

HANGING BY A THREAD?

Words & Photos **George McEwan** AMI Technical Officer

Instructing and coaching clients on multi-pitch climbs presents the instructor with a variety of considerations and challenges. To adequately address these factors we need to ensure our approach to working on multi-pitch terrain allows us to address the needs of our clients, whilst allowing efficient and safe upward progression. Our starting point to operating effectively with two clients is addressing the 'What to do' - finding out where they are at in their current climbing performance and experience - then addressing the 'How to do it' - choice of climb appropriate to our clients' aims and abilities; what rope type and system (single Vs half; parallel Vs Series); belay method (Direct belay Vs Semi-direct); how to rig the stance and so on. By following that process we should find our multi-pitch climbing sessions reflect what is appropriate to our clients' needs and less of the 'I do it this way cos I always do it this way' approach.

In this article I'll be focusing on the technical aspects of balancing our clients needs and abilities with making safe and efficient progress up a multi-pitch climb. I'll cover what options we have regarding the types of rope to use (and their pros and cons), choosing appropriate rope systems, belay methods, managing a pitch and stance management principles.

I should stress that the techniques described here are not meant to be the definitive guide to all aspects of multi pitch climbing with clients. Instead it should serve to promote thought, discussion, and a greater awareness of the variety of aspects that makes working with clients on multi pitch routes such a challenging and demanding experience.

Types of Rope

Rope technology has come on in the past decade. There is now a bewildering array of rope types and diameters to suit every possible situation encountered in the climbing

environment. However, knowing the type of environment you are going to use the rope, and what use you are putting the rope to, simplifies the decision making process. There are three main rope types available for use, as shown below. The descriptions outlining their use are taken from the Beal website (www.bealplanet.com) and based on the UIAA standard for rope types.

Rope Types and the Implications for Belaying and Seconding

You will see I have highlighted several statements in the below descriptions. These statements advise certain types of usage relevant to us working with clients on multi-pitch climbs. They highlight the following considerations:-

- Twin ropes '...does not allow for separate strand clipping...'

Twin rope systems are pretty specialist and it is arguable, with the recent developments in thinner, stronger half rope technology,

whether the twin rope system will not be going the way of the dodo. Pit Schubert, in an article titled 'Our ropes are stronger than we believe,' made the following point. 'Twin ropes have an energy absorbing capacity over sharp edges which is, depending on the sharpness of the edge, up to double that of a normal single rope.' So maybe there is a use for twin ropes yet.

My view, in a professional context working with two clients, is they are of no use as the ropes MUST be used with both single strands treated as one. Still climbers might choose to use such a system for their own climbing. The ropes do split into lighter carries which has its own advantages.

- Half Ropes '...two seconds may each be tied into just one of the strands...'

Having seconds follow their instructor up on a single half rope has always provoked a lot of discussion. It was one of these practices a lot of instructors and

guides used, yet there was little or no official sanction from rope manufacturers as to whether is was OK. Like all these things, individual instructors tend to make their own call on a situational basis as to when this type of use was appropriate.

When I was researching this I noticed that the three manufacturers (Beal, Edelrid and Mammut) I checked out all had a statement in their description of rope use suggesting such use was possible. However, I think there are several caveats.

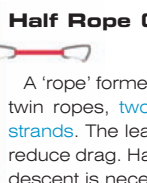
Although using thinner diameter ropes means the instructor towing less weight behind them on climbs, you must balance out that weight saving with the ability of your clients to hold a potential fall. Thinner ropes require attention to the relative diameters of rope and belay plate slots. For example, using a 8.9mm single rope with a belay plate that has slots designed to fit a 9-10mm rope could mean the belayer failing to hold a leader fall, or a descending

Twin Rope (Diameter range around 7.5mm)



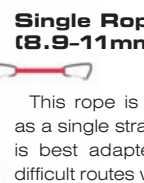
This rope is always used with the two strands together, remaining parallel: each climber ties into both strands and these are always clipped together. The main advantage over single rope is that it allows for abseils as long as the rope; and each rope is less weight for each climber to carry. It is lighter than half rope but **does not allow for separate strand clipping.**

