



AAC Publications

Know the Ropes: Safer 4th Class

Managing Risk on Easier Terrain

MANAGING TERRAIN with a low probability but high consequence of falling—typically described as third-class, fourth-class, and low fifth-class climbing—is a multi-faceted affair, affected by skill sets, route and time pressures, and human factors (the psychological factors, sometimes called heuristic traps, that can impact judgment). Tumbling down a 30-foot, low-angle gully or “approach pitch” may not appear as terrifying as falling off an overhang while roped, but it’s usually far more dangerous.

Each year we see many accidents that very likely could have been prevented or mitigated by the use of a rope in easy terrain, including unroped falls on technical alpine ridges (often caused by loose rock), approach and descent accidents due to rockfall or small slips, and scrambling accidents in terrain deemed “too easy for a rope.” This article seeks to make climbers aware of alternatives to soloing (scrambling) that use the equipment they’re likely carrying anyway and incur little or no time cost.

The terrain that best utilizes these techniques is likely too easy for fully pitching out yet will occasionally be the scene of a preventable accident—the prevention being the appropriate use of a rope. Examples include the Cables Route on the north face of Longs Peak, much of the north ridge of Mt. Conness, descending the summit pyramid on Mt. Shuksan, or even going over Asterisk Pass at Smith Rock. While many people are loathe to break out the rope for easy climbing, the added security and confidence often allow climbers to move faster, actually speeding up the climb.

All terrain, regardless of the severity, should be managed in one way or another. With pace, attentiveness, and equipment selection, we even manage class 1 terrain such as a trail. The best management of any terrain is the style that minimizes the probability and consequence of a fall, while keeping in mind the need for efficiency. Strive for consistent, rational judgments of terrain severity. Could you travel easily with an open cup of coffee? If not, consider adding safety systems. What’s the consequence of a slip or stumble? If it’s injury or death, consider adding safety systems. We practice and train climbing movement to get better—we also should practice and train using the rope on easier terrain.

PLANNING AND MOVEMENT

While this article covers methodologies with the rope, it’s important to remember that movement ability is a prime risk-management strategy for mountain travel, and there are many ways to set yourself up for success. If you never fall, the rope tricks you learn are just a fun but academic exercise. Here are some strategies for preventing falls that don’t involve a rope:

Plan ahead. Research the approach and descent as thoroughly as the climb. Don’t gloss over descriptions of the “easy” stretches of a route—study them as well as the cruxes. If time allows, scout the approach or descent the afternoon before the climb.

Choose appropriate footwear. While flipflops can work for cragging approaches or descents, a sticky-rubber approach shoe or running shoe provides much more security.

Wear your harness and helmet all day. Don’t wait until you’re perched on a precarious ledge to gear up.

And keep your harness on during the descent—you'll be more likely to use the rope appropriately.

Be vigilant for loose rock. Test all handholds, footholds, and blocks before committing to them. Climb and scramble gingerly.

Rest and eat. Having a quick snack before a long descent not only improves mental clarity, it also can offer time to scope the descent and communicate a plan to partners.

ROPING UP WITHOUT ANCHORS

Try to set your nonsense filter fairly high when using the rope: If you're roped without enough solid anchors somewhere in the system to stop a fall, the rope may be creating more potential harm than good.

"Confidence roping" is a concept used by a small cadre of hiking guides, mainly in Europe. It involves using a rope to ease the mind but not protect the body. Recreationally, this technique is not at all appropriate, as it is not designed to actually stop a fall or prevent injury.

Many guides employ "short-roping" to provide security for their guest in terrain where the consequences of a fall would be injurious or fatal, but not so steep to warrant pitching out (due to time pressure). Short-roping is not, as the media sometimes depicts, a small, brown man relentlessly dragging his exhausted white client to a Himalayan summit. It is a technique where a skilled, attentive guide can stop unwanted acceleration from becoming unmanageable—that is, preventing a slip from progressing to a fall.

