

Mountaineering Tips and Techniques

Mountaineering in the remote wilderness requires almost complete self-reliance. There is no backup plan. Everything a mountaineer does will have a direct and dramatic impact on comfort, success, and the end result: whether they get home safely or not. Subjecting oneself to the harshest environments, for whatever the reason, breeds the same types of techniques and strategies. Mountaineering has long been considered one of the toughest and most demanding outdoor “sports;” because of that, much can be learned from the basic techniques, which can be used in normal outdoor survival situations.



Much of the “coursework” of mountaineering involves understanding, studying, and learning about the environment of the mountains. Mountaineering is as much a science as it is an art, and the risks involved, while they can never be completely mitigated, can be tamed significantly. Mountaineering requires situational awareness, an appropriate practice in most off-the-grid and emergency/survival situations.

There are risks, both objective and subjective in mountaineering, including:

- **Falling ice, rock, and debris:** Even though falling ice and rock may be unavoidable and spontaneous, identification of potential hazards and avoidance of risky areas can reduce the impact left by these occurrences. Knowing the environment and keeping a close eye on the changes as you enter and participate in the environment will have a dramatic impact on your ability to spot potential hazards. Is new ice forming each night in between the crevices of the rocks of the slope; expanding as it freezes, then melting each day, exposing the now expanded crack? Traveling when ice is still frozen could often be your best bet.
- **Strong currents of water:** Melting ice and snow can cause a stream or river’s water level to swell. Picking the right time of day to cross a river can help dramatically. Generally speaking, a river will be at its lowest level in the morning. Scouting and looking for the best positioning is also a simple way to avoid problems in the current. A wider portion of a river where it has been running straight for some time may provide the shallowest and mildest point of crossing. Spreading heavy-grained sand over slippery or icy logs or rocks may help prevent a minor emergency or worse.

- **Uneven terrain:** The terrain is pretty straightforward. As a rule of thumb, talus and boulders sort themselves out, as the largest tend to be at the lowest levels. The mid-sized rock formations tend to be more stable in the middle segments of the mountain, and the smallest pieces, the most unstable, tend to be at the very top. Mountaineers will usually find a route alongside and ascending upward in the middle section of a mountain to avoid the instability of the ridge line and the difficulty of the lower areas. When stepping down, landing in the middle of rocks will help slightly, to keep them from rolling out underneath your foot. Stepping into the small places between boulders can also be very dangerous, as it can lead to a twisted ankle or lacerations.
- **Weather:** Changing weather can be a death sentence at high altitudes or in harsh environments. Having an understanding of how weather systems work and how air density can impact weather systems will be important to negotiating the weather influence in a survival situation. Pressure fronts, lightning and other weather scenarios can also negatively impact your situation.
- **Altitude:** Hypoxia (lack of oxygen) can begin to significantly reduce performance and start to cause problems at about 8,000 feet above sea level. “Altitude sickness” can only be fixed in one way, and is best addressed in its acute state. Acclimatization is the only way to treat hypoxia in high-altitude settings. To “re-acclimatize” someone, it is often necessary to descend altitude until the symptoms begin to wear off. At that point a reevaluation of the fitness of that person to continue with ascension should be made. Because of the inherent risks of mountaineering at altitude and hypoxia’s tendency to cloud judgment and dampen decision-making, it is recommended that high-altitude ventures be made in teams, rather than solo. Even those hard-core individuals with extreme experience and excellent capabilities put themselves at risk by traveling solo in such an unpredictable environment.
- **Avalanche:** Avalanche is the most “Hollywoodized” situation in the mountaineering setting. However, despite them being quite common, generally speaking, it’s rare that a qualified mountaineer will be out when there’s a high risk for avalanche or even be allowed on the mountain at that point (in regulated areas). There are several different types of avalanches, none of which are very predictable. It requires many years experience and many hours of training to even grasp the physics and mechanical nature of snow and ice with regards to an avalanche. Qualified mountaineers will be able to tell relative stability of the snowpack when digging a series of pits and running elementary tests on the snow and ice in the pack. Because it is so far beyond the scope of this single article to discuss the intricacies of avalanches, some basics on current/recent weather for your area may be helpful. Heavy and fast snowfall rate (1 or more inches per hour) causes unstable snowpack. Continued heavy snowfall can also cause instability simply because the added total weight. Snow falls from cold storms blanketed by snow falls from warmer storms cause instability. Winds of greater than ten to twelve miles an hour cause instability on snow during the storm. Slopes are amongst their most unstable during a snowstorm.
- **Cornices:** Cornices are the accumulation of snow blown by the wind at the top of the mountain’s ridge. Incredibly deceptive, they have been the undoing of many an expedition and many a mountaineer. Avoiding cornices by traveling just below the ridge line will help to avoid the concerns and risk associated with them.

