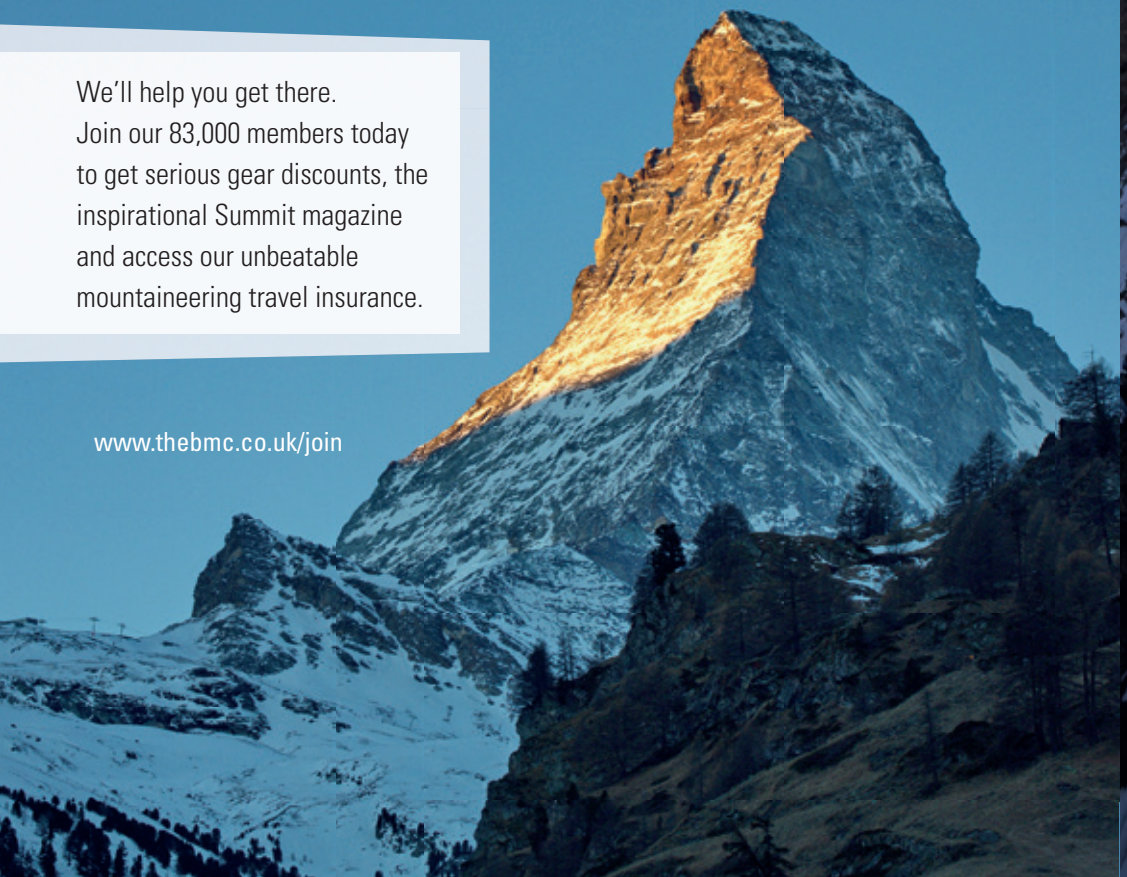

New Alpinists

YOUR FIRST STEPS TO ALPINE CLIMBING

CONTENTS

New Alpinists

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Working together: The BMC and the Jonathan Conville Memorial Trust

Providing quality mountain training for young people

www.jcmt.org.uk

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1. The alpine arena

Alpinism offers endless potential for mountaineers, climbers and skiers alike, and can be defined as mountain climbing in high, often glaciated areas, ranging from walks and scrambles through to technical climbs on snow, rock or mixed terrain.

People of all ages, backgrounds and abilities enjoy alpinism, but the prospects of learning new skills in such a harsh and complex environment can seem overwhelming on first acquaintance.

The European Alps are the home of modern alpinism, offering unrivalled ease of access to the high mountains, often by cable cars and funicular railways ascending from bustling tourist towns and quaint alpine villages.

The mountains are part of the cultural heritage of these alpine regions, rich in the traditions, languages and food of the local people, shaped by the landscape around them. The reliable weather and fantastic local amenities draw people from around the world, but there are still places away from the crowds where peace and solitude can be found amongst alpine meadows and glaciers.

The variety of experiences on offer in the Alps is endless and there are mountain activities on offer for all ages and abilities. The physical and mental challenges of attempting any of the classic alpine itineraries can be tough, but with appropriate planning and experience, even the most extreme challenges become reasonable aspirations.

In this booklet we explore the skills, knowledge and equipment required to become an alpinist, in the hope of putting you in the right direction to have many years of safe and memorable adventures in the high mountains.

2. Trying alpine climbing

There are several tried and tested ways of starting out as an alpinist and learning the essential skills.

Ask a friend

You may have friends who are alpinists. Learning from them could be the most convenient and fun way to be introduced to alpinism.

Jonathan Conville Memorial Trust

The Trust provides subsidised courses to encourage and assist young people to train for and pursue their love of the outdoors in the spirit of adventure. Qualified Mountain Guides deliver the courses each year in the Alps, Scotland and North Wales.

