

Climbing Communication

Communication between climbers is an essential safety concern; miscommunication can lead to accidents, injuries, and fatalities. Due to the environment found in outdoor climbing, communication between climbers can be difficult once they are separated by more than a few meters. To prevent miscommunication in the challenging outdoor environment, climbers need to have an effective communication protocol (command set) that works in difficult circumstances.

Effective communication between climbers in the outdoors relies on commands that follow three foundational principles:

1. **Communication Agreement:** Communication between climbers and belayers should be anchored to a script that is agreed upon prior to the need for the communication.
2. **Communication Precision:** Communication should strive to minimize the amount of oral traffic needed to relay information between parties. Communication should be difficult to misinterpret or mishear.
3. **Communication Action:** Communication should relate to an impending action, and therefore should either unambiguously initiate that action or affirm the completion of an action.

The general form of communication while the climbers are separated is a very limited set of commands just dealing with the rope, belay, and hazards. Commands, in general, should be yelled as:

- Name
- Command
- Color

The name is first to get the attention of the belayer or climber. The command is what to do, and the color refers to the rope color if more than one rope is in use by the team. If there are no other climbing teams in hearing, the name may be omitted. If there is only one rope in use, the color may be omitted.

Belaying Commands

Command	Who Says	Communication	Action	Affirmation
"On Belay"	Climber	Control the rope speed	Belayer assembles or double checks belay system.	"Belay On"
"Belay On"	Belayer	Rope speed is controlled.	Belayer has constructed the belay system on the rope.	"Thank you", "Climbing", or none
"Climbing"	Climber	Prepare to feed rope; rope will move	Belayer ensures rope feeds in to/out from belay system to maintain safety.	"Climb On"
"Climb On"	Belayer	Belay ready for rope movement; tension will be controlled along with speed.	Control rope tension for a safe belay while the climber climbs.	None
"Slack"	Climber	I need some slack.	Belayer quickly provides rope, until the rope has 3-6 ft (1-2 m) of slack.	"Slack" or none
"Tension"	Climber	I need the rope tight, because I am going to weight the rope.	Belayer provides a taut rope to take the climber's weight.	"Got You"
"Off Belay"	Climber	Remove the belay system; allow uncontrolled movement of the rope.	Belayer deconstructs the belay system. Note: Belay is not removed unless "Off Belay" is clearly heard from the climber!.	"Belay Off"
"Belay Off"	Belayer	Rope speed is uncontrolled	Belay system has been removed.	None or "Thank you"

Command	Who Says	Communication	Action	Affirmation
"Up Rope"	Climber	I need the belayer to remove slack.	Belayer takes rope in, removing slack, but does NOT tension the rope.	No need for affirmation
"That's Me"	Climber	Stop pulling or feeding rope.	Belayer stops pulling or feeding rope.	No need for affirmation
Following commands may only be used while the belayer is in view. Included for reference, these commands should not be used.				
"Watch Me"	Climber	I am making a move in which I might fall.	Belayer continues to actively belay.	"Watching"
"Clipping"	Climber	Pulling rope to clip into protection	Belayer provides correct slack to clip protection.	None
"Clipped"	Climber	Rope is clipped into protection, remove excess slack	Belayer removes excess slack.	None

Rappelling Commands

Command	Who Says	Communication	Action	Affirmation
"Belay On"	Belayer	Fireman's belay of rappel system is ready	Provide an attentive fireman's belay.	No need for affirmation or "Thank You"
"On Rappel"	Rappeller	I want to start rappelling.	Rappeller rappels.	"Belay On" if providing belay; "Rappel On" if acknowledging without belay.
"Off Rappel"	Rappeller	Rope is free	Remove all constraints on the rope	None

Lowering Commands

Command	Who Says	Communication	Action	Affirmation
"(Ready to) Lower"	Climber	I'm ready to lower immediately.	Belayer lowers the climber until told to stop, or the climber is on the ground.	"Lowering" or none

Warning Commands

Command	Who Says	Communication	Action	Affirmation
"Rock!"	Anyone	A rock (or object) is falling; beware!	All take measures to avoid the falling rock.	No need for affirmation
"Rope!"	Anyone	A rope is falling; beware!	All take measures to avoid the falling rope.	No need for affirmation

Note: Continue yelling "rock!" until the object has come to rest. The repeated warning allows people below to know when to come out of hiding.

