2025 Student Handbook

www.amcbostonclimbers.com

WARNING:

Climbing is a dangerous sport. You can be seriously injured or die. Do not depend solely on any information or opinions contained in this handbook. Your climbing safety depends on your own judgment based on competent instruction, experience, and a realistic assessment of your climbing ability. If you are unwilling to assume complete responsibility for your safety, do not use this handbook. The handbook editor, authors, Sport Program Climbing Committee, and the Appalachian Mountain Club expressly disclaim all representations and warranties regarding this guide, the accuracy of the information herein, and the results of your use hereof, including without limitation, implied warranties of merchantability and fitness for a particular purpose. The user assumes all risks associated with use of this handbook.

Sport Climbing Committee

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We would like to extend a special thanks to Frannie Bui, Xi Chen, and the Mountaineering Committee for all of the reviewing, feedback, and mentorship.

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Welcome!

We're excited to have you join the AMC Boston Sport Climbing Program. This handbook will guide you through what to expect from the program, how to prepare, and how to stay safe while learning and climbing outdoors. Whether you're new to climbing or transitioning from gym to crag, our team is here to support your journey.

Our Volunteers

We depend entirely on volunteers to make the Sport Program happen. Everyone you see volunteers their time every year to build the Boston climbing community. We would like to express our appreciation and gratitude to all the people who help make this program possible. In particular, we would like to acknowledge the efforts of several groups of people. First, there is the Organizing Committee that starts working months ahead of the program to make all the arrangements for the program. Then there are the Weekend Leaders who orchestrate the program weekends. Next are our instructors; without them we could not carry this program.

Please take a moment to say “thank you” personally to all our volunteers.

Program Overview

The Sport Program is a two weekend instructional series designed to teach fundamental outdoor sport climbing skills including lead climbing, belaying, anchor cleaning, and safety techniques. You’ll receive mentorship from trained volunteer instructors and gain hands-on experience on real rock.

Program Dates:

- **Lecture Nights (AMC Boston HQ):**
    - Thursday, August 7 @ 7:00 PM
    - Thursday, August 14 @ 7:00 PM
- **Crag Days (Rumney, NH):**
    - Weekend 1: August 9–10
    - Weekend 2: August 16–17

Saturday night camping is included at Rattlesnake Campground.

Communications

Website

Sport Program information can always be found on our website at:
https://www.amcbostonclimbers.com/sport-program

Email

If you have any questions during the program, you can email us at: sport@amcbostonclimbers.com

We have an email distribution list for official Sport Program announcements. All emails will come from sport@amcbostonclimbers.com, and we recommend adding this email address to your address book to make it less likely that program emails will get picked up by junk mail filters. Program emails are sent via Sender and each message will have an unsubscribe link at the bottom. If you unsubscribe you won't receive the rest of the Program emails with attendance sheets, carpool lists, feedback surveys, and important last-minute updates.

Weekend Coordination

Students will receive an overall program email outlining program dates & times along with necessary gear. Each week we will send out a reminder email with any updates as well as an online spreadsheet to facilitate carpool arrangements for Students and Instructors. We encourage carpooling in part because it's a great way to get to know your fellow Students (some of whom may be your climbing partners for years to come!).

Program Goals

- Develop foundational skills in outdoor sport climbing, with a focus on safety and communication
- Build confidence in lead climbing and lead belaying
- Learn to build and clean anchors with open and closed hardware
- Understand and practice risk management principles in a crag setting
- Create a supportive, inclusive environment where all students can thrive

Requirements

Students must be lead-certified at a gym in the greater Boston, MA or New England area.

Program Rules

You are *responsible for your own and for others' safety.*

Rock climbing involves certain inherent risks. These are minimized where possible, but climbing requires vigilance from all program participants. Each participant is responsible for their own safety and for the safety of those around them.

No Dogs allowed at the crag. While we love your 4 legged furry friends, we want your full attention, and would not be able to accommodate dogs.

The Sport Program Committee reserves the right to terminate anyone's participation in the program due to safety or other issues. Harassment of any kind is not tolerated.