The Trust was established by the family of Jonathan Conville after he died on the Matterhorn in the winter of 1979. Aged just 27, Jonathan was a sound and ambitious climber who identified strongly with the outdoors where he constantly found challenge.

www.jcmt.org.uk

WATCH: Explore the Alps on a Conville Course

www.thebmc.co.uk/conville

Join a club

There are a wide range of BMC affiliated climbing and mountaineering clubs, many of which hold alpine meets every year.

www.thebmc.co.uk/find-a-club

The Alpine Club

The Alpine Club is the oldest mountaineering club in the world, and many of the world's finest mountaineers are members. The club is a great way to network, exchange information, plan adventures, and meet new climbing partners.

The club offers a varied and substantial programme of meets, from regional lectures and weekends in the UK to expeditions abroad. The club owns a hut in the Lake District and has its base in London offering free bunkhouse accommodation and an unrivalled collection of books, photographs, paintings and artefacts. Members can apply to the Montane Alpine Club Climbing Fund that helps finance expeditions abroad.

There are three progressive categories of membership open to all ages, with big discounts for those aged under 25.

www.alpine-club.org.uk

Hire a Mountain Guide or International Walking Leader

Many alpine tourist offices will contain plenty of information on their local mountain activities. A qualified Mountain Guide or International Mountain Leader may be there to answer your questions.

Here you can hire an IFMGA Mountain Guide or UIMLA International Mountain Leader for guided trips or to teach you the basics. Alternatively, search online through guiding agencies and private providers for a Mountain Guide who can cater for your needs.

You can also hire a British Mountain Guide or International Walking Leader before you head out. These professionals commonly get booked up long in advance for the peak season of June to September so plan your trips accordingly.

Mountain Guides:

www.bmg.org.uk

International Mountain Leaders:

www.baiml.org

READ: All you need to know

www.thebmc.co.uk/alpine-know-how

Go on a course

Plas y Brenin, the National Mountain Sports Centre, delivers introductory courses each summer in the Alps, as well as alpine preparation and skills courses at their base in North Wales. All alpine courses are delivered by qualified Mountain Guides.

www.pyb.co.uk

"Climb if you will, but remember that courage and strength are nought without prudence, and that a momentary negligence may destroy the happiness of a lifetime. Do nothing in haste; look well to each step; and from the beginning think what may be the end."

Edward Whymper – Scrambles Amongst the Alps

Risk

High mountains are dynamic environments so a high margin of error is required when climbing in them. Some hazards cannot be eliminated, but can be reduced to a reasonable level by good planning and preparation. Experienced alpinists strive hard to know their own limitations and to match each mountaineering challenge to their abilities. Alpinists should also be familiar with basic emergency procedures and how to summon outside help.

3. Being an alpinist

Alpine areas bring people of all nationalities and backgrounds together in one unifying theme – to enjoy the mountains. Consider your impact on the mountain environment and the alpine communities you visit.

Environmental sustainability

Some areas do have their own environmental policies, most often in National Parks. These can range from sticking to marked trails, using set camp locations and not creating campfires. Ensure you follow the rules and traditions of the areas you visit.

Considering the travel to reach the high mountains and the infrastructure in place to support tourists in many alpine regions, your carbon footprint may be significant. You can reduce your impact by using public transport, and keep the mountains clean by picking up litter and leaving no trace when climbing in them. Enjoy the mountains and remember the maxim: "Take nothing but pictures, leave nothing but footprints."

Alpine good practice

Be polite to other mountain users and remember that although good manners are universal, they can be expressed in different ways across the world. No one person has the right to sole access; when more than one team are climbing the same route it's good practice to allow faster parties to pass where reasonable. Stop if your actions are going to endanger others, and offer help if somebody is hurt or in danger.

Alpine style is often heralded as the purest style of ascent where a party is self-sufficient and climbs in a single push ascent.

Learn about the ethics of the area you're visiting and speak to fellow mountaineers about what they think is reasonable. Some areas may have preferences for certain styles of ascent to preserve their unique climbing heritage.

READ: Six beginner routes
www.thebmc.co.uk/alps-beginner

4. Preparing for alpinism

Alpine mountaineering calls upon all the skills and knowledge that you have built up in the British hills and then some! Take time to evaluate your mountaineering strengths and weaknesses.

General climbing and mountaineering skills

Everything that you have learnt in the British hills will help you adapt to the long days and rarefied atmosphere of the alpine environment, but you should be prepared to find movement harder at altitude and the wide temperature range can be quite debilitating.

Good teamwork is key to efficient travel through the high mountains. Long mountain days on scrambling terrain with your alpine climbing partner provide the ideal training.

WATCH: How to scramble
www.thebmc.co.uk/scrambling-films

Winter mountaineering apprenticeship

Snow and ice can vary enormously, and on a typical alpine day you will encounter all sorts, from bullet-hard nevé or ice in the morning and knee-deep slush in the evening!

Safe travel in the Alps requires efficient movement with and without crampons. You also need to be able to climb rock steps wearing crampons rather than wasting time removing and then replacing them. Mixed winter climbs in Scotland provide a good grounding.

Familiarity in using an ice axe for support, self-arrest and cutting steps is useful for crossing any snow patches. Winter mountaineering in Britain will help develop these skills and help prepare you for technical mixed and ice climbs.