Lowering vs. Slack, Up Rope vs. Tension

Lowering and slack both cause the belayer to feed rope out of the belay, but **they are not the same!**

Slack is a command to quickly provide rope out of the belay, and continue (quickly) until there is 1-2 m (3-6 ft) of slack beyond the belayer. If the climber continues to pull rope, the belayer continues to give more rope. Once the climber stops pulling rope, the belayer stops feeding rope (with 3-6' of slack) and waits for the climber to proceed.

Lower is a command to slowly provide rope out of the belay, but maintaining tension for the climber to slowly walk down the cliff. While lowering, the belayer continues to slowly let the climber down, under tension, but feeding rope out of the belay, until the climber is on the ground or requests a stop (“That’s Me”).

Up rope and tension both tell the belayer to bring rope into the belay, but **they are not the same!**

Up rope tells the belayer to bring in rope, but not provide any tension. The belayer pulls in rope until light tension is felt, and then stops.

Tension tells the belayer to bring in rope until the belayer cannot bring in any more rope or stretch, including by jumping to pull in even more rope.

Additional Common Communication Notes

- **”Thank You”** can be used by anyone to acknowledge communication.
- **“Repeat”** can be used by anyone to ask for a command to be repeated.

Preventing Communication Challenges

- Select belay stances and pitch lengths that enable communication, when feasible.
- Visual communication is helpful when verbal commands are inaudible. Develop a visual communication system with your partner.
- Beware of rope tugs - they will almost certainly not work as intended..
- A second rope can be a communication tool; use with extreme caution.
- Radios, Cell Phones, and Other Technology - all are wonderful until they stop working. Have a plan for how to handle technology failure or loss.

Dealing with Loss of Communication

Before leaving the ground, all members of a climbing team need to agree on their actions (a “protocol”) if communication is lost. This is most common in a multi-pitch setting, but can occur on single pitch climbs as well. The protocol to follow will depend whether a person is a belayer or climber. The goal of the protocol is to guarantee that all climbers are always on belay when not clipped to an anchor! Below is a suggested protocol for loss of communication.

Leader

- Climb to the anchors or end of the pitch.
- Build an anchor, clip in, and send “off belay”.
- If no response, immediately assemble the belay for the follower, and start belaying; send “belay on”.
- Belay the rope until the follower reaches the anchor.

Belayer

- Belay the leader until “off belay” is heard or all the rope is fed out.
- When all the rope is fed out, prepare to climb.
- Disassemble the anchor.
- Start climbing, send “climbing”.
- Climb to the leader, slowing down when necessary to keep rope slack minimized.

Resource(s)

The American Alpine Club (2017, January 20). Climber Communication blog post]. Retrieved May 29, 2018, from <https://americanalpineclub.org/resources-blog/2017/1/19/4xm1fcsag6b7xqf1p1w1qp7vdpp1ha> .

Philosophy of Climbing Commands

As pointed out in the referenced AAC document, climbing communication is an essential part of safety in climbing; more accidents (not fatalities) are caused by miscommunication than all other causes, combined (anyone have a reference for this claim?). Once a climber has left the belayer, both verbal and visual communication rapidly becomes very difficult. Difficulty arises due to environmental causes (wind, water, other climbers), distance, and limited visibility. Technological solutions to the problem (radios, phones, etc.) are excellent options, when they work. Thus, climbers need a consistent, minimal toolbox of commands that can be distinguished with minimal hearing. In addition to the 3 principles discussed in the AAC document, and summarized in this one, here are some rules to achieve a suitable command set:

1. Commands are about the rope, & hazards
2. Only vowels matter
3. Limited command sets work, discussions don't
4. Sequences help understanding, and current state matters
5. Responses happen after the action, not before or during
6. Everyone has to agree on a toolbox, or it doesn't exist

Commands are about the rope, & hazards

The command set should only deal with the climbing rope, actions the belayer and climber can take with the rope, and hazards (falling rocks, etc.) The belayer can only change tension in the rope by allowing or preventing the rope to feed in or out of the belay stance. Only the climber's changes to the rope matter to the belayer. Thus, commands related to anything other than the rope are pointless and just hinder understanding. Since the commands will be shouted, at maximum volume, long sentences are silly. Short, one or two word statements are best for shouting.