Safety

- Understand the risks involved in rock climbing.
- Immediately intervene if you observe unsafe behavior; send someone to get a Weekend Leader if you can not intervene or if the behavior continues.
- Helmets are required at all times while at the crag, whether at the top or bottom of the cliffs (see below).
    - Helmets must be designed for climbing; other helmets are not allowed.
    - Helmets should be put on well before approaching the base or top of climbs, ideally in the parking lot. If this does not happen, please put it on once you arrive at the crag and keep it on until you hike out of the crag.
- Discuss and encourage the use of:
    - Eye protection - this is not just for UV protection and groovy looks. Even a small amount of chosss dislodged by an extended hand can ruin a day (or more)
    - Belay gloves - getting a hand sucked into a belay device hurts; dropping a climber because you didn't wear belay gloves hurts more.
- Double check knots, PAS (Personal Anchor System) attachments, helmets, and harness buckles on yourself and those around you *before beginning any activity that involves fall risk,* and create this as a norm.
- Verify the compatibility of belay devices with the intended rope(s) before each climb.
- Be careful not to dislodge any rocks or holds during a climb, which presents a danger to someone below. Call "ROCK!" if anything hazardous is dropped down the rock face.
- While belaying, Never let go of the brake strand EVER.
- No free soloing (climbing without a rope and belay).

Emergencies

- **If there is a serious accident, call 911 first**.
- For any accident, send someone to get a Weekend Leader.
- If you have medical or rescue training and can assist during an emergency please make the Weekend Leader aware immediately.

Required Gear

All students are responsible for bringing their own gear, which must be in good condition and certified for climbing (UIAA/CE approved). We advise marking your carabiners and other hard gear with nail polish so you can identify it. Tape is suboptimal as it can cause devices to bind with clipped materials, instead of running smoothly over the metal surface.

Essential Items:

Climbing gear (Required!):

- Climbing harness (UIAA/CE certified), not older than 5 years.
- Climbing-specific helmet
- Climbing shoes

- Belay device with assisted braking (Petzi GriGri, Edelrid MegaJul, Edelrid Jul, Black Diamond Pilot, Mammut Smart, etc.)
- Personal anchor system (Petzl Adjust, Beal Expresso Fit, Metolius PAS, Black Diamond 18mm Nylon Runner in 120 cm length, etc.)
- 4 locking carabiners
- At least two additional climbing carabiners (can be locking or non-locking)
- Hiking/Approach Shoes

Camping and additional gear

- Backpack
- Food & snacks for breakfast and lunch for both Saturday and Sunday (always keep food in your car overnight[1]; always keep food in airtight closed containers during the day[2]).
- Water (at least 2 liters)
- Sun protection (sunscreen, etc.)
- Bug spray (no DEET!!)
- Layers for changing weather
- Rain gear
- Headlamp
- Tent or shared tent setup
- Sleeping bag and sleeping pad
- Toiletries (toothbrush, soap, etc.)
- Camp chair (optional but nice to have)
- Eating utensils, bowl, cup

We will review this checklist in more detail at the first lecture night. If you are missing gear or are unsure about an item, reach out to the committee in advance.

[1] unless you want bear cuddles
[2] unless you want chipmunk-sized holes in your bag

Program Operations

Lectures

During the program each week there will be a lecture taking place at the AMC Boston Headquarters, on a weeknight before the crag weekend. This lecture will give students on the ground instruction and hands-on practice of the various skills that they will be working on each weekend, learning and practicing it in a controlled environment and getting comfortable with it before attempting it at the crag.

We will also use this time to discuss logistics for the weekend, go over any changes, and encourage carpooling plans to send less cars to the lots.

Crag Weekends:

During each program weekend, we will meet at the Rumney parking lot to check-in and break up into small groups.

Instructional Groups

Your group for the day will generally consist of 4-6 Students and 2-4 Instructors. We encourage Students to go with different Instructors each weekend/day. You will get a variety of perspectives and different presentations on rock climbing this way.

Each instructional group will have a bag of gear to use for the day that includes ropes, quick draws, stick clips, carabiners, etc. Students will be asked to divide this gear up amongst themselves to carry to the cliffs. All this gear must be returned to the Weekend Leaders at the end of the day. You'll have a short hike (no more than 10-30 minutes) to the cliffs.

Instruction

Each day will generally start with everyone getting into personal safety gear (helmets, harnesses, etc.), and Instructors will go over the planned program material for the day. From there, it will be a mix of practicing and demonstrating the skills on the ground using bolt boards, practicing those skills at/on the wall, and additional instruction from the Instructors on various topics. Program days generally last until 2-4pm, though it can vary with the weekend and the group.