Half Rope (8-9mm)



A 'rope' formed of 2 strands which the leader is tied into but, unlike twin ropes, **two seconds may each be tied into just one of the strands.** The leader clips only one strand into each runner so as to reduce drag. Half rope is recommended on climbs where an abseil descent is necessary or possible. It is equally preferable whenever belays are less than perfect, notably when ice climbing, because with just one strand clipped, you reduce the shock load in case of a fall. In addition, they offer better protection against stonefall or falling on an arête; to limit the drag, and thus the fall factor, you can clip the strands separately. **It is also possible to use half ropes like twin ropes ie. clipping both strands together.**

Single Rope (8.9-11mm)



This rope is used as a single strand. It is best adapted to difficult routes which are fairly straight-line, to easy routes without change-over belays, and where descent is not by abseil.



climber having problems when abseiling down steep terrain.

There will come a point, especially if you choose to use half ropes where both ropes have to be inserted into an appropriate belay device if the second is to have any chance of holding a leader fall. Then the issue comes down to how competent your client or clients are at belaying two ropes through a single plate. If both are novice clients, such a task might be awkward or challenging for them. In which case, using thicker (single) ropes would allow both clients to belay you simultaneously on independent ropes. Not only does this save you having to mind which rope you are being belayed on, it also keeps both clients busy doing something. In the unlikely event of you falling, two inexperienced or unknown belayers attempting to hold a fall is better than one!

Thinner ropes generally mean more stretch – this can be exciting for your seconding clients if one of them falls off and that individual gets to discover what is meant by ‘rope elongation’. Keeping the ropes very tight can help mitigate how much stretch occurs should one or other fall off. Checking out the Beal catalogue, I noticed that they produce a specialist 1/2 rope called the ‘Beal Pro-Mountain’ at 8.8mm diameter. Although a 1/2 rope it has limited stretch (for a 1/2) rope and is aimed at professional users such as instructors or guides who might elect to have their client seconds come up on a half rope each. Another option is to use thicker diameter ropes ie. single ropes, with a correspondingly lower elongation factor.

One of the issues that crops up as an argument against using half ropes with clients is the risk of ropes being cut – although it should be borne in mind that any rope, single or half, can potentially be cut. I would suggest some of the factors you

might have to consider regarding this risk include the following:-

- *How likely is this to happen and, if it does, what are the consequences?*

If there is a risk of a stone fall (go to any crag, cliff, or mountain and you must have a stone fall risk, either natural or climber triggered), it probably does raise the issue. Would you want to be climbing in such a place?

- *How great is the risk?*

Low or high risk? Do you then balance that out against the advantages using half ropes give you such as speed of movement, ease of climbing for the leader etc. What about the second putting their ice tool through their rope?

- *Is the rope liable to run over an edge?*

In many cases this can either be avoided, or the risk lessened, by good ropework, but some rock types are more prone to nasty, sharp wee edges. Choosing a rope that has superior abrasion resistance or is edge tested (Edelrid market their ropes on their resistance to being cut when loaded over an edge – see www.edelrid.de) might help mitigate any such fears of ropes being cut or damaged.

Pit Schubert has an article on the UIAA website where he describes the adventure two of his friends had when one of their ‘twin’ ropes was partially cut by some stonefall high on an alpine rock climb. When he recreated the situation, by cutting a twin rope 1/3 of the way through, he found that it still managed to hold eight falls!

I think on balance (and taking into account the points raised above) the decision about whether to have your clients second on half ropes or single ropes hinges more on the actual aims of the climbing (broadly speaking Coaching vs Guiding) and each individual client’s belay skills

and experience. Skinnier ropes potentially make holding any leader fall more problematic – unless both ropes are inserted into a single belay plate, in which case the belay skills of the belayer are the main consideration. Like all these things it comes down to the instructor making an appropriate judgment based on the prevailing and unique situation. In other words – it depends!

- **Single Ropes** although comparatively heavy to trawl behind you on a climb do have the main advantage of being more wear resistant, they stretch less (as explained above) when loaded, and due to their larger diameter holding a fall is less problematic with most belay devices means that they are still the most common rope type used by instructors.

