Haptic Perception and Universal Design

An Honors Thesis (HONR 499)

by

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Signed

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Abstract

Route setting for rock climbing has become a relatively new practice as new climbing gyms open every year at both colleges and growing cities. We created a manual for Ball State University’s climbing gym that could be used as a guide to set routes safely, creatively, and universally for all body types. We used Ball State University’s climbing gym, other local climbing gyms, climbing competitions, and existing literature as a foundation.
Acknowledgements

We would like to thank Professor Andrea Swartz for advising us through this project. Her guidance and support over the past three years has shown us what is possible within and outside of the field of architecture and design.

We would also like to thank Ball State University’s Outdoor Pursuits, Jessica Allardt, Kirsten King, Dru Mack, Devin Dabney, and Lane Sipahimalani for supporting and helping us accomplish this task.
Original Proposal

Haptic Perception and Universal Design

This honors thesis will explore the concept of understanding haptic perception as it applies to climbing wall route design and architectural design. In both of these design fields, analyzing relationships between human scale, movement, and comfort will identify positive truths and negative counteractive lessons to be applied in design decision-making. Both the analysis and conclusion will be presented graphically in a summary text.

The first subject of our study will be climbing wall route designs. We plan to research this topic by studying routes implemented on the climbing wall at Ball State University, at other local climbing facilities, at climbing competitions, and by studying existing literature. We will also be observing and surveying climbers to understand how factors such as age, height, weight, body dimension, skill level, and gender affect route success. Our goal is to understand how to regulate route design to consistently rate them on a set scale of difficulty without alienating a specific age, gender, height, or body dimension. We will create a graphically outstanding booklet to document our findings for future reference. This booklet would be especially valuable to future route setters, Outdoor Pursuits, and ourselves. Our booklet will incorporate how different types of holds, technical moves, and basic standards for route setting can be used to create routes more accessible to climbers of all heights and skill ranges.

Then we will extend this investigation of human scale into our interest of universal design. We want to integrate this universal design concept within our architecture major, to further understand the physical limitations of humans, and their opinions of spaces based on their physical attributes and past experiences. For instance, what does a 5’-6” woman deem as a comfortable chair, table, room, etc. versus a 6’-6” man? Can these two types of people be comfortable and content with the same designs, or must revisions or adjustments be made for universal design? We will observe, test, and survey people of different sizes and body types to determine their perceptions of architectural design components
(ceiling height, countertop height, window size, seating, etc.). This will inform a graphic compendium of “truths” for appropriate dimensional designs.

Based upon our personal interest, climbing wall routes will be the basis for this research. The project will broaden our understanding of human differences and how to adapt and realize what individuals want, desire, or need within a space, perhaps without conversation and purely based upon aesthetics or differences between people. These determinations could perhaps become subconscious to us as our careers as designers, route setters, or architects develop.

The graphic summary target audience will be colleagues, professors, current/future designers, Outdoor Pursuits, interested individuals/groups, and ourselves. We expect others to learn how to design successful routes/architecture based on universal design and differences seen and unseen between individuals. We desire for others to understand that they are designing for more people than their initial clients or selves.
Author's Statement

Unfortunately, we were only able to accomplish the first portion of our thesis, which was to create a graphic compendium and route-setting book for Ball State University’s Outdoor Pursuits.

We began by creating necessary IRB forms and performing CITI training that would later be unnecessary for our project. We each contacted participants and photographed them and ourselves over the course of three sessions, which included sixteen participants as they climbed eight existing routes at Ball State’s climbing gym.

We then started to edit all of this data over multiple weeks into the collection of photographs that are seen at the end of the book. This took the most time and overwhelmed the project. During this time we began to create a book template within the Adobe InDesign program to print through Blurb as a final product.

Wes created the style for the photographs and we then edited them together. We decided on a circle theme that was proposed from Joel. The table of contents was decided upon together and we pursued different sections separately.

Joel wrote most of the written sections and then we proofread together. We each created different layouts for different pages and then condensed them into the document. Wes did the Terminology section and most of the data organization. We then proofread the book together.
Works Cited


We would like to take this opportunity to dedicate and thank Ball State University's Outdoor Pursuits, Jessica Allardt, Kirsten King, Dru Mack, Devin Dabney, Lane Sipahimalani, and everyone else that helped us along the way with our passion of setting and rock climbing.

ROCK ON!
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Introduction

Let's get this straight from the beginning:

route setting is a privilege, not a right. And as a privilege, your ability to participate can be revoked (at any time) if you're being irresponsible or failing to follow wall procedures during setting times or during regular shifts. This booklet does not replace proper training and leadership - these are guidelines and should be treated as such - as route setting at Ball State University is constantly changing. The best way to learn is from practice and asking experienced staff for help. Collaborate, and learn from your predecessors and peers. The purpose of this guide is to give a quick overview on how to set and design routes at Ball State University's Outdoor Pursuits Climbing Wall safely, smartly, and for all types of patrons. Universalization is key to route design because of the wide range of body types, climbing styles, and natural diversity that everyone possesses.
Why Us?

Why us? You may have asked. We have worked at the climbing wall during our undergraduate careers at Ball State University. By no means are we the most informed or educated on route setting but we wish to educate others on how to design routes. We are architecture majors with an honors college curriculum. This guide is a portion of our senior honors thesis and we hope our insights can help the future at Ball State University.

Why You?

Why you? Perhaps you are reading this because you love to route set more than you love your grandma. Perhaps the book is required to read to become a route setter at Ball State University. Perhaps you’re proofreading who knows. But thanks for being along for the ride.
Why for All?

Why for all? Setting is not about you. It's about the thousands of other people that come into the climbing wall every year, the regulars, gumbies, and families that want to enjoy the sport as much as you do. So share your passion by designing routes not just for yourself, but for everyone. An infinite amount of body types come into our climbing wall. As a route setter you MUST accommodate for as many people as possible.

This guide only focuses on boulder problems. This is because setting low height routes is a great way to practice and gain insight for top rope design. We also believe that explaining how to organize setting stations for top rope is better learned from an experienced staff member in person.
One

Last Thought

Safety is the most important aspect at Ball State University's climbing wall. It is our and should be your number one priority. Use caution at all times and always triple check your setups before proceeding.
Types of Holds
In this section we will cover
the basic types of holds that exist. There
are several types of holds for climbing indoors
or outdoors: some of the basics include: jugs, pockets,
crimps, pinches, slopers, and jibs. Oftentimes one hold can
have multiple hand formations, and it is at the route setter's
discretion to incorporate as many different hand formations as they
desire. Handholds are determined by their primary features, so if
a hold has multiple hand formations, the primary or most evident
handhold determines which type of hold it is. At our climbing wall
we have 'natural features' that can be used within routes. After
reviewing opinions on routes we noticed that several people
enjoyed these features for both hand and foot holds and we
suggest that you use them in your routes. As well using
the same colored holds was a positive comment
this allowed people to see routes easier and
continue up a route intuitively.
These are not all of the holds we have at our gym. The basic rules for determining what type of hold are the following:

1. Does it have a hole in it? - it's a pocket
2. Does it look like a toy? - it's for kids
3. Can you pinch it? - it's a pinch
4. Is it really tiny? - it's a jib
Jugs

Jugs are often large easily held holds. They allow for a climber to use the large parts of their fingers to grasp the hold. You grab a jug by wrapping your fingers around it like a jug handle. Since they are easy to use, jugs are often used for warm-up problems, beginner routes, and steep walls. Jugs are also often used for resting or (un)clipping safely.

Pockets

Pockets are holds that have one or multiple small openings, which allow the climber to hold them with one to four fingers. Pockets can vary in depth and size. One-fingered pockets are called monos and are extremely stressful on tendons. Pockets should be used sparingly because even using two or three fingers can also be harsh on tendons.

Pinches

Pinches are holds that have two faces which must be pinched by engaging the thumb into a pinching motion. There are several ways to pinch with your hands. Pinches require significant hand strength to use and therefore should be used on medium to harder routes.
Crimps

Crimps are usually small holds that only allow the fingertips to be used. They can be sharp and painful to use. There are two specific ways to hold a crimp: open and closed hand. Open hand is when your thumb is not engaged and the holds are usually easier to grasp. Closed crimps engage the thumb on top of the pointer finger and puts stress on tendons. It is dangerous to climb often with closed hands. Permanent tendon damage can occur if you don’t build up the strength of your tendons slowly.