WATCH: Snow and ice skills
www.thebmc.co.uk/winter-films

Fitness preparation

Improving your cardio-vascular fitness will help you realise your alpine goals. Running, cycling and swimming are great activities to achieve this, or any sport done regularly, such as football, netball or tennis.

Invest in some specific training to match your aspirations. Those looking at classic mountaineering routes or ascents such as Mont Blanc should aim to replicate this with long back-to-back days out on the hill with a similar weight rucksack. Those with rock or mixed climbing aspirations will benefit from packing dozens of pitches into a weekend.

Alpine starts are early! Very early!! There is no harm in starting a hill walk in the early hours to see how your body reacts.

Don't confuse fitness preparation with acclimatisation. To make the most out of an alpine trip you will need to be well acclimatised as well as fit. Don't be disappointed to be breathing hard whilst working at a low intensity above 3,000m when acclimatising.

Time constraints and interest levels are often quoted as the biggest factors for people quitting their training or dietary regimens. With this in mind, it's very important to structure your training realistically around the time you have. It is better to ramp up training gradually rather than to burn out.

No matter how much physical training you do, it's often the psychological side that lets alpinists down. Try to reinforce positive experiences and don't be put off by the occasional setback; you can slowly adjust to fears and worries, and bring them down to a manageable level.

Be realistic of the hazards you may encounter and build escape options into your plans. Finally, don't worry unduly if what you're attempting feels difficult – that's probably why you chose it!

READ: Training for the New Alpinism
www.thebmc.co.uk/alpine-training

Planning

Every adventure requires an awareness of your own strengths and weaknesses, and alpine mountaineering is no exception.

For your first alpine routes there are a lot of unknowns, so choose routes with simple approaches and descents, several grades below what you climb in Britain, and keep below 3,500m in altitude.

The guidebook's suggested timings for hut approaches and routes are excellent benchmarks against which to measure your ability. If you are beating guidebook times and wishing to progress to harder challenges, a useful rule of thumb is to choose a longer route, a technically harder route, or a higher summit – but choose only one of these each time as you step up the challenge.

Play to your strengths. If you're more confident on sport climbs than ice climbs then there are plenty of sport climbs with glacial approaches for you to enjoy.

It's worth remembering that the scale of alpine routes can add an extra level of intimidation for your first routes, so this is another reason to be conservative with route choice. This is particularly true of ice climbs, which may have a low technical grade but can feel incredibly exposed when on large alpine faces.

Lines following couloirs feel more akin to British winter ice climbs and so may provide a more familiar environment. However, these lines are also channels for avalanches and rockfall, so an early start and finish is important - sometimes completing the entire climb in the dark is recommended.

Acclimatisation

The human body can adapt to living at different altitudes, but it takes several days for this process to complete. Individuals vary considerably in their ability to adapt, largely regardless of physical fitness.

The highest summits in the European Alps are well under 5,000 metres above sea level, so most people can adapt within a week or two to getting up and down a 4,000m peak.

Following a few simple steps should allow most people to acclimatise effectively.

- Above 3,000m, avoid overnighting at altitudes higher than you have climbed recently "Climb high, sleep low".
- Allow up to a day for every 300m gained above 3,000m
- Get plenty of rest, eat lots of food and drink lots of water. The body needs resources to adapt.
- Headaches and nausea are signs that your body is not yet ready to continue gaining height, particularly if an aspirin does not help. Descend to the valley if these problems persist for more than a day.
- Think of altitude, route length and technical difficulty as points on a triangle. Increase only one for each new route.

Altitude sickness

From 1,500m above sea level the body finds it increasingly difficult to absorb oxygen. The most serious altitude problems occur between 3,000 - 4,000m, so the importance of acclimatisation cannot be under-estimated. Altitude sickness can be very serious and correct diagnosis is essential at an early stage.

Acute Mountain Sickness (AMS) and edemas

AMS is the body's reaction to a lack of oxygen and can result in headaches, vomiting, confusion, disturbed sleep and irregular breathing patterns when sleeping. If symptoms are acute or persist then descend to an altitude where the casualty last felt ok. Descent will usually reduce symptoms rapidly.

If ignored, the casualty's condition can continue to deteriorate, with liquid retention causing the brain to swell (HACE) or water to gather in the lungs (HAPE). Both these conditions are potentially lethal: immediate helicopter evacuation is recommended. Failing this, descent is crucial.

READ:
Travel at High Altitude FREE booklet
http://medex.org.uk/medex_book/english_version.php

5. Equipment

What to pack

Alpinism encompasses an array of activities, so what you pack should be specific to your objective. Lightweight and multi-purpose gear is a good place to start.

However, savings in weight can come at the expense of durability and effectiveness. You don't necessarily need to do anything special to save weight but do the simple things well.

Alpine rucksacks

The main considerations here are size, weight and simplicity. Choose a simple design with compression straps, chest and waist belts, a lightweight back system and a single main body with a lid pouch.

Optimal sizing varies between 35 - 50 litres. Bigger bags often mean you carry more gear and pack less carefully – everything should stash inside the sack on your route.