You can get thinner diameter single ropes now (down to 8.9mm), although many of these ropes are for specialist use eg. hard sport climbs and are not designed for the rugged hard use that they tend to receive on multi-pitch climbs. All the issues regarding belay plate compatibility and the implications on holding leader falls, as explained, stand with these super skinny single ropes.

Rope Systems

As well as deciding what rope type we are going to use, we also have to decide which rope system is appropriate – series, parallel or two clients on one rope.

Deciding on which rope system to use really comes down to deciding on the outcomes or aims for your session. So, although the instructor may have one set of desired outcomes for the day, there may be other outcomes which might be more pitch dependent. Thus I tend to think of a session as not just the whole day, but as individual pitches on a climb. In the course of a day, or even the climb, the instructor will

continually appraise these outcomes as conditions, abilities etc dictate. Bottom line – be flexible.

We can pretty much break down the type of work we do on multi-pitch climbs into three main areas, each with their own unique considerations. In reality there is blurring between the different areas, as even when guiding two clients up a route you can still be coaching them eg. at the stances.

Teaching

Novices/intermediate climbers who aim to progress. Emphasis on ‘instruction’ with a need to act as a role model for the sport and for the systems used to reflect common practice.

Coaching

Peers/advanced level climbers who want to lead and/or get up harder routes.

Guiding

Climbers who are being given an experience. This may be because there are other aims to the day, or the emphasis is on getting up a climb. The rope/belay systems used need not reflect the way anyone else does it.

So focusing on the overall aims for the session influences our choice of rope/belay systems used. Whatever we choose to do, methods used should meet the following criteria:-

- Be safe
- Reflect aims of session

This whole process can, and should be reviewed throughout the climb. By using each pitch as a ‘session’ you can then decide what is and isn’t appropriate for your students. This helps avoid the classic starting with series rope system and ‘come hell or high water that is what I will use cos it’s easy’ approach.



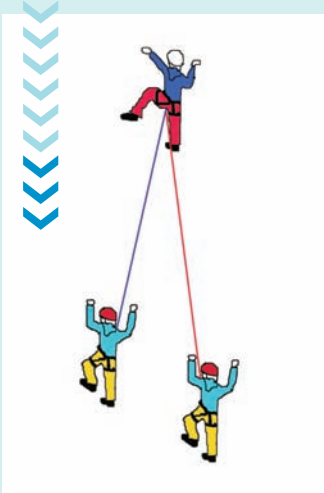
For example, you have two clients who have aspirations to lead multi-pitch climbs. They tell you they have led a lot of single pitch climbs, and both have their own rack etc. You start with a 'warm-up' multi-pitch climb which is technically a bit easier than what they both say they are leading at, and you decide to start off in series as you can then have them both going through 'lead climber' behaviours (see 'Teaching Leading' AMI News June 2007 issue). After several pitches, things have been moving slow. Time is not on your side, so you decide to ratchet up the pace. You change over to parallel so you can bring both your clients up simultaneously, and make up some time. This scenario is very much simplified, but I hope it serves to illustrate that we can change around our rope systems 'mid stream' if we feel it is appropriate.

Rope Systems Pros and Cons

Each rope system has unique advantages and disadvantages as the tables below illustrate.

Parallel

'En fleche' or arrow



Pros

- Flexible in that both can climb if desired (fast) or one at a time.
- Allows second student to be tied

off, if moving one at a time, thus protecting them should they inadvertently dismantle the belay.

- Instructor can be at the 'point', or switch to series (with themselves as middle person).

- Stronger student can help weaker by presence.

- Leader can abseil full rope length, or any distance between, without bringing up students.

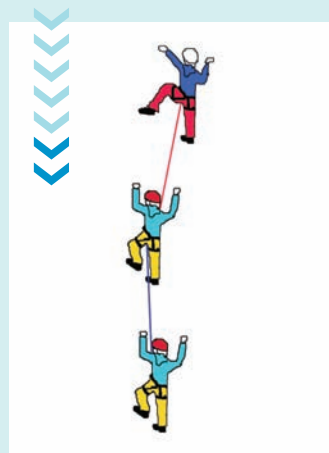
Cons

- Rope tends to become tangled.