Slopers

Slopers are the least positive of the handholds. They angle away from the wall with a smooth surface. These holds are one of the most difficult and are usually reserved for advanced routes. Slopers are usually smooth and need to be brushed frequently.

Footholds

There are several names for footholds but they are usually very small and allow only for the toes to be placed upon the hold. We often refer to them as jibs at our gym. Any handholds can also be stepped on and used as footholds.
Crimp

Jib

Sloper
Placing Holds on the Wall
It is very important to place holds on the wall safely. The size, location, and bolt type are all relevant to the safety and design of the route. Placing holds on our wall can be difficult with the natural features. These features create concave and convex spaces which can create gaps behind or around the perimeter of the hold. If holds do not have a proper amount of friction with the wall then they may slip and cause damage to the hold, wall, climber, or other patrons. There are three types of bolts that we use to install holds. The length of the bolts should be long enough to exit behind the hold and continue through the wall and enter the T-nut several times (the T-nut is on the other side of the wall that receives the spiraling bolt end). There are also two types of wrenches for installing holds, both use allen wrenches to install or remove holds. If you come across a bolt hole that will not accept a bolt it is often because the T-nut has been stripped and no longer can receive the bolt. Unfortunately we can not fix these problems easily and the route setter must choose a different hole to use. If a bolt does not thread in easily back it out and try again to make sure you are not cross-threaded that is how T-nuts get ruined.
Convex Footprint

If a hold is placed over a section of the wall that is bulging out, this might occur. This footprint causes very little friction between the wall and the hold and may spin easily. Holds are unlikely to break when they have a convex footprint, but often route setters leave them on and create a dangerous environment. One way to prevent this is to use a smaller hold; another way is to use a different location for the hold.

Concave Footprint

If a hold bridges across a section of the wall that is scooped in, this might occur. This footprint has very little friction between the wall and the hold which may cause the hold to spin out of place. When holds have a concave footprint they are likely to break or be damaged because the pressure from the bolt can crack or break the hold. Again, to prevent this from happening, use a smaller hold or look for a different location.
Taping holds

When you are placing a hold on the wall, it is often for a route. It is a good idea to put your tape underneath the holds because it is less likely to strip, will stay connected to the hold longer, and may leave evidence for others to know where the route goes. This is a great practice and since our tape is designed not to leave mark it peels off easily. Also, when putting our tape on the wall you don't want to have chalky or sweaty hands. Both of these factors affect the stickiness of the tape and may make it strip easily.

Same colored holds

As we stated earlier last section it is good practice to use the same colored holds throughout a route. This can be difficult but will allow the climbers to intuitively see the route easier without noticing the tape. The color of the tape can be overwhelming to climbers, especially colorblind individuals, and may create difficulty determining the colors of tape and holds. Using the same colored holds can help others read and understand your routes easier.
Cap Head Bolt

These bolts use the large allen wrench and should be used for large holds. When you use the large allen wrench you are able to obtain more torque on the bolt and rotate it tighter. Large holds are more likely to spin on our wall because the natural features prevent the holds from getting enough friction.

Button Head Bolt

These bolts use the small allen wrench and should be used for smaller holds especially jibs. These bolts have a small face, this prevents them from sticking past the hold. Button head bolts are often used on shallow holds because they are designed for the smaller face of the bolt. These bolts should not be used for large holds because they are likely to spin.

Tapered or Martini Bolt

These bolts use the small allen wrench and are used for specific holds. The holds do not have a washer to tighten the hold to the bolt, but instead have a tapered hole to create friction. We only have a few holds that use this system.
Types of Moves and Techniques
In this section we will talk about several moves and techniques that can be incorporated within routes or be used as you pursue more difficult routes that are located inside and outside climbing gyms. The more unique moves that you place within your route the more people will have to learn and practice to accomplish these moves. You should attempt to incorporate as many moves in your route as possible instead of creating a ladder. Moving horizontally as well as vertically is a great way to create diversity in your routes. We will begin by focusing on upper body movements, then lower body techniques, and finish with full body techniques. All of the categories will begin easier and continue to advanced levels.
Static Technique

In general this entails movement of a limb to a new hold without the simultaneous transfer of weight. Instead weight transfer occurs after the limb has moved. three-points of contact and slow, controlled movement is the rule.
Dynamic Technique

Any move in which body momentum is used to progress. Good hand-eye coordination and strength are important here. These types of moves can quickly drain power from a climber on a rope but are more typical in bouldering.
Match

A match is when you place both hands onto one hold. You are "matching" on the hold when you put both hands on it. This is often used to move horizontally instead of vertically.
Crossover

A crossover is when you bring one arm past your other arm and reach for a different hold on the opposite side of your body. This is also great for moving horizontally across the wall.
Bump

A bump is a move where you shift to a higher hand hold without changing your body position. This is usually used when a low hold is bad and a better one is higher. If you do a bump you would start with either hand on a hold and then move that hand to a different one without moving or changing your other hand.
Sidepull
A sidepull is a vertically orientated hold that is towards one side of the route. You lean away from the sidepull to hold yourself towards the wall. Pull to the side because pulling down won’t work on a vertically oriented hold. If the hold is to your left, lean to the right so your weight opposes the gap.
Undercling

An undercling is when an upward pulling motion is available. Usually this move is created when a hold is turned upside down. Sometimes incorporating pinches or pockets that have both a top and bottom hold will allow routes to use underclings within them causing climbers to reach higher for the next hold.
Compression

A compression is when you push with both of your hands toward the inside of the rock. Usually compressions also call for a heel hook to move the hands forward. This is often very useful on pillars or aITES. When you compress your body, the friction in both of your hands allows you to stay on the wall.
Gaston

A gaston is a move where you can pull on a vertically orientated hold that's in front of you. You will put your elbow away from your body and your hand, thumb down, near your chest and push towards your elbow. The move is often described as the opposite of a side pull.
Edging

When there is a small ledge to put your foot on, you are probably going to naturally edge with either your inside or outside foot. This is normally used with small holds that you can’t fit your entire foot upon.
Smearing

Smearing is when there isn't a ledge for you to put your foot on. You will use the ball of your foot and use the friction in your shoes as a foothold with your heels angled down.
Foot Match

A foot match is similar to a normal match in that you match both of your feet together onto the same hold. This is sometimes difficult to accomplish on small footholds.
High Step

A high-step is when you are able to bring a foot up to a high foot. These foot holds can be anywhere within the navel range of the body.
Flagging

A flag is when you extend a leg to counterbalance your body and change your center of mass. This move helps prevent barndooring and may allow you to reach for a hold that is far away.
Drop Knee

A drop knee is similar to a backstep. You turn your hips perpendicular to the wall and twist your knee so it's almost pointing down. You'll use both of your legs for strength but this move is great for high-feet or taller people. Counterintuitively, it also allows shorter people to reach further.
Frontstep

A frontstep is when you place a foot in front and past your other one. It is good to use this move to move horizontally along the wall. It’s best used when you have a lot of small feet that you cannot match on.
Backstep

A backstep is when you place a foot behind your body with your foot on its outside edge. This move helps you move horizontally along the wall if you have multiple feet to use without matching your feet on small holds.
Toe Hook

A toe hook is when you are able to wrap the top of your toe around a hold. You are then able to pull with your leg to help you move. This is also a great way to allow for a slight rest if you engage your foot as if it is a hand and balance yourself without using your hands.
Heel Hook

A heel hook is the same thing as a toe hook, but instead you use your heel. Using a heel hook is stronger than a toe hook because you are able to engage your body with your upper legs. These are also great for breaks or moving up corners on routes.
Mantle

A mantle is when you are able to push downward on a hold in order to gain vertical distance. The move is often compared to getting out of a swimming pool. If you are ever able to mantle it is recommended because you are no longer pulling and are instead pushing.
Hand-Foot Match

A hand-foot match is when you match both a hand and foot on the same hold. This is usually used with high-steps, mantles, and underclings that allow the move to occur. This is also useful when there are not a lot of feet to use.
Layback

A layback is when you lean backwards and pull with your hands and push with your feet. This is a good technique for cracks and multiple vertical holds that are facing the same direction.
Dyno