Mountaineering boots

Choosing the right pair of mountaineering boots can be crucial to your comfort and success. Boot stiffness traditionally ranges from B1 (bendy) to B3 (rigid) and these are compatible with C1 to C3 crampons. A very rigid boot can take a flexible crampon, but a rigid crampon will require a rigid boot.

There is also a choice of summer and winter mountaineering boots, giving differing levels of insulation and weight. When buying mountaineering boots go to a specialist outdoor retailer with informed staff and a wide selection on offer.

Technical equipment

Crampons

There are many specialist crampons available. Ensure your crampons are compatible with your boots, suitable for your intended route and fit them before heading out. Very lightweight crampons are only suitable for short passages of flat or shallow ice.

Snow can build up on the sole and prevent the crampon points gaining purchase. Therefore, take anti-balling plates for your crampons.

Ice axe

Ice axes can be split into walking or climbing categories. Walking axes vary from short and lightweight to long and ergonomically curved. For general mountaineering, a straight shaft that you can plunge into the snow is most versatile.

Choose an axe that is comfortable to carry and won't damage your glove over the course of the day from abrasion. When deciding upon length, consider the purpose of the axe – some people prefer a long axe to use as support whilst walking, others may want a lightweight axe that will be predominantly stored on the rucksack.

There is a wide choice of climbing axes available. An ergonomically shaped axe with horns at the bottom will support the hand immeasurably with each swing. Springer leashes are now the norm over wrist leashes.

Ropes

Both single and double ropes are commonly used. For climbing and mountaineering, 60m ropes provide increased options for abseiling and running long pitches together.

Parties walking only on glaciers will want a rope at least 30m long; this ensures there will be enough rope left at either end for a crevasse rescue. Dry treated ropes are much harder wearing in the Alps due to the often gritty nature of glaciers, constant wet and dry as well as potential for ropes freezing.

These rope coils are tied off "French style". Quick to do but only for simple glacial travel. ***See pages 18-20 for a better way to tie off your coils.***

Harnesses

You will be wearing your harness for most of each day, often while walking, so comfort is important. Being able to put your harness on and remove it when wearing crampons is very desirable, so a harness with adjustable leg loops is recommended.

Removable protection

Standard removable protection in the form of wires, camming devices, ice screws, slings and quickdraws will be necessary for many alpine routes. Modern guidebooks recommend specific gear for many routes. Popular routes can be well-bolted, so a small rack often suffices, but this is not universal. Try to do some research yourself in advance.

Other equipment

Glacier travel kit

You need enough equipment to perform a crevasse rescue – and know how to do it! A variety of belays are used ranging from ice screws to a buried axe or rucksack. Recommended kit is an ice screw, three screw-gate and two HMS karabiners, a 120cm sling, two prusik cords, a belay plate and your ice axe. Many people also carry a lightweight mechanical locking pulley.

Sun protection

Harmful radiation is increased at altitude due to the rarefied altitude. Snow and ice reflect the light's intensity. High factor (30+) sun cream and lip protection are recommended, renewed regularly. Keep arms and legs covered and wear a sunhat. Sunglasses should be worn even in misty conditions – choose a pair rated for high altitude and carry a spare set or goggles.

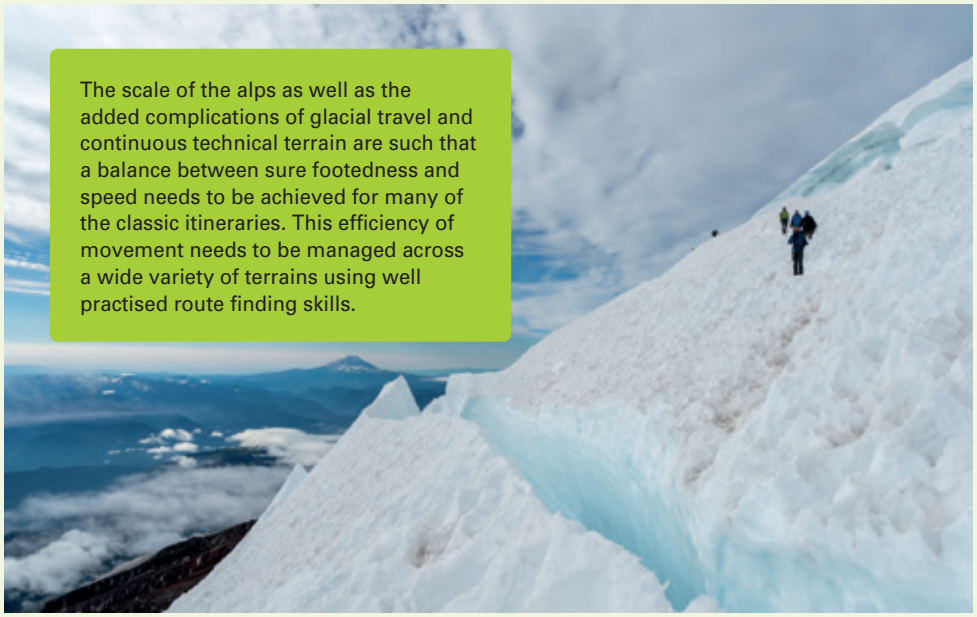
Bivouac gear

Weight is particularly crucial if you need to carry bivouac kit on a route.

A fully waterproof bivi bag is highly recommended, and breathable fabrics reduce condensation building up inside the bag. Store your sleeping bag inside the bivi bag to help keep it dry.