Our instruction is hands-on: while an Instructor may demonstrate a skill, you are going to have to do it yourself. Volunteer to help out when the opportunity arises, ask questions, and don't be afraid to make a mistake – that's a part of the learning process. You will also be doing some climbing – and falling – during the program. Climbing outside is different and, in some ways, harder than climbing in the gym.

Pink Books

During the program, you will get skills and requirements signed off in your Pink Book. This book will act as a progression system for the program. Getting a sign off on initial skills, such as demo-ing cleaning an anchor on a bolt board on the ground, will allow you to move onto other skills, such as cleaning an actual anchor at the top of a route. This is to ensure that Students can remain safe by being comfortable with and proficient enough with the skills involved in the Program before putting them to practice.

You will generally be with a different Instructor each program day. Make sure your Instructor signs your Pink Book as the course progresses each day– you may not see him or her again the next day, or that Instructor may not remember what you did a week later!
Your Pink Book is the only record of what you have done in the program so do not lose it, and remember to bring it every weekend! (If you do forget your Pink Book, ask a Weekend Leader for a replacement for that day.)

Some Advice

To get the most out of the program, we have a few suggestions...

1. Ask questions and be an active learner. We want students to become independent climbers. This means that by the end of the program, you should be confident that you are tying knots correctly, belaying competently, able to set up your own sport climbs etc. – and not be dependent on an Instructor to check what you're doing. Ultimately, you must be responsible for your own safety while climbing. To reach this level of competence:
    a. Ask questions – If you don't understand why something is done a certain way, ask a question. If you don't understand the underlying principles, ask a question.
    b. Practice – Go over your knots at home until you can tie them quickly and correctly. Take advantage of any opportunity to practice belaying. If you want to practice a skill more, talk to your Instructor or a Weekend Leader.
    c. Volunteer – When an Instructor asks for someone to… don't just sit back and watch. Don't be afraid to make mistakes; that's how we all learn. (Better to make a mistake here, where it will be caught and where we will all learn from it, than when you are out climbing on your own!)
2. We encourage you to go with a different Instructor for each day of the program. You will get different presentations and different opinions from each Instructor. Use this to enhance your learning experience. There is generally no single correct way to do anything in climbing, and each Instructor will have their own set of practices as well as perspectives on efficiency and risk.
3. Learn to trust the system. We require you to climb and take falls for two reasons. First, other Students need practice catching a fall while belaying. Second, you need to learn to trust the system – that the anchor will hold, the belayer will do their job, the rope will become taut, and your harness will keep you from plummeting to the ground. Some fear of falling is natural (and part of the thrill of sport climbing!). While intellectually knowing how the system works helps overcome this fear, there's no substitute for taking falls until

you develop an intuitive confidence in the system. Then you can focus on enjoying the climbing rather than on the fear of falling.