A dyno is a dynamic move where momentum is needed to reach a hold that is far away. You might even possibly jump and take your feet off of the wall when you do a dyno.
Double Dyno
A double dyno is similar to a dyno but instead you will take both hands off at the same time instead of just one hand. This requires a lot of thrust with your legs and strength in your hands to land the move.
Lengths and Distances
Since we have so many different types of climbers at our gym we must take all of them into account. The best way to make a bad route is to make the holds far away and difficult for shorter people to reach. The number one rule for route setting is to design universally for all types of people. As a person gets taller their wingspan becomes naturally longer, therefore a taller person has longer legs, chest, and wingspan. So the difficulty in routes cannot come from the distance from one move to another. The difficulty should come from the hold selection and the types of moves. As a setter one way to check if a route is accomplishable by all types of people is to be able to reach past the next hold. A rule of thumb is to be able to reach past your wrist. For a shorter setter this might not be necessary, but for a taller setter they might want to set to their forearm (or in extreme cases, their elbow) The shortest climbers we have had are about five feet tall and some of the tallest we have had are six and half feet tall. That is a huge range that needs to be taken into account. All type of people have strengths and weaknesses, so creating a variety of moves and distances will allow your routes to develop and grow.
Another distance that needs to be taken into account is how high your feet are. High feet can be difficult for some people just based on what clothes they are wearing. Our most common climber will wear either leggings and athletic shorts, but we also have climbers that wear jeans regularly or other restrictive clothing. How high your feet can go is determined by the handholds, the quality of the handholds, your strength, and your clothing. If you want a more difficult route, using high feet can help obtain difficulty, but these should not be used regularly.

A good distance for high feet would be around the crotch or navel area of your body. But the difficulty shouldn't always come from the feet that are used again; it should initially come from the hand holds and moves that are designed in your routes.
There are several ways set a route, but what is important is that the route makes sense and flows smoothly. You don’t want to have a route that has awkward feet and missing handholds so it’s always good to forerun and have other climbers climb your route before you are finished with it. Another way to forerun a route is to connect moves as you set them to make sure they are feasible for everyone. Everyone should have an enjoyable time when climbing, and as a route setter, you are the first designer of that enjoyment. Routes should not be a ladder and designing ladders with difficult holds is a terrible way to set. Creating a route changes from person to person, so here are a few excerpts from route setters and how they approach the wall.
In the time I've spent climbing, I've learned to approach every route the same way - regardless of difficulty, conditions or any other outside factors - and that is with absolute attention, focus, and commitment. Before climbing any problem, it is important to take the time to 'read' the route, and plan out a basic course of action, whilst also knowing that some things either may not work the way you plan or may be subject to change mid-climb. I also make sure to plan rests when I need them, and have alternative ways of working out cruxes in case my original plan does not work. Probably the most important thing is to completely immerse one's self in the process of engaging a route; the end result (i.e. completing the route) is not the important part, but rather the education that results. Too often we as climbers focus on grades and achievement, when I think the most important part is giving our all to the process, and taking what we learn from it to become better climbers, and ultimately better in tune with ourselves and the educational process of climbing.
I look for how many holds are in that set of color, so if there are more holds in that color than it is easier to set with those ones because there are more options. As well as looking on the wall where that color hold can go. And then I would look at what the gym is looking for overall. If we're low on V3's or V5's I would set those. Normally when I set I create what is in my head and I create as I am setting based on the holds that I have, or I would try to set a specific grade or difficulty based on what the gym needs. It comes naturally to me based on the types of holds I have, the orientation of the hold, how you can use the hold, the angle of the wall, and from how much time I've spent climbing. I have a lot of moves floating around in my head.

I think something that is important is to set for everybody, and you can do that easily by adding a lot of foot jibs. That way, shorter people can still reach the holds, and tall people won't be super scrunched. You need to have that thought in your head while you're setting. There are going to be long moves for tall people and long moves for short people that aren't long for tall people. From the hold I am on I reach down, and wherever my hand is normally a decent place for a foot, or where your next foot could go, which is a good way for me to know how to continue.
I start with the holds. I choose holds that are all of the same color and often the same brand hold. The holds determine the difficulty for me, and if I choose hard holds then my route will be more difficult. I work from the bottom up, and begin with the start hold(s). The first or second move is usually a hint at the difficulty of the route and will scare people away who might not be able to do the whole route. I care a lot about the flow of the route and focus on that primarily—working from move to move, and redoing the moves one at a time and make sure they connect evidently. I will usually put the crux of a route through the route to keep people interested and up high off the ground to stay focused. When I create a crux I will do the move at least three times, unless it’s above my climbing range. What matters to me is that all of the moves are reachable for everyone and that the route is a learning experience.
The main thing I look for while I'm setting is flow. Climbing is a vertical dance in which the rock is always leading, the trick is being able to read what she's telling you to do. As a setter you're teaching the wall a new dance to lead climbers through. If you set well enough climbers of all types will feel the way the route is leading them up, and she'll lead them each up a little differently according to what works for their body.

The first thing I do is pick out a few holds. My favorites are sloppy pinches so always a few of those and then whatever strikes my fancy. I pick out a few rest holds to give folks a break after different cruxes. I start from the bottom up. Technique is everything, a route should make you think, not just apply physical strength. When I'm working my way up the wall setting a route I get as high as I can sometimes getting creative with the feet, and reach out with my arm to make a sweep. I look for any bolt holes near my wrist during that sweep, I'll check with the other arm if I don't like what I find. To test flow I climb through everything as it is being set, again and again, sometimes I'll go through a single move 8 or 9 times tweaking how holds are rotated.
Rules and Managers

You should always listen and follow the rules at the climbing wall. The rules exist to keep not only you safe but everyone else that comes into our facility. You won’t learn everything on day one, and a great resource for help are your predecessors and coworkers. Your managers and employers are working for you, themselves, and the rest of the facility so they want what is best for everyone, just as you should.

Setting Safety

It is mandatory and safe to always set with another person in case a person is injured. Sometimes even a third person would be good in case a belayer was incapacitated from a falling object—which brings us to our next point. When you drop something from up high you have to yell “ROCK” to help the people below you know that something is falling from above. You should make sure before you drop something that you know no one is below you however, accidents do occur and you might drop a wrench or hold from high up.
Slings and Clips

There are several metal clips on the wall that allow you to clip into the wall to stay closer to the wall. These will help tremendously when setting on the overhung wall or other difficult positions. We have two types of slings, thick and thin ones. The thick ones are designed to be fallen on and take other shock forces, but the thin ones are not designed for these forces and should not be fallen onto. Also the metal clips within the wall are not foolproof. These are bolted in just like the holds on the wall. The holds slip often and sometimes the metal clips will too. Always have a crash pad underneath you if you are not setting with a top rope. Do not trust the metal clips to save your life.
GLOSSARY OF USEFUL CLIMBING TERMS

A

ABSEIL
The process by which a climber can descend a fixed rope. Also known as RAPPEL.

ANCHOR
An arrangement of one or (usually) more pieces of gear set up to support the weight of a belay or top rope.

APPROACH
The path or route to the start of a technical climb. Although this is generally a walk or, at most, a scramble, it is occasionally as hazardous as the climb itself.

ARÊTE
- A small ridge-like feature or a sharp outward facing corner on a steep rock face.
- A narrow ridge of rock formed by glacial erosion.
- A method of indoor climbing in which one is able to use such a corner as a hold. See also DIHEDRAL.

ARM BAR
Jamming an arm into a crack and locking it into place.

ASCEND
To climb a rope using aid device.

ASCENDER
A device for ascending on a rope.

ASPECT
The direction in which a slope faces.

ATC
A proprietary belay device manufactured by Black Diamond. Has become common term for any tubular belay devices. ATC originally stood for Air Traffic Controller.

B

BACK-CLIPPING
A potentially hazardous mistake that can be made while lead climbing. The rope is clipped into a quickdraw such that the leader's end runs underneath the quickdraw as opposed to over top of it. If the leader falls, the rope may fold directly over the gate causing it to open and release the rope from the carabiner.
BAIL
To retreat from a climb

BARN-DOOR
If a climber has only two points of contact using either the right or left side of their body, the other half may swing uncontrolably out from the wall like a door on a hinge.

BELAY
To protect a roped climber from falling by passing the rope through or around any type of friction enhancing belay device. Before belay devices were invented, the rope was simply passed around the belayer's hips to create friction.