Many modern stoves are very efficient for melting snow, boiling water and simple cooking. Check that your fuel is available where you're heading.

6. Moving in the mountains



The scale of the alps as well as the added complications of glacial travel and continuous technical terrain are such that a balance between sure footedness and speed needs to be achieved for many of the classic itineraries. This efficiency of movement needs to be managed across a wide variety of terrains using well practised route finding skills.

Glacier Travel

Glaciers form the alpinist's highways through many high alpine valleys, and the ability to travel safely over them is therefore an essential skill. As many alpine glaciers are receding, your guidebook may be out of date. Some extra research at the local Guides' Office, with a hut guardian or locals will pay dividends.

Access to the glacier surface is often by steep ladders, so a harness with a sling ready to clip into rungs is a good idea, in case anything unexpected should occur once you have committed to the ladder. In fact, it is highly recommended that a harness is always worn during glacier travel.

Once on the glacier look very carefully for the correct exit point on the other side. Otherwise, you may get delayed negotiating steep mounds of loose moraine piled up on the glacier banks.

Navigating a route over a glacier will be easier if you learn about glacial terminology and ice movement, which tends to fracture at stress points to form deep cracks called crevasses. These are most commonly found at bends and steepenings, and are more common along the sides of the glacier than in the centre.

Many alpine and ski mountaineering maps will have the normal glacial routes marked in blue or red. However, if your map is a few years old, check with locals about any recent changes to these routes.

There are two types of glacier. Those covered with snow are wet glaciers, and those with bare ice are dry glaciers. Each has characteristics that impact upon glacier travel.

Dry glaciers

You will normally need to walk in crampons and be prepared to step or even jump across narrow crevasses. This should always be minimised however, by zigzagging to find crossing points where the crevasse peters out.

The ice axe may be useful for cutting a step in the surface crust or pulling over a short steep step. Wearing a rope is generally more of a hindrance than help on dry glaciers. One feature to be particularly wary of are surface streams, which can be fast flowing and tricky to cross, particularly on warm afternoons. These tend to pour into sinkholes, called moulins, and present a significant hazard.

Wet glaciers

The snow surface may vary from several metres thick at high altitude to only lining crevasses at the lower reaches, but it is always hard to know whether any snow bridge across a crevasse will support body weight. Therefore, all party members should be tied into a rope. It is worth fixing an anchor and belaying the first person as they cross a snow bridge, particularly in descent.

The ideal route crosses crevasses at right-angles but this is often not possible, especially when zig-zagging through complex terrain, so the aim is to stay as far apart as possible whilst keeping enough rope available to hoist somebody out of a crevasse in the rare event of this becoming necessary.

In practice, two on a rope about 15m apart is a good balance between adequate space and reasonable communications. If there are several people on the rope the distances between individuals can be shortened a little. It is much harder to deal with a fall if travelling as a pair. A proven improvement for pairs is to each add a simple loop or two in the rope – in test-falls these often snag on the crevasse lip, allowing the fall to be held much more easily.

The remainder of the rope can be tied off in coils around the shoulder of the first and last person, providing a reservoir of spare rope to use for hoisting. See pages 18-20 on how to take coils.

It is best to tie into the rope rather than just clipping with a karabiner and a rethreaded overhand knot is the simplest to use. It is hard to adjust the distances between part members, so get this correct by measuring rope lengths. From your shoulder to finger tips of the opposite hand is about one metre. Walking while roped together requires some practice. The rope should be kept fairly snug, so that the middle just touches the ground occasionally, rather than dragging. Good communication is important, especially when zigzagging through crevassed terrain.

Alpine skill: taking coils

These next pages are a pictorial guide to taking alpine coils when moving in a group of two or more across a glacier.

Taking coils may feel quite complicated at first, so practice until it becomes second nature. Before taking coils, wear you rucksack and put up your jacket hood.

It is best to mark out lengths of rope in advance. When there are just two people find the middle of the rope and each person measure out between five and six arm spans from here. This should leave between 10 and 12 arm spans between you, or 15 to 20 metres. Tie a knot on a loop of rope to mark this point.

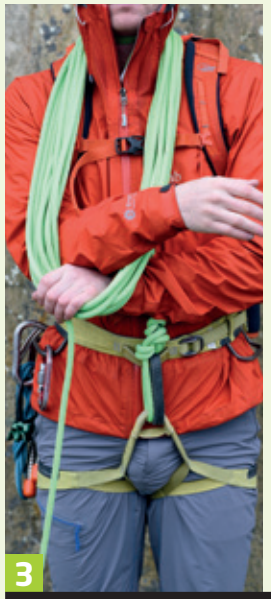
If there are more than two people on the rope, then the distance between each member of the party can be reduced to between seven and nine arm spans.

1

Once you have measured out the appropriate number of arm spans, tie in to the end of the rope with a figure of eight knot. Pull the rope from your harness straight up and snugly around your head.

2

Place a hand out flat at naval height to capture the rope and begin taking coils around your head. Be careful to make the coils evenly sized. Stop taking coils once you get to your knot in the rope.