Short-roping allows the team to move together as fast or faster than the weakest party member would move while soloing. However, it relies heavily on the guide's movement and rope-handling skills, and most importantly the nature of the terrain: Ledy, blocky 4th class might be very manageable, but a 60° slick slab or ice might not. Because of the reliance on specific movement skills, short-roping is seldom appropriate for the recreational climber. It's often overused even by trained professional guides.

Rather than relying on the rope alone, most recreational climbers should focus on techniques that combine the rope and terrain or placed protection. If no anchors or terrain features between climbers can be found, it may be safer for the team to solo than to stay roped up. Relying on the rope without any protection is a relatively unusual circumstance for the experienced climber, and if you are encountering it often there may be another deficit in your skill set to address, be it technical or ideological.

SIMUL-CLIMBING

While it has its pitfalls, simul-climbing is heavily used by experienced parties in easier terrain, including approaches and descents. Simul-climbing is when two or three party members climb at the same time, linked by the rope, with security provided by the leader placing gear so there is always protection between each climber. (Terrain features can be used in a similar way.) Pacing and communication between the climbers prevent excess slack from developing.

An important part of the technique lies in using the correct length of rope between climbers. Longer lengths of rope may allow for steeper steps to be climbed without both climbers in steep terrain at the same time, but they also can dredge gullies and dislodge rocks, creating a hazard. Longer lengths of rope also are sub-optimal for communication—most simul-climbers will want to chat about what they need along the way ("Can you move faster for a second?" "Could you stop there?"). Remember, the point is to limit the length of a fall, and if you're traveling with 150 feet of rope between partners and very little gear, you may be putting the leader at risk for a very long fall.

On the other hand, too short a rope length can be annoying if there are different paces in the team due to ability or terrain. And it can become dangerous if a climber becomes “trapped” on difficult terrain when the rope stops moving or pulls too hard in either direction.

It’s a good practice to slightly overestimate the necessary length of rope, then take in coils as soon as you notice you’re starting to hold coils of rope or loops are dragging. A good place to start is 50 feet or so between climbers, then reassess and dial in the length. Using a Grigri blocked by a knot or plate device in guide mode can offer a dynamic tie-in and easy rope adjustment, but in simpler terrain this often just adds unnecessary complexity. When shortening the rope for simulging, the extra rope can be carried either in a Kiwi coil or in the pack, with each climber tying off or clipping into the harness.

How much gear to place between climbers is very dependent on the terrain, conditions, and ability of the climbers: 5.10 leaders on dry 5.2 might motor along with two or three cams between them, but may want more in verglassed 4th class (especially in rock shoes). Camming devices are often faster to place and remove than nuts. The leader should use as much of the rack as possible before transitioning, as long as he or she has adequate materials for an anchor at the end of the “pitch.” For a quick belay anchor when transitioning to a short belayed pitch, wrapping the rope a couple times around a horn or using a Connecticut tree hitch (an easily released hitch blocked by a carabiner) on a thigh-diameter or bigger tree can be entirely adequate. [See the video below from guide Karsten Delap demonstrating how to make this hitch.]

Using terrain features when simul-climbing can provide “free” protection (i.e., protection with no time cost or gear cost). This is primarily accomplished by routing the rope over features, like rock horns or strong trees, that would stop a tumble. Having partners move on either side of a rock or snow ridge (relatively close to each other, as communication can become a factor) can provide a great deal of free security, as long as the terrain isn’t significantly more difficult on one side versus the other.

Transitions in simul-climbing—from simulging to belaying or vice versa—are where the magic happens for the skilled and the process falls apart for the unpracticed. It’s important to be able to quickly provide a belay to the second from a stance. Consider the hierarchy of belay techniques, and then apply the most appropriate: hand belay, hip/shoulder belay, or belay off a plate or Munter hitch. Transitions are also a good time to get on the same page with your partner about route finding, pacing, etc.

Generally, the stronger climber should go second, as counterintuitive as this seems; the consequences of the second falling and pulling the leader down are greater than the leader falling. (However, if one member knows the route better, it may be prudent for that climber to be in the lead.) Off-label use of progress-capture devices like the Petzl Micro Traxion or Tibloc, clipped to solid intermediate protection points, can mitigate the danger caused by a second’s fall, but their use is more appropriate in difficult terrain than for traditional simul-climbing ground.