BELAY DEVICE
A mechanical device used to create friction when belaying by putting bends in the rope. Many types of belay devices exist, including ATC, Grigri, Reverso, Sticht plate, eight and tuber. Some belay devices may also be used as descenders. A Munter hitch can sometimes be used instead of a belay device.

BELAY LOOP
The strongest point on the harness. This is the loop you use your belay device on. You should not be anything around the belay loop such as a daisy chain or sling. The belay loop will wear more quickly.

BELAY OFF
Called by belayer to confirm belay has been removed from climbing rope. Response to Off Belay request.

BELAY ON
Called by belayer to confirm belay has been re-applied to climbing rope. Response to On Belay request.

BELAY SLAVE
Someone that volunteers for, or is tricked into, repeated belaying duties without partaking in any of the actual climbing.

BETA
Advice on how to successfully complete (or protect) a particular climbing route, boulder problem, or crux sequence. Some climbers believe that beta taints an ascent.

BETA FLASH
The clean ascent of a climb on the first attempt, having previously obtained beta or while having beta shouted up from the ground en route. Also see ON-SIGHT.

BIG WALL
A climb on which most parties will spend more than one day. Big wall style generally refers to hauling the needed gear (food, water, sleeping bags) in a haul bag instead of carrying the gear on their person. The climbers put it in the haul bag and raise it in between pitches.

BINER
See CARABINER.

BOLT
A point of protection permanently installed in a hole drilled into the rock to which a metal hanger is attached, having a hole for a carabiner or ring.

BOLT CHOPPING
The deliberate and destructive removal of one or more bolts.

BOMB-PROOF ANCHOR
A totally secure anchor. Also known as bombee. Bomber can also refer to a particularly solid handhold or foothold (a "Bomber Jug").

BOOTY
Gear left behind at a climbing area.
BOULDERING
The practice of climbing on large boulders.
Typically this is close to the ground, so protection
takes the form of crash pads and spotting instead
of belay ropes.
BRIDGING
SEE STEMMING
BUCKET
A large handhold.
BUILDERING
The art of climbing on buildings, which is often
illegal.
BUMMER
A slang word referring to a difficult or
uncomfortable hold, often one that tears the skin
on the hand.
BUMP
A climbing technique wherein a hand or foot
is moved to one hold then quickly moved up
immediately to a further hold. This is often done
over short distances advancing from an inferior
hold to a superior one.
BUTTRESS
A prominent feature that juts out from a rock or
mountain.

C
Cairn
A distinctive pile of stones placed to designate a
summit or mark a trail often above the treeline.
Cam
A spring-loaded device used as protection.
Campus
The act of climbing without using any feet.

Campus board
Training equipment used to build finger strength
and strong arm lock-offs.
Carabiner
kar-uh-bee-ner
Metal rings with spring-loaded gates, used as
connectors. Usually oval, or roughly D shaped.
Also known as Biner.
Chalk
A compound used to improve grip by absorbing
sweat. It is actually gymnastics chalk, usually
magnesium carbonate. Its use is controversial in
some areas.
Chalk bag
A hand-sized holder for a climber's chalk that is
usually carried on a chalk belt for easy access
during a climb.

Chest jam
Jamming the torso into a wide crack for resting.

Chicken head
SEE BOULDER HORN.

Chicken Wing
This is a crack climbing technique. A hand is
placed on one side of the crack and the shoulder
on the other.

Chimney
-A rock cleft with vertical sides mostly parallel
large enough to fit the climber's body into. To
climb such a structure, the climber often uses his
head back and feet to apply opposite pressure
on the vertical walls.
-The process of using such a technique
(chimneying).

Chipping
Improving a hold by permanently altering the rock
which is considered unethical and unacceptable.
Chock
-A mechanical device or a wedge used as anchors in cracks.
-A naturally occurring stone wedged in a crack

Choss
Loose or 'rotten' rock

Classification
See GRADE

Clean
-To remove equipment from a route
-To complete a climb without falling or resting on the rope. Also see redpoint
-To aid climbing, abbreviated 'C', a route that does not require the use of a hammer or any invasive addition of protection such as pitons or copperheads into the rock (see PROTECTION)

Clipping in
The process of attaching to belay lines or anchors for protection

Clipstick
In bolted climbing, an extendable pole which allows the climber to reach the first bolt from the ground, thus making the route safer and less committing. Ethically controversial

Col
A small pass or 'saddle' between two peaks, excellent for navigation as when standing on one it’s always down in two opposite directions and up in the two directions in between those

Cord lock
A lock or toggle used to fasten cords with gloved hands. Used most mountaineering gear

Corner
An inside corner of rock, the opposite to an arete (UK). See DIHEDRAL

Crack climbing
To ascend on a rock face by wedging body parts into cracks. i.e. not face climbing. See JAMMING and CHIMNEY

Crag
A small area with climbing routes, often just a small cliff face or a few boulders

Crank
To pull on a hold as hard as possible

Crash pad
A thick mat used to soften landings or to cover hazardous objects in the event of a fall

Crater
Hitting the ground at the end of a fall instead of being caught by the rope
Crimp
- A hold which is only just big enough to be grasped with the tips of the fingers.
- The process of holding onto a crimp.

Crux
The most difficult portion of a climb.

Cup
A hand grip which is squeezed over the top or around the side between the fingers and palm, forming a cup shape with the hand or applying this type of hold on any protrusion or feature.

Cut-loose
Where a climber’s feet swing away from the rock on overhanging terrain, leaving the climber hanging only by their hands. Also known as “Cutting feet.”

Daisy chain
A special purpose type of sling with multiple sewn or bed loops used in aid and big wall climbing. It is designed to hold a climber’s bodyweight rather than arrest a fall and while the sling as a whole will have a strength rating comparable to that of a standard sling the individual loops will typically have much lower ratings.

Dead Ball
Type of Highball boulder where one can possibly die when falling from above.

Dead hang
To hang limp such that weight is held by ligament tension rather than muscles.

Deadman anchor
An object buried into snow to serve as an anchor for an attached rope. One common type of such an anchor is the snow flake. Any object that is buried in order to make an anchor or what you become if that anchor fails.

Deadpoint
A dynamic climbing technique in which the hold is grabbed at the apex of upward motion. This technique places minimal strain on both the hold and the arms.

Deck
- The ground.
- To hit the ground, usually the outcome of a fall.

Deep Water Soloing
Free climbing an area that overhangs a deep enough body of water to allow for a safe fall. Often abbreviated DWS.

Descender
A device for controlled descent on a rope. Also called a rappel device. Many belay devices may be used as descenders including ATCs, figure eights, or even carabiners. See RAPPEL.

Dialled
To have complete understanding of a particular climbing move or route.

Dihedral
An inside corner of rock with more than a 90-degree angle between the faces. See also CORNER and ARête.

Direct aid
A type of tension climbing consisting of using one or more belay ropes to haul the leader up to the next point of protection.
Dirtbag
climbers living cheaply and supporting themselves through odd jobs in order to maximize the amount of time climbing. Well-known practitioners of this lifestyle include Jan and Herb Conn or Fred Beckey.

Doubled Rope Technique (DdRT)
A method used primarily by tree climbers where the rope passes over a support/limb and continuously slides over the limb as the climber ascends or descends.

Double Rope Technique (DRT)
The term denotes the use of two separate ropes which is true of alpine and rock climbers but not as much for tree climbers who usually see it as synonymous with DOUBLED ROPE TECHNIQUE.

Downclimb
To descend by climbing downward typically after completing a climb.

Drop Knee
Method for reducing muscle strain in arms when holding a side grip. One knee ends up in a lower position with the body twisted towards the other leg. It can give a longer reach as the body and shoulders twist towards a hold.

Dynamic belay
Technique of stopping a long fall using smooth braking to reduce stress on the protection points and avoid unnecessary trauma from an abrupt stop.

Dynamic motion
Any move in which body momentum is used to progress. As opposed to static technique where three-point suspension and slow, controlled movement is the rule.

Dynamite starfish
Tightly gripping handholds simultaneously flagging out both legs then proceeding to violently kick downwards and inwards in a desperate attempt to produce upwards motion making the climber resemble an explosive bottom feeder.