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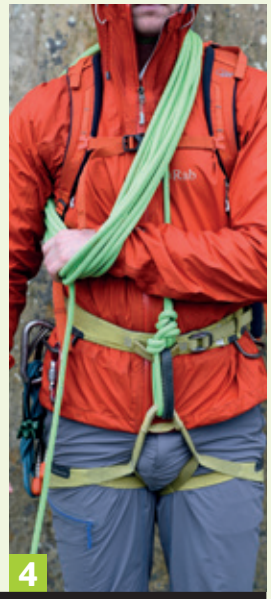

4

Take the arm opposite to the initial upward coil, and place it through the coils to seat the coils under your armpit.

5

Place the hand that is on the coil side through all the coils, and take the rope.

6

Pull this end of rope back through the coils as a loop.

7

Take this loop down and around the back of the rope leading up from the knot on your harness.

8

Thread the loop back down and around the loop you have just created, to form an overhand knot. that will tighten and capture the coils.

9

Attach the loop of this knot to your harness belay loop with a screwgate karabiner. Your coils are now tied off securely.

10A

The most popular method of finishing is by tying a clove hitch into the loose end of rope through the same screwgate. This makes it easier both to arrest a fall, should someone fall in a crevasse, and to escape the system in the event of a crevasse rescue.

10B

An alternative method to this is by tightly coiling a 'French Prusik' to the loose end of rope which has the same effect as 10A but with the benefit of a releasable prusik knot holding the weight which can be transferred directly onto an anchor in the event of a crevasse rescue.

11

Make sure to have between 10 and 12 arm spans of rope between two people when walking on a glacier and be sure to keep the rope snug between each other at all times.

12

Overhand knots tied into the rope have been proven to make arresting a fall into a crevasse easier as they can snag on its snowy or icy edge. It is recommended to tie these knots approximately an arm span away from each person on the rope.

13

When removing coils carefully take the coils from around your head, hold them in one hand and release the coils one by one to avoid tangling the rope.

Crevasse rescue

If the rope is kept fairly snug, as recommended, falling into a crevasse on a wet glacier should rarely be more than waist depth. The rest of the party should arrest the fall – perhaps by ice-axe braking – and fasten the rope to a snow or ice belay as soon as possible.

This requires practice and a cool head, so practice these skills somewhere safe such as a non-glacial wind scoop. Larger groups might well be able to use simple pulling power to retrieve their party member. Otherwise, a hoisting system may need to be used – this should be practiced in advance.

The priority is to fix a belay and call for help if someone is hurt.

Moving together

Many alpine routes are so long that it's impractical to climb every pitch one person at a time. Moving together speeds up an ascent, and describes party members moving at the same time whilst connected with the rope, such as when crossing a wet glacier. It is a necessary means of travel on most alpine routes.

It is common to move together on easy, yet exposed terrain, such as steep snow slopes or rocky ridges. The point at which you decide to move together is down to team dynamics and good communication.

If anyone feels uncomfortable about moving together it is important that they voice it, and that others respect this. In such circumstances, a belay may be quicker and certainly safer.

Teams should only move together on easy ground, and many factors impact upon what could be described as 'easy'. Factors include personal ability, fitness and acclimatisation, all of which can vary between individuals.

In theory, less pitching brings overall speed on the route closer to soloing. However, time saved can be lost by hesitant movement or the rope catching on rocks. Moreover, the increased stress placed on individuals may become overwhelming. A fall by one person could pull everyone off the mountain. Therefore, the first question for all team members should be "do we really need to move faster here?"

In most cases, it is best to shorten the length of rope between you, so that there is less potential for snagging or build-up of slack rope. The aim is for everyone to move at about the same pace.

When walking on steep snow slopes, everyone should be very close together to reduce the possibility of dynamic forces being created should someone slip.

When on rocky terrain and with the leader placing runners periodically, party members would be more spaced to ensure that there always at least two runners between each of them, with the last person removing any runners. It is also possible to flick the rope around spikes to act as runners.

Ski mountaineering

Ski mountaineering or ski touring, as it is otherwise known, is a wonderful way of enjoying the Alps in winter and spring time when many of the peaks are smothered in snow and difficult to access on foot. It's also a fantastic opportunity to cover large distances and visit little frequented corners of the Alps where your hard work on the uphill is rewarded with incredible long descents. Most of all, the ability to ski wherever you want opens up access to entire mountain ranges outside of the confines of controlled ski areas where there are acres of virgin snow slopes to be skied.

FIND OUT MORE: Try ski mountaineering www.thebmc.co.uk/ski-mountaineering

Navigation

In recent years, the technological developments of GPS and smartphone mapping apps have been a game changer for alpine navigation. A quick and reliable tool that can quickly pinpoint your exact location can be very helpful in low cloud. Maps can easily be downloaded and are free of charge in some countries, such as Switzerland - **www.map.geo.admin.ch**

An altimeter is another invaluable tool for navigation, as well as providing quick updates on your climb or descent.

However, map and compass skills to help you understand the terrain you cover and to plot sensible routes are essential. It's not uncommon for smartphone batteries to run flat, systems to fail or LCD screens to freeze. Therefore, it's important to have a physical map and compass in case technology lets you down.

Maps in some countries may not have grid lines, and both symbols and contour intervals vary – check that you can understand your map! Avalanche-prone slopes greater than 30° in gradient are highlighted in red on some ski maps. This can be particularly useful in winter.

