

MOUNTAINEERING KNOWLEDGE & SKILLS

Sheet 2 Version 1:1 Revised: 30062006
Written & Compiled by Berend du Plessis © Venture Forth 2006

Footwear

In most activities, correct footwear can be considered to be one of the most important pieces of equipment.

The main elements in choosing the correct footwear are:

- Conditions anticipated
- Fit
- Support & weight
- Durability vs. cost

Inappropriate/incorrect footwear can negatively affect your feet, ankles, knees and back. Taking in account the type of activity planned and the conditions anticipated is the first consideration. Outdoor footwear can be divided into a couple of different categories, namely:

- Mountaineering boots
- Hiking boots
- Approach shoes
- Trail runners
- Other

This footwear all has different designs which are most appropriate for their different activities.

Different manufacturers use different *lasts* around which they design the shape of their footwear. This is very important because not everybody's feet are the same shape. That is why a boot might fit someone perfectly while it will hurt someone else's feet. Therefore, if someone is buying footwear, he/she needs to go around to different shops and try on as many different pairs from different manufacturers as he/she can to find the perfect fit. The most expensive boots are not necessarily the best boots available for an individual!

The different types of footwear have different levels of support for your feet. Mountaineering boots in general, offer excellent ankle support and normally would have a full length steel shank in the sole giving support underneath the foot. These features will have an effect on the weight of the boot. On the other side of the spectrum, trail runners need to be light weight and therefore offer little support.

Cheap boots are not known for excellent durability. The last thing someone wants is a pair of boots that he/she has to replace within six months. If, however, the cheapest boots is the only boots with a perfect fit for someone, it would essentially be the best buy for that person.

Mountaineering Boots

These are normally made from hard, roughout leather, although plastic boots with a soft thermal inner boot is also available, but not commonly used in South Africa.

A good sole, like Vibram, which offers a perfect compromise between grip and durability, is very important. Inside the sole should be a full length steel shank, limiting flexing of the sole.

Good boots will have a rubber rand, protecting the boot at the places most susceptible to scuffing. Mountaineering boots should be crampon compatible.

Hiking Boots

Hiking boots can be sub-divided into Trail boots and Off-trail boots.

Off-trails boots is similar to mountaineering boots, but with a slight downscale with regards to support.

Trail boots are normally made from softer suede leather or fabric.

Approach Shoes

These can be described as shoes which are suitable for easy day-trails.

Trail Runners

These are lightweight shoes made for running on trails.

Other

Rock shoes are tight fitting shoes with very sticky rubber soles for grip, recommended for rock climbing and pulling an eighteen-wheeler.

Sandals are great for casual wear or for taking with on a hike where you expect to cross some rivers.



Hiking boots



Trail runners



Rock shoes



Mountaineering boots

Care and Maintenance

Taking good care of footwear is imperative to extend its lifetime and to keep it waterproof. Special product ranges (like *Nikwax*) are available to clean and waterproof footwear. Waterproofing and breathability are important factors in boots' moisture management. Using products like Dubbin or shoe polish is not appropriate, because it clogs the leather-pores and thus affecting breathability.

Footwear should never be dried next to an open fire, heater or in direct sunlight.

How to Fit Hiking Boots

Knowing how to fit footwear is very important, because you often find salespeople not being able to appropriately help you in this regard. The best time to fit footwear is in the afternoon, because feet swell during the day. Boots should be fitted with the socks which the person is intending to wear with the boots.

Before lacing the boots, the toes should be kicked to the front of the boot and there should then be space enough for two fingers between the heel of the foot and the back of the boot. This is to ensure that the toes don't touch the front of the boot when walking downhill or kicking rocks.

When properly laced up, the person should walk around a bit. If the person feels any discomfort, he/she should consider another boot. There should be no movement of the heel inside the boot.

Backpacks

A wide variety of different types of backpacks are available on the market today. Different sizes and design offer a choice of packs most suitable for the intended use.

Some backpacks are designed with only one big compartment, which means a nice slim pack, whilst others are designed with small external side pockets, which some people like because of easier organisation and management.

Support and comfort is an important aspect especially with bigger packs. The important features regarding support and comfort are a nice broad and soft waist belt, and a sturdy back support system.

Making sure the waist belt fits around your waist and the back system is suitable for the length of your back is the most important factors when fitting backpacks.

Hydration Packs

These small and lightweight packs are designed mainly for the mountain biker or adventure racer. It is designed to carry a hydration system and not much more. It is a fast and light product which is normally made from a lighter, less robust fabric.