Dyno
A dynamic move to grab a hold that would otherwise be out of reach. Generally both feet will leave the rock face and return again once the target hold is caught. Non-climbers would call it a jump or a leap.

E

Edge
A thin ledge on the rock.

Edging
Using the edge of the climbing shoe on a foothold. In the absence of footholds, smearimg is used.

Egyptian bridging
The same position as bridging or chimneying but with one leg in front and one behind the body.

Eliminate
A bouldering move or series of moves in which either certain holds are placed off bounds or other artificial restrictions are imposed.

Elvis legs
Wobbly knees resulting from tired legs. See SEWING MACHINE LEG.

Epic
An ordinary climb rendered difficult by a dangerous combination of weather injuries, darkness, lack of preparedness or other adverse factors. See RUTTER.
European Death Knot (EDK)
A double overhand used to join a pair of ropes for retrievable abseils. So named as the technique originated in Europe and the Americans initially distrusted it.

Exposure
Empty space below a climber, usually referring to a great distance a climber is above the ground or large ledge or the psychological sense of this distance due to being unprotected, or because the rock angles away due to climbing an arete or overhang. Exposure can also refer to exposure to the elements like wind, snow, or sun.

Face climbing
To ascend a vertical rock face using finger holds, edges and smears, i.e. not crack climbing.

Fall
To unintentionally descend under the influence of gravity. Hopefully stopped by a rope.

Feature
A protrusion or indentation on an indoor climbing wall which is permanently moulded into the wall itself.

Feet follow
An instruction on indoor bouldering routes requiring foot movements match preceding hand movements, with no intermediate moves.

Figure four
Advanced climbing technique where the climber hooks a leg over the opposite arm and then pushes down with this leg to achieve a greater vertical reach. Requires strength and a solid handhold.

Figure eight
Aelay device or descender shaped like an '8'.

Figure-eight knot
A knot commonly used to secure the climber's harness to the climbing rope.

Finger board
Training equipment used to build finger strength.

First ascensionist
The person who performed the first ascent.

First ascent (FA)
The first successful completion of a route.

First free ascent (FFA)
First ascent without aid.

First jam
A type of jam using the hand. See climbing technique.

Fixed rope
A rope which has a fixed attachment point. Commonly used for abseiling or aid climbing.

Flagging
Climbing technique where a leg is held in a position to maintain balance rather than to support weight. Often useful to prevent barn-dooring. There are three types of flagging:

- Normal flag where the flagging foot stays on the same side (e.g. flagging with the right foot out to the right side of the body)
- Reverse inside flag where the flagging foot is crossed in front of the foot that is on a foothold
- Reverse outside flag where the flagging foot is crossed behind the foot that is on a foothold.
Flake
- A thin slab of rock detached from the main face
- A method of untangling a rope in which the rope is run through the climber's hands and allowed to fall into a pile on the ground. Useful when preparing a rope for coiling or before starting a lead climb to ensure the rope is fed cleanly and without twists. Often called "flaking out" a rope.

Flapper
An injury consisting of a piece of loose (flapping) skin. A climber will usually just repair these with sticky tape or super glue.

Flash
To successfully and cleanly complete a climbing route on the first attempt, after having received beta of some form. Also refers to an ascent of this type. For ascents on the first attempt without receiving beta see on-sight.

Flat-lander
Non-climber

Flute
A usually insecure fin or flake of rock or ice

Foot Jam
Also known as the heel-to-toe jam, it involves jamming the foot into a larger crack by twisting the foot into place, the contact with the crack being on the heel and toes.

Free base
Climbing with your only protection being a parachute that is deployed in the event of a fall. A combination of free soloing and base jumping.

Free climbing
- Climbing without unnatural aids, other than used for protection
- Often incorrectly used by non-climbers as a synonym for soloing.

Free solo
Climbing without aid or protection. This typically means climbing without a rope.

Frenchies
An exercise used to develop lock-off strength consisting of pull-ups that stop with the elbows locked at angles between 20 and 160 degrees.

Friable
Delicate and easily broken rock, often dangerous.

Friction
Climbing technique relying on the friction between the sloped rock and the sole of the shoe to support the climber's weight, as opposed using holds or edges, cracks, etc. Also known as SWEAR.

Gabby
A young female climber who shows great potential in climbing.

Gaston
A climbing grip using one hand with the thumb down and elbow out, often thought of as a reverse side pull. The grip maintains friction against a hold by pressing outward toward the elbow.

Gate Flutter
The action of the gate on a carabiner opening during a fall.

Gendarme
A pinnacle or isolated rock tower frequently encountered along a ridge.
Golden Retriever
When a climber is cleaning a route and forgets to pull out a piece or unclip the rope and begins to climb above the piece rendering the top rope ineffective.

Gorp
Good Old Raisins and Peanuts.
Trail mix for periodic nibbling to keep high energy level between meals or long climbs or hikes.

Grade
-Intended as an objective measure of the technical difficulty of a particular climb or bouldering problem. More often is highly subjective however.
- The slope of an incline. (Grade (geography))

Graunchy
A route (often off-width) requiring the use of unconventional and uncomfortable techniques.

Grease Ball
A route that has become climbed excessively, causing the rock to become slippery or "greasy".

Green Point
Climbing a sport route with the use of traditional gear.

Grigri
A belay device designed to be easy to use and safer for beginners because it is assisted-braking underload. Invented and manufactured by Petzl.

Many experienced climbers advocate the use of an alpine type device for beginners.

Gripped
Scared. Also over gripping the rock.

Gronked
Accidentally going off-route while leading and becoming lost on a rock face in an area much more difficult than the climb being attempted. The word arises from the climb "Gronk" in Avon Gorge which is notorious for this.

Grovel
-To climb with obviously poor style or technique.
-A climbing route judged to be without redeeming virtue.

Gumby
An inexperienced, unknowledgeable and obvious climber is a derogatory term. Gumbies are incapable of learning.

Gym Climbing
Climbing indoors on artificial climbing walls. This is typically for training but many people consider this a worthwhile activity in its own right.

H

Hamster
The act of pulling oneself up with both arms parallel in front of your chest. Resembles a Hamster during feeding. That sloper required some hamstering to get to the next move.

Handjam
Making progress by inserting the hand (usually vertically with the thumb uppermost) into a crack and then pushing the thumb downwards towards the palm. This expands the hand and can make a highly secure placement. In the UK this move was created with facilitating the advances in free climbing in the late 1940s and 50s made by climbers such as Joe Brown and Don Whillans although they did not invent it.
Hand traverse
Traversing without any definitive footholds, i.e. smearor heelhooking.

Hangdog
While lead climbing or on top rope to hang on the rope or a piece of protection for a rest.

Hanging belay
Belaying at a point such that the belayer is suspended.

Harness
A sewn nylon webbing device worn around the waist and legs that is designed to allow a person to safely hang suspended in the air.

Haul bag
A large and often unwieldy bag into which supplies and climbing equipment may be thrown.

Headpoint
The practice of top-roping a hard trad route before leading it cleanly.

Headwall
A region at the top of a cliff or rock face that steepens dramatically.

Heel hook
Using the back of the heel to apply pressure to a hold for balance or leverage, this technique requires pulling with the heel of a foot by flexing the hamstring. This technique is notalable since in most forms of climbing one uses the toes to push.

Helmet
Also known as a brain bucket or skull lid, it can save your life but only while worn.

Highball
A tall, boulder problem. Falling becomes more dangerous due to the increase in height.

Hold
A place to temporarily cling, grip, jam, press or stand in the process of climbing.

Honied
To be in peak mental and physical fitness for climbing.

Hook
A climbing technique involving hooking a heel or toe against a hold in order to balance or to provide additional support.

Horn
Large pointed protrusion of rock that can be slung. Typically also makes a good handhold. Known in the UK as a ‘Spike’. See BOLLLARD, CHICKEN HEAD.

J

Jamming
Wedgeing a body part into a crack.

Jib
A particularly small foothold, usually only large enough for the big toe, sometimes relying heavily on friction to support weight.

Jug
A shortened term for Jug Hold, both noun and verb.

Jug hold
A large, easily held hold. Also known simply as a Jug.
K
Knots
Climbers rely on many different knots for anchoring oneself to a mountain, joining two ropes together, slings for climbing up the rope, etc.