Considering the array of different mapping on offer abroad it's vital to develop sound map and compass skills at home.

7. Climbing and descending long routes

Multi-pitch climbing

For many of the more technically demanding routes you will encounter in the alps you will need a good foundation in multi-pitch climbing and dealing with different rope systems. Double or twin ropes are most commonly used as they allow for longer abseils on descent.

Belays are often rigged to create single-point anchors, allowing for a swift and efficient changeover on stances. When using hanging belays, the rope is often taken in by way of coils in ever reducing loop lengths lain over the anchor attachment.

Teams can lead either alternately or lead a block of consecutive pitches at a time. Both systems, done well, are equally fast. The benefit of block leading is that team members can benefit from maintaining the same frame of mind for a prolonged period rather than constantly switching leads, making it a preferred tactic on longer routes.

Multi-pitch abseils

Many climbs require multiple abseil descents, and it is essential to be skilled in creating retrievable abseils. Having a system in place to negotiate multi-pitch descents will pay dividends when you are tired from a long day.

Planning your descents and escape routes should be part of your preparation. Guidebooks will often show common abseil descents, with abseil stations marked on topos.

Back up an inadequate abseil station; your life is worth more than a few items of climbing equipment. Carry a few metres of 5-6mm cord in your rucksack and some small maillons to achieve this.

READ: Abseiling basics
www.thebmc.co.uk/abseiling

Do you know where your abseil will take you?

8. Alpine hazards

Hazards can be intimidating to the alpine novice, but with good planning, suitable acclimatisation and a thorough understanding of the dangers, many hazards can be avoided or reduced to acceptable levels. Having flexible plans, considering alternative routes and identifying escape options will help manage common hazards.

Avalanches

Avalanches are most common in winter but can happen at any time of year in the high mountains. They can be caused by instabilities in the snow pack, recent snow fall, high temperature gradients or wind loaded snow. Avalanches can occur naturally or from a trigger related to a stress on the slope such as a person walking or something hitting the slope such as a serac. Slopes of 30° and above in angle are most liable to avalanches.

Avalanche bulletins run daily in most alpine areas from November through to the end of April with information on the affected slope aspects, altitude, snowpack, weather influence as well as giving an overall hazard level based on a European scale from 1 (low) to 5 (very high).

Different slope aspects at different altitudes can present separate avalanche hazards and considering these hazards at a planning stage of your journey will help you avoid areas where avalanches may occur.

Weather

A forecast is a key factor when planning your journey and will inform what you carry, where you sleep and when you go. Poor visibility not only makes navigation difficult in complex alpine terrain, but makes it hard to distinguish hazards such as crevasses, seracs, avalanche-prone slopes and areas exposed to rockfall that may be difficult to identify on the map.

Thunderstorms can be terrifying experiences in the high mountains. Temperatures plummet and deep fresh snow can fall during storms. The latter increases the avalanche risk and obscures crevasses. Most alpinists remain in the valleys, huts or tents on bad weather days.

Mountain specific forecasts are accessible on smartphones, from tourist offices and in mountain huts. Whilst forecasts are generally very accurate when it comes to the weather to be expected, the exact timing of thunderstorms can be hit or miss.

Seracs

Seracs are unstable ice cliffs and can fall at any time of day, although heat or recent snowfall can increase the risk. Collapses can also trigger avalanche-prone slopes, creating extra hazards. Plan your journey to avoid crossing the fall line of seracs, but if unavoidable try to reduce the time you are exposed by maintaining a steady pace and traversing downwards where possible.

Rockfall

Thawing snow and ice commonly release rock and boulders during the summer. Rocks can also be dislodged by other climbers or their ropes, typically on abseil descents. Early starts when everything is still frozen can reduce these risks, as can prudent route choice to avoid danger zones.

Heat exhaustion

Alpine days can be very hot, even at altitude. Try to avoid direct sunlight by careful route planning. Keep well-hydrated, and replenish salts lost through sweat.

Sunstroke is a possibility in the high mountains. This is usually associated with profound dehydration, and will require hospital treatment.

Cold exhaustion

Cold wet conditions can cause problems, especially if a bivouac is involved. Try to avoid getting sweaty or wet in the evenings, use all available insulation and eat food to maintain energy levels. Prolonged exposure to cold can lead to hypothermia, where the body's core temperature drops below 37 degrees: urgent evacuation is then necessary.

Frostbite

Frostbite can be caused by freezing temperatures, particularly if combined with wind. Progressively deeper layers of skin tissue become frozen and so the extremities and exposed areas of skin are most at risk.

The young and old are most susceptible to frostbite. Keep a watchful eye on each other in cold conditions. Superficial frostnip can be reversed by increased insulation and improving circulation by exercising frozen digits. Severe frostbite should be treated in hospital.

9. Access, huts and bivouacs

Grand Mules hut in the Chamonix alps.

We take access to wild places as a right, but mountains are fragile and dynamic environments that deserve our respect and protection. Many alpine areas are in national parks that have guidelines to reduce human impact, and sometimes closures for particularly sensitive areas.