- 'Struggling' student can get caught up in other rope, if moving one at a time.

- Can be heavy work for the leader dragging two full ropes behind.

Series



Pros

- Allows the first student to adopt 'lead' climber behaviours eg. clipping rope through runners behind.

- Attention can be devoted to one student at a time.

- Instructor can step out of the 'point' allowing the students to adopt a standard two person rope (instructor can solo/self line placing runners etc as appropriate).
- Ropes easier for instructors to sort.

Cons

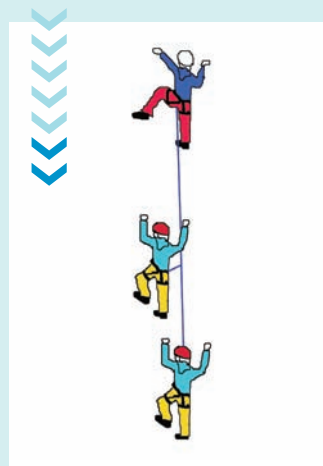
- Can be very slow (moving one at a time.)

- Tiresome and lonely for last

student.

- Risk of last student falling full length of rope should they inadvertently be unclipped by the second.

Two Clients on One Rope



Pros

- Simplified rope work.
- Fast to use – both students climb at the same time.

- Stronger student can support weaker student.

Cons

- Only suitable on straightforward, easy ground.

- Students have to be briefed to climb at compatible speeds.

Belaying

Belay Systems

Choice of belay systems would (should?) reflect the aims of the session, and/or intended progressions. For instance, if teaching two novices to rig belays you may choose to use the rope to link the anchors together, and use a belay plate (semi indirect belay). Alternatively, if it is a guided experience you may choose to use slings to link the anchors and use a direct belay.

Other factors such as how good the main belay anchors are; likelihood of clients falling or getting stuck will all influence the decision as

to the most appropriate belay method.

Semi Direct

Leader tied into belay using rope. Belay plate (ATC or similar) clipped into rope loop on harness.

NOTE: Position of braking hand is crucial using this method

Pros

- Method is common practice – reflects what recreational climbers do.

- Leader can devote attention to single client.

- Can be easier to give a tight rope in extremis, or hoist.

- Avoids full impact force on the belay in the event of a fall. (Use of rope, and dynamic belay increases dynamic element in system).

Cons

- Difficult to bring two clients/students up at same time if moving at different speeds. If one student weights the rope it is impossible to take in/pay out the other rope through the plate.

- Instructor is in the system necessitating a potentially complicated escape if required.

Direct

Italian Hitch on HMS krab clipped to attachment point (usually a single point from linked anchors).

NOTE: Requires 'bomb proof' anchors.

Pros

- Less strain on belayer.

- Leader not in the system.

- Fast method of bringing up second(s).

Cons

- Not standard practice.

- Difficult to provide tight rope in extremis.

- Requires 'bomb proof' anchors – not always available in winter.

'Magic' Style Auto Locking Belay Plate

(eg. ATC Guide, Petzl Reverso; New Alp 'Magic Plate' etc)

Clipped to attachment point on main belay.



Pros

- Less strain on belayer.
- Leader not in the system.
- Fast method of bringing up second(s).
- Two students can be brought up independently and simultaneously. (Rope automatically locks if loaded but allows independent operation of other rope).
- Tight rope can be given.

Cons

- Not standard practice.
- Very difficult/impossible to lower student(s) if loaded (one-way clutch).
- Requires 'bomb proof' anchors – not always available in winter.

Managing a pitch

Earlier in this article I'd highlighted the following in the description of half rope use. 'It is also possible to use half ropes like twin ropes ie. clipping both strands together...'

This is one issue that comes up when discussing how to manage the ropes when leading a pitch with two clients. Although it is possible to clip both ropes in the same runner you have to think about the 'what ifs?'

● **FACT:** Clipping both half ropes into a single krab on a runner, whilst reducing rope stretch in the event of a leader fall will increase the loading on that piece of protection (pulley effect – when a climber falls off, the load on the anchor is approx 1.6 times the force the falling climber exerts).