L
Lead climbing
A form of climbing in which the climber places anchors and attaches the belay rope as they climb (traditional) or clips the belay rope into preplaced equipment attached to bolts (sport).

Leader Fall
A fall while lead climbing. A fall from above the climber's last piece of protection. The falling leader will fall at least twice the distance back to his or her last piece, plus slack and rope stretch.

Liebacking
Climbing a vertical edge by side-pulling the edge with both hands and relying on friction or very small holds for the feet.

Liquid Chalk
A liquid form of chalk with a longer hold time than normal chalk. It is used on very hard routes and competitions where the act of re-chalking requires too much energy or time.

Locking carabiner
A carabiner with a locking gate to prevent accidental release of the rope.

Lock-off
Using tendon strength to support weight on a handhold without tiring muscles too much.

Low-Angle
A face climb that is less than vertical, the opposite of an overhang or roof. The same as 'slab'.

M
Mantel
A move used to surmount a ledge or feature in the rock in the absence of any useful holds directly above it involves pushing down on a ledge or feature instead of pulling down. In ice climbing, a mantel is done by moving the hands from the shaft to the top of the ice tool and pushing down on the head of the tool.

Mantle
The external covering of a climbing rope. Climbing ropes use kernmantle construction consisting of a kern (or core) for strength and an external sheath called the mantle.

Match
To use one hold for two limbs or to swap limbs on a particular hold.

Mock Leading
To climb a wall. Top rope with having another rope connected to the climber for practice of Lead climbing clipping. The other rope is normally not connected to any belayer below and is only there to practice the clipping. Usually practiced while learning how to Lead Climb. Also known as Pseudo Leading.

Mono
A climbing hold, typically a pocket or hueco that only has enough room for one finger.

Move
Application of a specific climbing technique to progress on a climb.
Multi-pitch climbing
Climbing on routes that are too long for a single belay rope.

Munter hitch
A simple hitch that is often used for belaying without a mechanical belay device. Otherwise known as an Italian hitch or a Friction hitch.

N
Ninja feet
The quiet, deliberate, and precise placement of toes upon a foothold.

No-hand rest
An entirely leg-supported resting position during climbing that does not require hands on the rock.

Nub
A little hold that only a few fingers can grip or the tips of the toes.

Objective danger
Danger in a climbing situation which comes from hazards inherent in the location of the climb, not depending on the climber’s skill level. Most often these involve falling rock or ice or avalanches.

Off belay
Called by a climber when requesting that the belayer remove belay equipment from the climbing rope (for example when clearing top protection from a lead route). Replied to with Belay off.

Off-width
A crack that is too wide for effective hand or foot jams, but is not as large as a chimney.

On belay
What an American climber calls when he is ready to be belayed. Replied to with Belay on.

On-sight
A clean ascent with no prior practice or beta. For ascents on the first attempt with receiving beta see FLASH.

Open book
An inside angle in the rock. See also DIHEDRAL.

Overhang
A section of rock or ice that is angled beyond vertical. See roof.

P
Panic Bear
A panicking novice climber clinging to handholds while searching desperately for a foothold.

Peel
To fall.

Pendulum
- Swinging on taut rope to reach the next hold in a pendulum traverse.
- A swing during a fall when the last piece of protection is far to one side.

Picnic stop
A no-hand rest.

Pinch Hold
This is a hold where you must pinch it to hold on. They come in various sizes.
Pinkpoint
To complete a lead climb without falling or resting on the rope (hangdogging), but with pre-placed protection and carabiners. Also see CLEAN and RESPOIN.

Pitch
In the strictest climbing definition, a pitch is considered one rope length 50-60 metres (160-200 ft). However, in guidebooks and route descriptions, a pitch is the portion of a climb between two belay points.

Polish
On popular routes, the sheer passage of traffic can polish the rock to such an extent as to make the climbing much more difficult. This is most noticeable at the crux, and more common on certain rock types.

Positive
A hold or part of a hold having a surface facing upwards, or away from the direction it is pulled, facilitating use.

Problem
Used in bouldering, the path that a climber takes in order to complete the climb. Same as route in roped climbing.

Project
A potential new route or bouldering problem that is being attempted, but has not seen a first ascent yet.

Protection
- Process of setting equipment or anchors for safety
- Equipment or anchors used for arresting falls
Commonly known as Pro

Pseudo Leading
To climb a wall top-rope with having another rope connected to the climber for practice of lead climbing clipping. The other rope is normally not connected to any belayer below and is only there to practice the clipping. Usually practiced while learning how to Lead Climb. Also known as MOCK LEADING.

Psychological protection
A piece of protection that everyone knows will not hold a fall, but makes the climber feel better about having gear beneath them anyhow.

Pumped
-To have such an accumulation of metabolic waste products in the forearm that forming even a basic grip becomes impossible. A climber who is pumped will find it difficult to hold on, and may struggle to lift or clip a rope.
-(Psychology) A feeling of anticipation and energy before a challenging climb.

Punter
An over-ambitious and under-prepared climber.

Purchase
To have a solid grip on a hold or feature. "I had a good purchase on that jug".

Q
Quickdraw
Used to attach a freely running rope to anchors or chocks. Sometimes called "quickies", "draws", or "extenders".
Rack
The set of equipment carried up a climb also the part of a harness (consisting of several plastic loops) where equipment is hung ready to be used.

Rappel
The process by which a climber may descend on a fixed rope using a friction device. Also known as abseil or roping down.

Redpoint
To complete while placing protection on a lead climb after making previous unsuccessful attempts, done without falling or resting on the rope (hangdogging). Also see CLEAN and RINKPOINT.

Rest step
Energy-saving technique where unweighted (uphill) leg is rested between each forward step sometimes by "locking" knee of rear leg.

Rodeo clipping
To clip into the first piece of protection from the ground by swinging a loop of rope so that it is caught by a carabiner. This can only be done when the first piece of gear is already placed.

Roof
Horizontal overhang.

Rope
A basic term of climbing equipment that physically connects the climber to the belayer.

Rope gun
The most capable climber in the group. The person who can get the rope up there for the rest of the party.

Route
The path of a particular climb or a predefined set of moves.

Runner
Made of nylon and nylon/blend materials, runners, also referred to as slings, are used by climbers for a multitude of purposes.

Runout
A lengthy distance between two points of protection which in some but not all cases might be perceived as frightening or dangerous. May also be used as an adjective to describe a route, or a section of a route.

S
Saddle
A high pass between two peaks larger than a col.

Sandbag
A climb which receives a much lower grade than deserved. Also used as a verb when referring to the act of describing a climbing route as easier than it actually is.

Send
contraction of the word ascend. past tense: ascended. See SEND.

Scrambling
A type of climbing somewhere between hiking and graded rock climbing.
Screamer
-A long and loud fall
-A nylon webbing structure consisting of one large loop sewn in multiple places to make a shorter length. The stitch-points are intentionally sewn with less than maximum possible strength. The screamer is attached with carabiners between an anchor point, particularly one of dubious strength and the climber in the event of a fall, the stitching of the sewn sections is designed to rip apart, absorbing some of the fall energy and decelerating the climber thereby reducing the overall shock load on the dubious anchor. Screamer is a brand name of Yales Mountaneering.

Scree
Small loose broken rocks, often at the base of a cliff. Also an area or slope covered in scree. Scree is distinguished from Talus by its smaller size and looser configuration.

Screw on
A small climbing hold, screwed onto the wall in climbing gyms. Can be used for feet in a route regardless of its colour. Also referred to as a foot clip, clip, or micro.

Second
A climber who follows the lead or first climber.

Self-Belay
To perform belaying for oneself.

Send
To clearly complete a route e.g. ON-SIGHT, FLASH, REDPOINT. See SEND.

Sewing machine leg
The involuntary vibration of one or both legs resulting from fatigue or panic. Also known as "Sissor leg", "Elvis Presley Syndrome" or "Disco knee". Can often be remedied by bringing the heel of the offending leg down, changing the muscles used to support the weight of the climber.

Sharp end
The end of the belay rope that is attached to the lead climber. 'Being on the sharp end' refers to the act of lead climbing, which is considered more psychologically demanding than top-roping or following, since it may involve more route-finding, as well as the possibility of longer, more consequential falls.