Day Packs

A variety of different styled day packs are available. The capacity of a day pack ranges between 20 and 45 litres. It is enough to carry the necessary on a day hike. Some come with space to put in a hydration system.

Midsize Weekend Packs

With capacities ranging between 40 and 60 litres, these packs will generally be suitable for 2 to 3 day trails. The fabric used in these larger packs becomes a bit more robust. This is the size range where support begins to become a very important factor. One should look for a proper waist belt in a decent pack.

Large packs

Ranging from 60 litres upwards, these packs become suitable for the longer trek. With the capacity being more, the packs will inevitably be heavier and that is where good support becomes an imperative factor. In addition to the waist belt, these larger packs should have a sturdy length-adjustable back support system.

Sleeping Bags

The two main categories of sleeping bags concerns it's filling. Firstly you get natural down-filled sleeping bags, and then you also get synthetic filled sleeping bags. The filling is what traps body-heated air for insulation in what is called the *loft* of a sleeping bag.

The main difference between down and synthetic bags is that down bags have a better warmth-to-weight ratio. This means that a down sleeping bag's will weigh considerably less than it's synthetic equivalent of the same temperature rating. The down bag will also be a more compact package.

Another big advantage that down bags has over synthetic bags is that they will have a much longer lifetime. On the flipside, synthetic bags are normally a lot cheaper than down bags. Also, synthetic bags will not lose its insulation properties when wet.

Sleeping bags are all graded with a temperature rating which gives an indication as to at which temperature the bag will keep you comfortably warm.

The two main sleeping bag designs are called *rectangular* and *mummy cowl*. Rectangular shaped sleeping bags offer a generally more comfortable sleep with lots of space inside the bag.

The more technical mummy design is tighter fitting giving you a warmer sleep, because the loft is close to the body. It is also popular because of the weight-cutting due to its tapered design.

A sleeping bag's wall construction refers to the design of the channels in which the filling is spread. Examples of wall constructions include the *box wall* and *vee channels*. The aim of the designs is to prevent cold spots at seams.



Vee channelling

Care & Maintenance

The most common mistake when it comes to caring for your sleeping bag is rolling it up into the stuff sac. Stuffing the sleeping bag randomly into the stuff sac will ensure a much longer lifespan. Sleeping bags should also never be stored in their stuff sacs when not in use, but rather be stored loosely in a cool, dry place.

After returning from a trip, it is a good idea to hang your sleeping bag for a while to air it before storing.

When washing a down sleeping bag, special down soap should be used. The sleeping bag should be left to dry in a clean shaded area, lying horizontally to prevent clumping of the down.

It is a good idea to use your sleeping bag with an inner liner. You will find that the bag is upgraded by a degree or two and you will often only need to wash the liner.

Sleeping Mats

Sleeping bags keep you warm because it traps a loft of body-heated air around your body, but the filling below you are flattened by your body, preventing the filling to loft. The problem is that you are now left without insulation from the ground.

That is why you need a mattress to sleep on, preventing the cold to penetrate from below.

Closed cell pads are made from a closed cell foam and offers excellent insulation. These mattresses are reasonably cheap.

Self-inflatable mattresses are a far more expensive option, but offer a much superior level of comfort. Some models are also more compact packaged than the closed cell mats.



Closed cell pad



Self-inflatable mattress

Tents



Bivy bag



Lightweight shelter



Dome tent



Geodesic tent

Various tent designs are available. Domes probably are the most common tents. They are lightweight and extremely easy to pitch.

A-frame tents have become somewhat of a rarity, probably because they aren't very sturdy and not that easy to pitch.

Tunnel design tents is becoming increasingly popular in the camping market, but is also used by mountaineers. Tunnels can withstand much higher winds than domes.

Bivy's are extremely expensive, especially if you consider what you get. They are nothing more than a waterproof cover for your sleeping bag.

Geodesic designs are the most popular expedition tents. It is an extremely sturdy design which can handle very strong winds, as well as some weight of snow on top of it.

Most tents have a double wall construction, which means that it has a breathable inner tent, with a waterproof flysheet over it. There are, however, tents available with a single wall construction. These tents only have one waterproof and breathable flysheet. These tents are far more expensive, because making such an advanced fabric which is waterproof as well as having superior breathability, is an expensive process. Bivy's are made with the same principle of have one layer of fabric. The main advantage of having a single wall tent is cutting down on weight.

Some tents have fibreglass poles, whilst others have aluminium poles. Aluminium poles are superior, because they are lighter and are more suitable to cold conditions.