A team of three adds potential load to the system and requires additional terrain judgement and more conservative strategies when difficulties arise. (This is one of the risks that can be managed in planning for an objective, by adding or subtracting team members.) Considerations include whether to space the climbers evenly or have the bottom two close together, and whether the second climber, when spaced evenly, should clean the protection or re-clip it for the third. These considerations are impacted by terrain and ability.

As with two climbers, a longer distance between the lower team members in a team of three can mitigate some of the pacing problems when transitioning from easier to harder climbing, but adding rope to the system can create other problems. One option is to attach the middle climber to the rope using a Micro Traxion or other live-load-rated progress-capture device, either directly or with a short tether. In the case of a fall, the progress-capture device will grab the rope. This technique allows the climber to move at any pace, including moving back down the rope. This method requires high confidence in rock quality, availability and quality of protection, and movement skills, but it can allow

for three people to move through fourth-class terrain very quickly. It loses appropriateness as difficulty rises.

SHORT PITCHING

Very short belayed sections can quickly add security to long stretches of scrambling or simul-climbing. Consider using this technique for terrain that seems to be harder than expected or when there's any doubt about route-finding. Don't just "climb and hope."

Quickly switching to belayed climbing requires practice and, more importantly, vision. Being able to see terrain well ahead of you, note when you would likely want a belay, and identify a simple belay anchor are skills learned through practice (and mentoring, if available).

Often, a series of short pitches using "terrain belays" can be a fast yet secure way through ground that is complex or unfamiliar. A terrain belay uses the friction of the rope around a rock to provide security—it's like a hip belay but wrapping the rope around an immovable rock horn or boulder instead of your body. Speed and efficiency are gained by not having to build anchors.

The keys to using a terrain belay effectively are identifying a horn or boulder that's big and well-anchored enough that there is no chance it will move under load. Give the rock a good shake and then place one hand on the horn and hit it with the other hand—you want to feel little to no vibration. Be sure the shape of the horn and anticipated direction of load mean the rope has zero chance of slipping off.

In order to limit rope abrasion, don't drag the rope over the horn as much as lift it and place it as you're belaying. (The movement is very similar to belaying off a plate device in guide mode.) A refinement for using features too tall to place the rope over is to simply pass a bight of rope around the feature and belay using the side of the bight that goes to the following climber; there's no need to untie, and this provides a modicum of security to the belayer as well. A thigh-diameter or larger tree, when well rooted, makes a good belay point, but terrain belays on trees can put a lot of sap on the rope and damage the tree. A basket- or girth-hitched sling around the tree and a belay off a Munter hitch will be nearly as fast.

Short pitching requires placing protection at reasonable intervals—soloing 50-foot pitches isn't any safer than just plain soloing. In loose terrain, it's vital to protect the whole pitch, not just the hardest moves, so place a piece every few body lengths or whenever you pause to scope the route ahead. Cams are often faster than nuts to place and clean. Favor larger or simpler protection (larger cams, slung horns or trees, routing across a ridge) and avoid smaller or more finicky gear, unless it is the only option. Keep in mind the big picture: managing the consequence of an unexpected fall.

DESCENDING 3RD AND 4TH CLASS

Probably the most appropriate yet underutilized time to belay on easy terrain is when descending, especially when descending an unknown technical route. Having someone down-lead a short pitch from an anchor provides more options than rappelling, as it's easier to reverse a short downclimb than to reverse a rappel.

When down-leading, placing protection for the second is of vital importance. Place solid gear directly after (below) any difficult or insecure moves, as the second will be effectively "leading" this part. Remember to place gear high enough that a ledge fall would be mitigated, which often means placing gear early in the downclimb.

Simul-climbing is also useful during descents. Downclimbing hundreds of feet of fourth class, as many alpine routes require, can be difficult and dangerous at the end of a long day, and adding a rope

with protection between the climbers not only may be safer but also can help keep a team together, communicating, and focused.