Only vowels matter

Research and experience has shown that vowel sounds transmit farther than consonants, so the important part of a command set is the number, order, and type of vowel sounds in each command. The included command set is developed for english; alternate command sets would need to be developed for other spoken languages. When looking at the suggested command set, pay

particular attention to the number, type, and order of the vowel sounds. When developing commands, no commands related to safety can overlap number, type, and order of vowel sounds!

Limited command sets work, discussions don't

While the list of commands is limited, the commands comprise a toolbox for total control of the rope and warning of hazards during climbing. Like a programming language, or the 10- codes used on CB radios, solutions to problems are built out of a sequence of precise commands in sequence. What sequence of which commands will solve a given problem is up to the climber to decide, but the capability is there.

Due to the difficulty in verbal communication in climbing, discussions simply don't work when the team is separated. Have discussions and do the planning when next to your climbing partner at a belay stance, not when around a corner and 70 m away, in a windstorm next to a raging stream. Once the team is separated by 3 m or more, discussions should be shelved until the team reconnects at the next belay stance. Climbing short routes makes communication easier, but climbing command sets must work in the worst cases, not only the best.

Sequences help understanding, and current state matters

Clearly, some commands must occur in sequence to make sense: you cannot be ready to climb until the belay is ready, nor can a climber request a belay to be removed unless the belay is on. Most commands can be used in any order, as they are individual actions. Also, note that some commands can be both part of a sequence and used outside that sequence; a lead climber belaying the follower from the top will not wait for the follower to send "on belay" before rigging a belay. The lead climber rigs a belay and sends "belay on" to inform the follower that it can start preparing to climb.

Commands related to the belay do, generally, need to follow the sequence of call-and-response; the response indicates the requested action has been completed. Also, while "on belay" and "off belay" have the same vowel sounds, they can be interpreted by the current state of the belay. A climber or belayer can only request a change in the state of the belay; a climber should never ask for "on belay" while on belay! Similarly, a belayer should only, ever, disassemble the belay when "off belay" is clearly heard! Never should the belay state change if only "belay" (or something like it) is heard without the first word!

When developing a climbing command set, minimize the state required for the climber and belayer. The presented command set only requires one bit of state - is the belay on. The more state required, the greater the chance of the belayer and climber having different states. Having different states leads to different interpretations of stateful commands, which causes miscommunication and

accidents. So, minimize the state required to interpret commands; most climbing command sets require only the belay state, and only to interpret if you heard “off” or “on” before “belay”.

Responses happen after the action, not before or during

When responding to climbing commands, the response must be held until after the action requested is completed; do not send a response to a command to acknowledge before the action is completed! The affirmation response to a command is itself a communication that the requested action has been completed. Sending the confirmation before the action is completed leads to problems with rope management and safety; e.g. a follower will begin removing an anchor once “belay on” is heard, which could be fatal if the belay is not, in fact, rigged!

Everyone has to agree on a toolbox, or it doesn’t exist

Before leaving the ground, everyone on a team needs to agree to a common command set. Otherwise, there will be no effective communication. You can discuss the commands individually, trade printed sheets of commands, use the default set from your climbing club, or any other protocol to get a consistent set of commands agreed between the climbers.

Also, discuss what you will do, as a team, when you can’t communicate. A suggested protocol for loss of communication is included in this document, which prevents disastrous loss of belay during a loss of communication. Any similar protocol will work, but the time to discuss it is on the ground.

Common Words to Avoid, & Why

Many common words seem like they could be useful to a climbing command set, but they have issues. Some of the more common ones are collected here, with reasons to avoid using them.

Stop	Overlaps vowel sound with “rock”; does not travel; action achieved by “That’s me”
In direct	Does not indicate an action for the belayer to take, thus vague.
Safe	Overlaps with “Slack”; does not indicate a belayer’s action, thus vague.
OK	Common usage makes this word very vague; use “Thank you” for a generic acknowledgement