● **FACT:** With both ropes clipped into a single krab on a runner there is the danger that the moving loaded rope will damage the other non-moving rope. Although whether it would cause a rope failure I am not so sure about but, at best, you could have some friction damage to the outer sheath.

From a more practical point clipping both ropes into the same piece ensures, when using parallel rope technique that tangles and

crossed ropes are certain. This can lead to other problems for both you and your clients on the pitch. Far better to avoid or reduce the chance of such tangles occurring.

When using parallel ropes avoiding tangles and rope twists can become a major pre-occupation for the leader. It need not be. A couple of simple techniques and you can reduce the likelihood of major rope twists occurring:

- Parallel rope technique is not double rope technique. Don't confuse them. Think of parallel rope technique as like a railway track ie. both lines always run parallel. This way, you avoid either clients taking pendulums if they fall off, or managing to climb under/over the other rope.
- Clip the ropes so they always run separate (see image below).



- Take care at the stance to avoid crossing ropes especially if using an auto-block belay plate.

Stance management

Stance management is the general term used to describe the organisation of clients on a stance, on multi-pitch routes. This organisation includes elements such as correct belay plate orientation, rigging of anchors; placement of clients on stance relative to a variety of factors eg. hazards, belaying etc, organisation of ropes, and appropriate client/student briefings.

It is perhaps the most difficult part

of working on multi-pitch routes to 'get right', as efficient solutions tend to involve not just using the right technique(s), but adapting the relevant techniques to the type of stance you are using.

Many problems can be avoided if you work forward from first principles ie. what are you trying to achieve with your people in that session, (for session you could read pitch, as teaching aims can change whilst on a route, perhaps because you have misjudged your clients abilities, you are running out of time etc). Such an approach will tend to narrow down your options to a manageable range.

The main principles involved in stance management are:-

Aims

- Safety of clients.
- Efficient changeover at belays.
- Reflect the aims of the session.

Basic Points

- Stance can accommodate clients.
- If appropriate is in visual contact of students on 'hard' pitch.
- Is safe ie. good anchors, no danger of falling rock/ice/leader on clients.
- Is organised such that the leader can move off with the minimum of fuss and disruption.

Making it efficient

- Leader and clients stacked in climbing order (eg. leader at top/outside. First client in middle; second client at bottom/inside).
- Clients clipped in without crossing ropes.
- Leader on stance with their back facing the side they will move off from for next pitch.
- Sort ropes out so leaders rope on top of stack (back coiled).
- Outside of stance clear eg. no ice-axes or human runners!

Summary

Rope technology has come on in the past decade. Ropes now come in a variety of diameters, with their

recommend use also becoming more specialist eg. ropes for sport climbing, ice climbing, etc. Half ropes can be used to bring up two seconds, but using either half ropes or thin diameter single ropes (<10mm) does raise the issue of belay plate and rope compatibility. Thin diameter ropes do make holding a falling leader harder for an inexperienced belayer. So, although using thin diameter ropes means the instructor is hauling less rope weight behind them, it could mean that in the event of a leader fall inexperienced seconds might be unable to hold it successfully.

Choosing a rope system – series/parallel or two on a rope – should be based on the aims of the session rather than what is easier for the instructor to use, likewise with belay methods. However, a flexible approach to using rope systems and belay options should be used as the situation on multi-pitch routes can change – more so in winter.

Whatever rope type and system we use, attention must be paid to ensuring good rope management to avoid tangles and twists, both on the pitch and at the stance. It not only makes life easier and slicker for the instructor but also for the clients. More time spent climbing and coaching – less time playing at knitting on stances!

References:

- www.mammut.com (downloadable rope booklet).
- www.bealplanet.com Beal Rope Booklet 2006.
- www.edelrid.de Edelrid Catalogue 2006.
- 'Winter Skills' by Allen Fyffe and Andy Cunningham MLTUK.
- 'Our ropes are much stronger than we believe' Pit Schubert 2003 article on www.uiaa.ch.

George McEwan is the AMI Technical Officer and Head of Mountaineering at Glenmore Lodge National Outdoor Training Centre.