Further discussion on tents will take place on your practical outing.

Cooking Equipment

Stoves

The main factors you are looking for in stoves are reliability and field maintainability. There are various different stoves available today. The two main categories are *Liquid fuel stoves* and *Butane gas stoves*. Liquid fuel stoves work on various different liquid fuels like benzene, paraffin or petrol, which is placed in a container to be pressurised by hand.

Butane gas stoves work on pressurised butane cartridges. If one considers the initial unit prices of the stoves, the butane stoves are a lot cheaper than the liquid fuel stoves, but in the long run liquid fuel stoves can work out cheaper due to lower running costs.

Butane stoves are very convenient and easy to set up, while the liquid stove takes a bit more time.

However, the liquid fuel stoves are a lot more reliable in strong winds, cold temperatures and high altitudes.

Some top-of-the-range stoves offer the convenience of being two-in-one. They can burn on liquid fuels and on butane gas cartridges. They are obviously even more expensive.

Cookware

An infinite variety of cook sets of different sizes and with different gadgets is available. Normally they would be made from *Stainless Steel*, *Non-stick Aluminium* or *Titanium*.

Stainless steel offers good durability, while non-stick aluminium is lightweight. Titanium is more expensive, but offers lightweight durability.



Stainless Steel Cook set



Liquid Fuel stove

Fluid Containers

Reliable containers for your valuable fluids are very important. Some excellent hard-to-break plastic bottles are available, and hydration systems are also a good option.



Nalgene water bottles

Water Filtering Equipment

Generally all flowing water in the Western Cape mountains are drinkable. However, all still-standing water as well as flowing water in certain other areas should be treated before consumption. Chlorine tablets is a cheap option, whilst filters and other devices offers a superior drink.

Lighting

Having reliable light available is imperative, even when you don't expect to be caught in the dark. Headlamps are becoming ever more popular. The idea of having light where you need it with two hands free is very attractive. Normal handheld torches are still generally cheaper.

The advances in LED (light emitting diode) technology have revolutionised the headlamp industry. LED's uses a lot less battery power than normal torch bulbs. These days high intensity LED's are available which can rival the power of normal bulbs. LED's also have a much longer lifetime than bulbs.

Lanterns working on butane gas cartridges are still popular to take on hikes. The main disadvantages are the weight, the high fuel cost, and the fragility of the mantles and glass.



Headlamp



Gas Lantern

Time & Navigational Products

These will be looked at in more detail during the Navigation Module.

Compasses

Compasses work with the earth's magnetic poles to orientate. They are calibrated to work in a certain region on earth. So a compass made for zone one won't be accurate in zone 2. Some more expensive compasses are able to work globally.

GPS

Global Positioning System units receive signal from over 30 satellites situated in orbit around the earth. The GPS unit need signal from at least 3 satellites simultaneously to be able to triangulate your position. The more satellites it receives simultaneously, the more accurate is the positioning.

Basic models can give your position as coordinates and in relation to a loaded base map. It can also track your movements and mark *waypoints*.

With more expensive models you can get a variety of extra features like altimeter, barometer, more detailed downloadable maps, auto-routing etc...



Garmin Quest GPS

Watches

Watches aren't just a timekeeping device anymore. Watches can include features like altimeter, barometer, electronic compass, GPS, heart rate monitor etc...

Trekking Poles

A couple of years ago, if you saw someone walking with trekking poles you could bet that he/she was American or German.

These days trekking poles is ever becoming more popular. They give fantastic extra support, which can be appreciated when carrying a very heavy pack and reduces wear and tear on knees and ankles. When trekking poles are used, you incorporate use of your arms into the walking process, thus reducing strain on your legs, helping them to go further before becoming tired.



Trekking Pole

Rope

A rope is a very important and useful object for a mountain walking group to have. Possible uses include managing steep slopes (will be dealt with in the Safety on Steep Ground Module), navigation during restricted visibility, creating handrails, keeping a group together, building a shelter, lowering or raising packs and crossing rivers (use of rope for crossing rivers only in extreme cases and should be used vigilantly; will be dealt with in River Crossing Module)

for a HIGHER EDUCATION and all your mountaineering needs....

Venture Forth International - Cape Town School of Mountaineering

Telephone: 086 110 6548 Mobile: 082 770 7876 Email: info@ventureforth.co.za

www.ventureforth.co.za & www.ctsm.co.za



VENTURE FORTH
i n t e r n a t i o n a l