Short fixing
A traditionally-belayed lead climber reaches a new belay station, creates an anchor, tying the lead rope off to the anchor. The climber then switches over to self-belaying and continues to climb. Meanwhile, the second climber ascends the fixed rope using ascenders (aka Jugging) and clears the pitch. When the second reaches the belay, he or she anchors in and starts to belay the leader in the traditional way again. When the leader reaches the next belay the process is repeated.

Side pull
A hold that needs to be gripped with a sideways pull towards the body.
Simulclimbing
A technique where both climbers move simultaneously upward with the leader placing protection which the second removes as they advance. A device known as a Tibloc which allows the rope to only move in a single direction is sometimes used to prevent the second climber from accidentally pulling the lead climber off should the second slip.

Single Rope Technique (SRT)
The use of a single rope where one or both ends of the rope are attached to fixed anchor points.

Sit and spin
A method of starting a rappel from a cliff edge accomplished by sitting with legs over the edge and then spinning around to face the cliff while planting feet on the face.

Sit start
Starting a climb from a position in which the climber is sitting on the floor. This is common in climbing gyms in order to fit an extra move into the climb. Noted as SS or SDS in some topo guides.

Skittling
Climbing without following any specific color in a gym with color-designated routes/problems. Also referred to as “rainbowing,” since any and all colors of holds are used.

Slab
A relatively low-angle (significantly less than vertical) section of rock usually with few large features. Requires slab climbing techniques.

Slab climbing
A particular type of rock climbing and its associated techniques involved in climbing rock that is less than vertical. The emphasis is on balance footwork and making use of very small features or rough spots on the rock for friction.

Slack
Portion of rope that is not taut, preferably minimized during delay.

Sling
Webbing sewn or tied into a loop.

Sloper
A sloping hold with very little positive surface. A sloper is comparable to palm ing a basketball.

Sloppy Plopping
Poor footwork (Northumberland climbing slangs) as in "Nae Sloppy Ploppin" - you'll need accurate footwork to have any chance of flashing this.

Smearing
To use friction on the sole of the climbing shoe in the absence of any useful footholds.

Solo climbing
Setting and clearing one's own protection on an ascent climbing by oneself.

Soupy
A hold that is wet and slimy from water or some other source.

Spinner
In indoor climbing, a hold that is not secure and spins in place when weight is applied.

Spike
See HORN.
Sport climbing
A style of climbing where form, technical (or gymnastic) ability and strength are more emphasized over exploration, self-reliance and the exhilaration of the inherent dangers involved in the sport. Sport climbing routes tend to be well-protected with pre-placed bolt-anchors and lends itself well to competitive climbing.

Spotting
A method of protection commonly used during bouldering or before the leader has placed a piece of protection. The spotter stands beneath the climber ready to absorb the energy of a fall and direct him away from any hazards.

Sprag
A type of hand position where the fingers and thumb are opposed.

Spraying
Giving unwanted — and unasked-for — beta to a fellow climber. Also, excessive, overly prominent or boorish proclamation of one's own (often exaggerated) skills or exploits.

Static
Of a style of climbing or specific move not dynamic. In general this entails movement of a limb to a new hold without the simultaneous transfer of weight. Instead weight transfer occurs after the limb has moved.

Steep
Descriptive of any climbing face that is angled beyond vertical. See OVERHANG.

Stem
- The simultaneous use of two widely spaced footholds.
- Climbing using two faces that are at an angle less than 190° to each other.

Stick clip
A long stick on the end of which a climber can affix a quickdraw. It allows the climber to clip a quickdraw to the first bolt on a sport climb while still standing on the ground. This is especially useful if the first bolt is high up and out of the comfort zone of the climber. A stick clip can be bought or easily made by attaching a quickdraw to a stick with a rubber band.

Summit
- The high point of a mountain or peak.
- To reach such a high point.

Sweeper
Refers to the last member or the tail of a climbing group. The sweeper's task is to spot and retrieve things that may have accidentally fallen from the preceding climbers. To make sure that no mess or gear is left behind, and to make sure that the rear is keeping up with the whole team.

Swinging-lieback
A dynamic form of the lieback described above; rotating off one foot while maintaining a grip with that hand, then grabbing a high handhold at the deadpoint of the swing. This move is frequently reversible unlike more aerial dynos.

T
Take
Called by a climber when requesting that the belayer remove all slack. See HANDICAPPING.
Talus
An area of large rock fragments on a mountainside that may vary from house-size
to as small as a small backpack. The area if
colder and consolidated, may be stable, or the
rocks may be precariously balanced. Talus is
distinguished from scree in that it is larger and
may feature solid interlocking of the rocks while
scree is by definition loose.
Teabagging
When after a whopper or long fall, a climber falls
past their belayer who is generally lifted up off
the ground.
Technical climbing
Climbing involving a rope and some means of
protection as opposed to scrambling or glacier
trail.
Technique
Specialized moves given names to help
communicate what to do to another person.
Tendu
From the French word meaning outstretched. In
this grip the fingers are close to the position when
the hand is open. The relative angle between the
finger bones is gradual. The load applied is
coming from tension in the forearm muscles.
Tension
A technique for maintaining balance using a taut
rope through a point of protection.
Testpiece
A climb that is representative of the hardest best
climbs in an area.
Thrutching
Root technique or body climbing, often making
a move more difficult than it need be. Also
A grunting, heaving action synonymous with
climbing.

Tie-In Points
The leg straps and waist belt create two loops
connecting the belay loop. The points which you
are in at.
Toe hook
A toe hook is securing the upper side of the
toes on a hold. It helps pull the body inwards—
towards the wall. The toe hook is often used
on overhanging rock where it helps to keep the
body from swinging away from the wall.
Top rope
To belay from a fixed anchor point above the
climb. Top-roping requires easy access to the
top of the climb by means of a footpath or
scrambling.
Top-out
To complete a route by ascending over the top
of the structure being climbed.
Track
To use holds specified out for you in any route,
usually used in gym climbing.
Traditional climbing
A style of climbing that emphasizes the adventure
and exploratory nature of climbing. While sport
climbers generally will use pre-placed protection
("bolts"); traditional (or "tradt") climbers will place
their own protection as they climb. Generally
carried with them on a rack.
Training
Getting prepared to climb on difficult mountains.
Tramming
A technique that is typically used while lowering and cleaning gear from an overhanging and/or traversing route. A quickdraw is clipped between the climber’s harness and the rope that is threaded through the gear. As the climber is lowered by the belayer, the quickdraw holds the cleaner close to the wall and following the line of the route. Without the quickdraw, the climber would lower straight down further and further from the remaining gear to be cleaned.

Traverse
- To climb in a horizontal direction.
- A section of a route that requires progress in a horizontal direction.
- A Tyrolean traverse is crossing a chasm using a rope anchored at both ends.
- A pendulum traverse involves swinging across a wall or chasm while suspended from a rope affixed above the climber.

Tufa
A limestone rib formation that protrudes from the wall which can sometimes fit within the pinching grasp of a climber’s hand; alternatively, a plastic bolted on bouldering hold designed to replicate such a formation on an indoor climbing wall.

V
Volume
A large, hollow bolted-on bouldering hold.

W
Wallerina
A graceful female climber who appears to dance up the climbing wall.

Webbing
Hollow and flat nylon strip mainly used to make slings.

Weighting
As in “weighting the rope.” Any time the rope takes the weight of the climber. This can happen during a minor fall, a whipper (long fall), or simply by resting while hanging on the belay rope (see also HANGDOGGIN).

Whipper
A lead fall from above and to the side of the last clip, whipping oneself downwards and in an arc. Has come to denote any fall beyond the last placed or clipped piece of protection.

Wired
A route or sequence that a climber has rehearsed extensively and thus ascends with ease. See DIALED.

Wolf moon
To complete a lead climb during nighttime.

Woodie
A homemade climbing wall. Often specifically a hybrid between a climbing wall and a fingerboard. Specifically called such because of the wooden panels (usually left unpainted) used to attach the climbing holds to.
Y

Yabo
Another name for a Sit start, a Yabo start was named after John Yabo Yabloniski

Yard up
To pull on the rope to make upward progress, often with assistance from the belayer. This may be done to bypass a crux, or to quickly regain ground lost after a fall without re-climbing the section. AKA to "jug up" the rope.