FIND OUT MORE: www.theuiaa.org/respect-the-mountains

Huts

Mountain huts provide a bed and food for the night, and are located to provide easy access to many alpine routes. They vary enormously in comfort and facilities, ranging from tiny unstaffed shelters to comfortable hotels. Most have an advanced booking system, which is often online, and you should use this to book your beds and inform the guardian of any specific dietary requirements. Always notify the hut if you need to cancel.

Most catered huts allow you to bring your own food, but rules for how this can be prepared vary for different countries – research this on the relevant national federation website or in the local guidebook. Huts represent excellent value for money when you consider the costs of supplying provisions, and many offer a discount on the accommodation fees for holders of reciprocal rights cards. Most huts require poles, axes and boots to be stored in a boot room. It is a good idea to clearly mark your own gear, perhaps tied together.

FIND OUT MORE:

www.thebmc.co.uk/hut-discounts

Bivouacs

A bivouac is an excellent way to achieve an early start or access routes not served by a mountain hut. A return trip allows for a comfortable night and lightweight route, as any overnight kit can be hidden under a boulder and collected later. Otherwise, every item of kit has to be considered carefully since it must be carried on the route.

Alpinists should take particular care to avoid polluting water supplies and to remove their waste materials. Many alpine areas allow an overnight stay or bivouac above the snowline with or without a tent between the hours of dusk and dawn. Don't abuse this concession by overstaying your welcome.

10. Emergency procedures

What to do

Stay calm and assess the situation. Your first priority should be the safety of you and your group. Once ensured, determine your exact position on the map and then consider your options for self-evacuation, sending for help, or finding shelter.

When considering your options take into account the severity of any injuries to any casualties, the danger they are in from further mountain hazards and what clothing and equipment you and your group have.

Sending for help

Only basic information on emergency dial codes and procedures of different alpine countries is provided here. If the language in the country you're in is not your native tongue, consider learning some simple responses to relay crucial information to the switchboard.

- **Europe, Himalayas, Greenland:** Dial **112** and ask for Police - **MOUNTAIN RESCUE**
- **North and South America, Antarctica, Jordan:** Dial **911**
- **New Zealand:** Dial **111**
- **Australia:** Dial **000**
- **China:** Dial **110**

When connected provide:

1. Location of the incident
2. Number and names of people in the party and their condition
3. Any injuries and names of casualties

Be ready to provide the following additional information:

- Number of phone you are using and any additional phones in the group
- The nature of the incident – what happened?
- Time of the incident
- Any distinguishing feature at your location

If there is no coverage at your location, consider seeking a better signal. If no signal can be obtained, try signalling for help using 6 whistle blasts or light flashes repeated regularly. You may need to send somebody to fetch help: at least one person should stay with any casualty where possible.

In some very remote areas, you may need to pre-arrange a rescue plan such as leaving a deposit with a private helicopter. Advanced rescue and insurance information are sometimes necessary before local authorities grant you permission to explore certain areas.

First Aid

Many people do not consider the importance of first aid training until standing next to an injured companion on a remote mountainside. A large range of first aid publications and courses are available, many of which are tailored to the needs of mountaineers.

Mobile phone apps, SPOT trackers & satellite phones

There are many options available for when you have very poor phone signal or none at all. In the UK you can register with the emergency SMS service which allows you to send texts to call for help in areas with low signal.

Similar systems run in a number of countries such as iREGA in Switzerland, which allows you to combine your GPS position with a request for assistance.

If you're further afield you may wish to consider the use of a SPOT tracker or satellite phone. These are available for sale or as rental units. SPOT trackers need to be registered and if a distress signal is sent then the emergency contact is reached and given co-ordinates of where the distress signal came from.

Satellite phones are a more expensive but versatile option allowing phone calls and text messages. Some units can access the internet.

FIND OUT MORE:

www.findmespot.com

www.emergencysms.org.uk

11. Next steps

Greater ranges and expeditions

Experience gained in the European Alps can be put to good use in other alpine ranges, at higher altitudes or in more remote locations worldwide. If you're looking for bigger mountains, exciting travel opportunities, first ascents or simply a little more adventure then there are fantastic online resources as well as innumerable expedition reports on areas from the Antarctic, Patagonia and Alaska through to the Himalaya, the Southern Alps and Kyrgyzstan.

Whilst exploring the greater ranges isn't for everyone, it can provide a real sense of adventure and exploration that can be difficult to come across in some of the more frequented areas of the European Alps. Expeditions are often heavy on a commitment of time and planning and many of the challenges that teams face are outside of the mountaineering activity they have travelled out for. That said, the extra hard work and dedication required to make a successful expedition only add to the overall sense of achievement.

For some countries, particularly those with disputed borders, it can be necessary to apply in advance for permission to climb, and to attend an official briefing meeting on arrival, perhaps also requiring a liaison officer to accompany an expedition to base camp.

Whether you're looking for virgin trekking peaks in Kyrgyzstan or trying to repeat technical test-pieces in Patagonia planning is the key to success. Extra care is required to ensure all necessary food and equipment is in the right place at the right time, and an evacuation plan should be in place in the case of an emergency. In some areas, rescue resources are limited or non-existent.

Compared to all this planning and organisation, the climb should feel relatively straightforward in comparison! Hence the need for extensive alpine experience before embarking on trips to more exotic locations and objectives.

FIND OUT MORE: Expedition grants www.thebmc.co.uk/expeditiongrants