Of course, the choice varies according to the conditions and activities.

Two pairs of wool or wool-blend socks go inside boots, which also vary on the activity: thick soled, insulated versions to which crampons can be attached; neoprene boots if the activity is based around water; mukluks (reindeer skin) for use around camp; or expedition double-soled boots with built-in gaiter.



Mountain Equipment-sponsored Ben Saunders set the world record for the longest polar journey on foot, alongside Tarka L'Herpiniere.

Ben Saunders

Primaloft-insulated Mountain Equipment compressor vests that served us so well) and flipped back his hood as if he were too hot," says Mr Saunders. "I know these are tell-tale signs of hypothermia, yet I was on the limit myself and failed to react."

The food drop meant that the pair fell short of their goal of an unsupported trip, making it "imperfect", in Saunders' words. "For more than a decade I've been talking about how it would be a journey that was at the very limits of human endurance. In hindsight, I wonder if I really appreciated how prescient and accurate that glib statement was."

Aided by outdoor brands' innovations, performance textiles and smart design, an increasing number of people will be able to experience the sense of achievement of completing challenging journeys – though perhaps not as challenging as Saunders' Scott Expedition, which was recognised as remarkable, despite his disappointment.

"The biggest lessons – to me at least – of this very hard walk, are perhaps that compassion is more important than glory; friendship and kindness and taking care of each other," he admits. "The joy of being outdoors and alive in the wild, pushing ourselves harder than anyone will ever understand, will I think prove more wholesome and satisfying than the pride of any public recognition on our homecoming."

Tell-tale signs

Aside from the researchers and professional visits, there are plenty of people who venture around the Arctic for fun: to test apparel, for personal enjoyment or for charity. The right gear must be combined with training, both physical and survival. "The key is to regulate body temperature through exercise: if you're cold you walk a bit faster, if you get hot you walk a bit slower," says Mr Ward. Travellers are taught not to grip walking poles too tightly, to prevent cramp, and tent poles must not be lifted too high – this strains the heart. They also learn that one of the most important weapons in the polar explorer's arsenal is food. "Your metabolism will adjust to cold temperatures after a while and burn fuel to warm you up – as long as it has enough fuel," he adds; a daily diet of 6,000 calories is recommended.

In the end, this was where Ben Saunders came unstuck: 70 days in and 45km from their nearest food dump, the pair made the agonising decision to radio for an air drop. They had fallen short of the pace they had calculated, meaning their food supply was insufficient. The effect on the body of surviving on half rations became apparent: "Tarka stopped mid-session, in a howling blizzard, to remove his outer gilet (the



The Compressor Vest from Mountain Equipment was an essential part of South Pole Trek teams layering system.

Mountain Equipment