Yosemite Decimal System
A numerical system for rating the difficulty of walks, hikes, and climbs in the United States. The rock climbing (5x) portion of the scale is the most common climb grading system used in the US. The scale starts with the easiest grades at 5.0 and is open-ended on the harder end. As of November 2013, the most difficult grade was 5.15c.

Z

Z-clipping
Clipping into an anchor with the segment of rope from beneath the previous piece of protection, resulting in a potentially dangerous tangled configuration of the belay rope.

Zipper fall
A fall in which each piece of protection fails in turn. In some cases when the rope comes taut during a fall, the protection can fail from the bottom up, especially if the first piece was not placed to account for outward and/or upward force.
What not to do
Dynos

Dynos are also a big controversy at the gym. Again, they should not be set at our location because we care about safety and it's dangerous to attempt these without regulation and practice. We do have a dyno competition set during Boulder Ball every spring, but you should not set these on a regular basis. They should not be in routes and should not be set without talking to management. Again, these are only set during our competition, so stay safe!
Foot hopping

Foot hopping is when you make a person hop feet from one foot to the next to move on. This usually is a sign that there isn’t enough feet on your route or that you didn’t completely forerun your route. It is okay to have feet matching, but if a person has to jump and switch feet on a small foothold it will lead to unnecessary injury. Instead, place more feet, if you want to have difficult footwork within your route then choose difficult feet, just don’t make people foot hop. It’s lazy, poor form, and hard on shoe rubber.
Campus routes

Campus routes are when a route is designed without the use of feet. These can be a great strength building exercise, however, Ball State University’s climbing wall is not the place for these routes. People can be seriously hurt without the proper amount of training and guidance that is necessary to climb campus routes. Campus routes used to be set at Ball State University, but the routes attracted the wrong attitude toward the climbers. After that past experience we do not allow these routes to be set even by experienced staff.
Thanks and Farewell
Thank you for taking the time to read our thesis and learning with us.

We would again like to thank Ball State University's Outdoor Pursuits, Jessica Allardt, Kirsten King, Dru Mack, Devin Dabney, Lane Sipahimalani, and the countless others that participated and helped us complete our thesis.

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We hope to see you all soon and keep enjoying climbing as much as we do. Farewell.
VO-
"Heron Sighting"

This problem was made with all jugs and one optional sidepull. It managed to include a little bit of technique while still maintaining the easiest boulder grade. By moving laterally it encouraged the climber to cross hands and the placement of jibs for feet encouraged climbers to frontstep, using the outside of the feet as well as the inside of the toe.
Climber's Thoughts

"It's simple and easier but still provides a sense of accomplishment. I think it's a clean route."
Climber’s Thoughts

“The moves flowed nicely together.”
Climber’s Thoughts

"Super juggy, nice warm-up, lots of feet. Almost too many jugs for clear beta."
Climber’s Thoughts

"Larger holds, 2-hand start were good. Didn’t like the movement, random feet."
This problem included a mantle followed by a pinch that required the climbers to mantle to their fullest to reach it. The designer set this move to his west but some climbers still stated it as reachy. Sometimes unfamiliar moves or moves that take a larger commitment and challenge patrons will cause them to blame the setter. Don't take it personally if it's your problem, all you can do is show them your beta and encourage them to continue working on the movements.
Climber's Thoughts

"Interesting movement.
Fun static moves."
Climber's Thoughts

"I think the mantle is pretty neat. It and the ending stance is the perfect height. I suppose I could have done it differently, but the crimp after the peanut seemed far/awkward for the match."
The mantle is a good challenge and a good move to have in your Vo skillset to climb outside.
Climber’s Thoughts

“Unusual movement that was interesting and fun, not the typical reach up and pull.”
This problem contained several matches or crosses depending on the beta and climber. Using two faces of a corner the climbers were introduced to arete climbing. The holds were very positive and juggy, but the location and orientation allowed the route to develop into an interesting design. The use of natural features was also a positive remark from several climbers.
Climber's Thoughts

"I liked the start of this route. I also enjoyed the use of natural pockets. I did not like the finish of this route. For a V0+, I felt that it needed another foot for balance at the finish."
Climber's Thoughts

"The holds were fun to use, but the sequence was unclear."
Climber’s Thoughts

‘Good use of naturals. lateral movement. The second hold was semi-awkwardly rotated.’
Climber's Thoughts

"I thought the movement up to the pocket was good."
V1 “Free Snow Cone”

This problem moved diagonally along the wall as it progressed. The sequence was very clear, but what made the problem difficult was the types of holds. Pinches and shallow pockets were used instead of jugs. Their could have been another jib or two added to help climbers as they moved laterally along the wall.
Climber's Thoughts

'I like the side start. The feet directed your body orientation. The ending was nice lean/side step which I enjoyed. I felt like there was one unavoidable foot hop.'
Climber's Thoughts

"Good cross movement.
Weird starting holds."
Climber's Thoughts

"I'd never done it before, but was able to get it first try! It wasn't just up and down; it moved across the wall. There was a route next to it that was near to the same color, so it was hard to tell which holds were on."
Climber’s Thoughts

'I liked the multiple ways to adjust feet for different climbers. The sequence is open for interpretation by individual. The length of the route seemed long to me.'
This problem contained a wide two-hand start which is a new addition to our previous routes. The problem consisted of all the same colored holds and several climbers appreciated the clarity that created. The use of difficult and high feet made the problem difficult for some shorter climbers to accomplish. The route is short, but the technique to finish it was very well thought of and designed.
Climber's Thoughts

"I like the technique involved and the same colored holds."
Climber's Thoughts

"The moves required to complete the route. I like the high feet. The use of different holds made it a bit challenging."
Climber’s Thoughts

“I liked the same colored holds and thought the footwork was interesting...in a good way. It could be reachy until you found good beta for yourself.”
Climber's Thoughts

'I enjoyed the wide-set start. I also like that all the holds were the same color. It made it easier to see where the next hold was. The moves were reachy, able to be done, but it made the route more difficult.'
This problem featured several situations that challenged climbers both mentally and physically. A jib was used as a pinch for a hand which threw climbers off mentally. The difficulty of the handholds and high feet also forced body positions climbers were not used to. Most climbers liked this problem except for its finish. Everyone thought it was too reachy and out of sync with the flow of the problem.
Climber’s Thoughts

"I liked the forced lean in one place, and that all the holds were challenging. You can also do the end dynamically or statically, but it’s awkward if you want to finish statically."
Climber's Thoughts

'The move off the green geometric hold was nice. Having to use it in multiple ways. I did not like finding the tape. the color is similar to the wall.'
"That it was a challenge but I got it. I also liked that a foot was used as a hand hold."
Climber's Thoughts

"I liked that it made me think about my sequence. I wish it weren't as reachy. The finish was a little sketchy."
This problem featured a more dynamic flow and powerful hold techniques. Climbers came up with several different betas to complete the problem, but all were at least somewhat dynamic. Climbers really enjoyed the natural feet available here and that is what allowed for so many different ways to finish. This allowed climbers to bring more of their personal climbing style into the problem.
Climber's Thoughts

"I liked the movement around the arete."
Climber's Thoughts

"I liked the required moves and flow of the route. The route allows you to complete it in different ways. I use a high toe/heel hook to use to push me up to the finish hold."
Climber’s Thoughts

"I really liked the body positioning, heel hook, and hip rotation. The flat sloper wasn’t great, but not terrible."
Climber's Thoughts

"The toe hook I had to do around to the slab wall was cool. I didn't like the setter was there really pushing their own beta. I'll find what works for me."
This problem was the hardest one we looked at and is the upper range of difficulty for recreational climbers at our gym. The holds were all of the same color and style—yellow and crimp. The crux of the problem is a crossover to a gaston. Natural feet were used for most of the route to make it more difficult. The drop finish could have been changed to a higher finish because dropping is not a desired move often.
Climber's Thoughts

'1 liked the same colored holds and that the holds are all a similar type of hold—crimpy. Good finish hold. The start is really compressed and difficult—it's really low to the ground. I don't like that the route has a drop finish.'
Climber's Thoughts

'I liked the sequence and hold selection. The start was a little funky, but cool.'
Climber’s Thoughts

"I had a lot of difficulty reaching the third hold. I did not enjoy this problem."
Climber's Thoughts

'I liked the style, holds, and name. I hated the finish! Why go back down? It's a gym, just go upwards as much as possible.'