Rappelling low-angle terrain can be both tedious and dangerous; the ropes can easily turn into a cluster, and pulling the rope through loose rock is hazardous. Traditional methods like carrying the ends of the rope in saddlebags or stacking the extra rope in the pack are effective, but often time-consuming. The J-rig rope throw can help get the rope down as well. The J-rig starts as a regular rappel, but without throwing or lowering the rope ends; instead the second feeds the rope to the first rappeler until the second is holding the ends at the upper anchor. He or she then throws the ends out and over the first rappeler.

When rappelling short steps, the equivocation hitch (a.k.a. death daisy or death macrame) can mitigate many issues, including having to pull the entire rope across a rock horn or tree anchor. With this hitch, climbers can lower or rappel on one strand, then pull the other strand to retrieve the rope. The equivocation hitch can be tied without having the ends of the rope available, so there's no need for climbers to untie before rappelling. This technique is best for advanced climbers and is beyond the scope of this article to teach. *The Mountain Guide Manual* (Chauvin and Coppolillo, 2017) provides an excellent explanation and photos.

When transitioning from rappel to downclimbing, it's often possible and prudent to use the existing rappel anchor as a belay anchor if the terrain warrants and there's rope available. Say the required rappel is only 50 feet—after rappelling with a doubled 200-foot rope, another 100 feet of rope could be made available for a belayed downclimb before pulling the rope. Once both climbers have rappelled, one climber can clip or tie into one rope end and clove hitch into the other strand, creating a closed loop to the anchor above. The other climber then can downclimb while belayed by the person above, placing gear along the way to protect the second one down. Be aware of rockfall hazard when pulling the rope after separating the party members. Separating the climbers also makes a stuck rappel rope potentially more time-consuming to deal with if it requires leading back up.

CONCLUSION

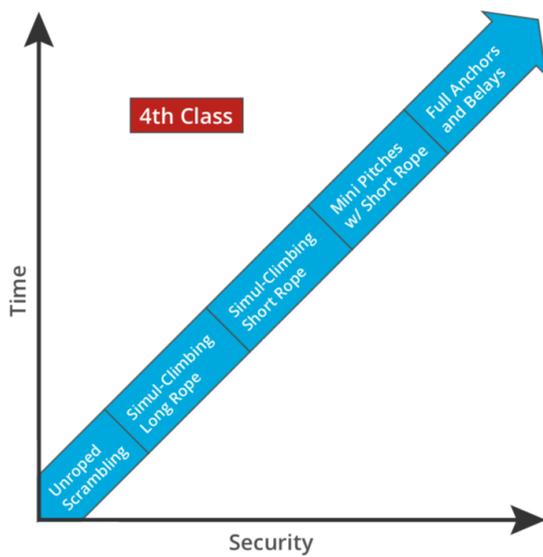
It's essential to realize that the techniques described in this article are meant to be insurance against the totally unexpected. If a fall is considered to be in the realm of possibility, you should not be simul-climbing or otherwise running it out. Just belay and protect pitches as usual (or leave gear and rappel when descending). We don't think, "Well, I've got a seatbelt on, I might as well drive drunk." We shouldn't just think, "Well, I've got a rope on, I'll be fine even if the terrain is harder than I expected."

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Images



Five climbers died on Capitol Peak in Colorado (shown here) in 2017. Though few rope up for this peak, simple rope techniques could increase climbers' confidence, keep them on route, and prevent falls.



On fourth-class terrain, there usually are trade-offs between the security of travel techniques and the time they require.



Simul-climb tactics: The leader, belayed off the ground, placed a low piece to protect a hard move. Before the second makes the same move, the leader passes his rope around a horn for security.



The Kiwi coil for shortening a rope. The rope leading to the next climber is clove-hitched to a carabiner to direct any load to the belay loop.



A blocked belay device allows a dynamic tie-in while simul-climbing.



Two climbers seconding on either side of a ridge so that neither will take a long pendulum fall. The same principle applies while simul-climbing.



A quick terrain belay around a solid horn protects a stretch of easy but exposed ground. Ideally, this horn would be less rounded on the brake-hand side to offer more control.



Down-leading a short pitch: The climber places a piece below a tricky step to protect the second person's downclimb. Note the use of friction over a smooth ridge for a terrain belay.



Safer Fourth Class

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