- **Human error:** It's a very easy for even the most experienced and skilled outdoorsman or mountaineer to make errors. Generally speaking, skilled practitioners make errors when they make decisions for the wrong reasons rather than the inexperienced, who make errors simply because they lack the experience and skill set. Make sure you are interpreting warning signs correctly by communicating well and deciding beforehand how to handle specific scenarios, and try to exercise good judgment.
- **Clouded judgment:** The altitude, the team, and the situation, not to mention personal and family issues, can cause judgment to become clouded. It's best not to put yourself in stressful outdoor situations during times of personal distress or major events. In the unforgiving environments you'll be subjected to, clouded judgment can bring about a swift end to your life.
- **Emotion:** People can make decisions based on emotion rather than on rationale, and it's important to try to separate the two in matters of life or death. Emotion should not play a role in major decisions, as far as you can separate it. It is inevitable that emotions will sometimes factor in to a major decision; it's important to try and discuss the issues and come to a reasonable arrangement prior to being thrust into them and having to rely on judgment in emotional times.

Glacier travel is an important part to high-altitude mountaineering; it's important to understand how to move across/through glaciers and crevasses. Specifically, it's important to understand how to navigate these ice flows in case a rescue is necessary.

Glaciers are flows of ice which are fed by the snow melt from the accumulation of snow at the head of the glacier. The buildup of snow and ice causes an incredible amount of pressure to be exerted on the lower ice, which eventually begins "flowing." Glaciers try to move ice from top to bottom and are constantly moving.

Ice at its surface does not have a lot of pressure exerted upon it, so it tends to be brittle and crack as the underlying glacial flow moves. These cracks are called crevasses and extend as far as the top brittle surface of ice, which can be around 200 to 275 feet. It is because of these crevasses that glacier travel is so difficult and risky. New snow can cover and hide crevasses, essentially making them large and deadly booby traps. Crevasses are the reason why mountaineers tie off to each other and anchor their ropes while traveling over glaciers. A good mountaineer or outdoorsman looking to travel in glacier country will understand the ice flows and the nature of the area as well as use prudent measures and travel in groups which are capable of sustaining safety and fall prevention in glacial travel. Safety and technical equipment will be paramount.

"Ice fall," an extensive interwoven and interconnected jumble of crevasses, can create a scenario where glacier travel must be done underneath or within the crevasses rather than on the surface of the glacier.

At the foot of the glacier, the ice spreads out into the valleys and the compression from the sides is reduced; the tension that results causes "longitudinal crevasses." At the head, massive transverse crevasses, called "Bergschrunds," form at the place where the ice flow moves away from the mountain rock. The crevasse that is furthest up represents the start of the glacier flow.

Where it is concave, like in valleys or areas of slow glacial flow, crevasses are forced closed. These areas will be easier and safer to travel upon.

Finding an appropriate and safe route is a combination of understanding the tension areas and knowing where to expect the crevasses that come along with them. As a general rule, convex areas represent tension and concave areas on the glacier indicate compression. You will want to find routes that follow concave areas and avoid bulges, ridges, high points and other convex areas if possible. It is very important that a traveler equates any linear feature on the mountain, including depressions, shadows, or color changes, to dangerous crevasses.

While this text is a simple precursory exploration of mountaineering and some of the ties between it and the basic survival experience, the lessons learned in the predictive sciences of mountaineering and the experience gained can be of major importance to those seeking comprehensive survival information. Should you ever find yourself within walking distance of the glacier and in a survival situation, hopefully some of this information will be of use. The real underlying hope, however, is that this information piques an interest within you that will help you in your research to determine more proficient and effective ways to carry out your normal routines and help sustain your growth as a survivalist. After all, experience, techniques, and information forged in the most unforgiving places on earth, such as mountaineers experience on a regular basis, are as good as any in the survival genre.

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