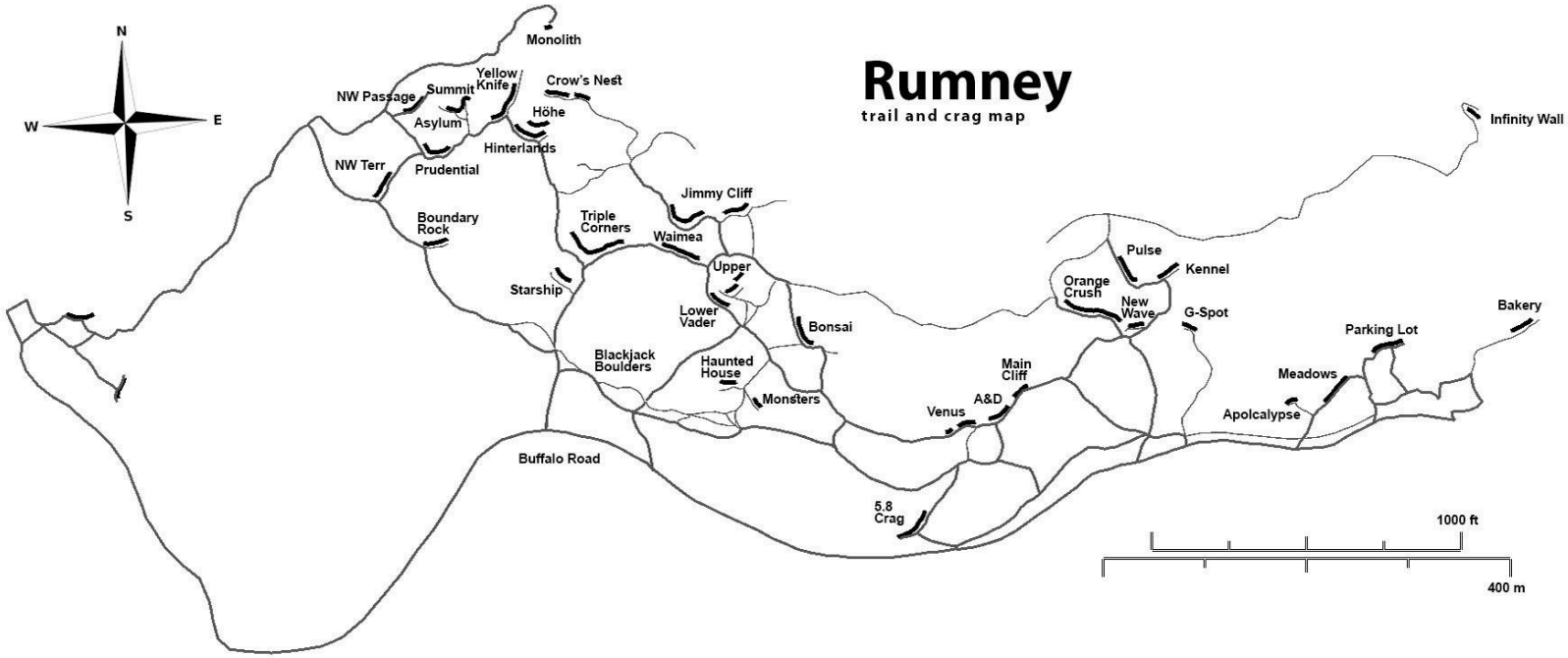
4. Meet people. This program is not just about learning skills for sport climbing; it's also an opportunity to meet kindred spirits! If you want to get out climbing a lot, you will need to be proactive. It will be up to you to take the initiative, though: you can offer to organize a day trip or a weekend, or to drive (or maybe just mention "beer"!).

Rumney Climbing

Rumney is one of the premier sport climbing destinations in the country. This area has become a focal point of hard sport climbing, with climbers from all over the world visiting during the fall season. Numerous crags dot the hillside of Rattlesnake Mountain above the town of Rumney, New Hampshire. Each crag is distinct in character but similar in rock type: schist. It is the rock that sets Rumney apart. The schist is reminiscent of wood, as the rock crystals form a definite "grain." Located on N'dakinna, which is the traditional ancestral homeland of the Abenaki, Pennacook, and Wabanaki Peoples, past and present. We acknowledge and honor with gratitude the land and waterways and the Alnobak (people) who have stewarded N'dakinna throughout the generations. Please see additional information and perspectives here: https://indigenousnh.com/land-acknowledgement/

Local Climbing Organizations (LCOs) such as the Rumney Climbers Association, Western Massachusetts Climbers' Coalition, and Central New Hampshire Climbers Association, take care of these nearby crags - voluntarily. From route development, to the regular replacement of bolts and anchors we use, to managing the relationship between climbers and the town government the crags reside on, they are invaluable resources in developing these climbing destinations and keeping them open and accessible into the future.

Learn more about Rumney on Mountain Project



Source: Mountain project

Week 1: Lead Climb and Belay

- Program Rules
- Leave No Trace and Crag Etiquette Review
- Gear Overview
- Lead Climb Demo
    - Preparing for a Climb
    - Pre-Climb Checklist: Entering the System, Action Plan, and Safety Checks
    - Demo-ing a Lead Climb and Belay
- Mock Lead Climb and Belay with a Top-Rope backup
    - Intended Sign-offs
        - Top-Rope Belay
        - Mock Lead Climb
        - Mock Lead Belay
        - Building a Quickdraw Anchor
- Lead Climb and Belay
    - Intended Sign-offs
        - Lead Climbing
            - Lead Climb
            - Taking a Lead Fall
        - Lead Belaying
            - Lead Belay
            - Catching a Lead Fall
- Knots Review
    - Intended Sign-off
        - Program Knots
- Crag Stewardship

Leave No Trace and Crag Etiquette

The 7 principles of Leave No Trace (LNT):

1. Plan ahead and prepare
2. Travel and camp on durable surfaces
3. Dispose of waste properly
4. Leave what you find
5. Minimize campfire impacts
6. Respect wildlife
7. Be considerate to others

The crag etiquettes:

1. Know which areas and routes you want to climb, know where to park the cars, pay for parking if required, ensure that the group does not overcrowd the parking lots and climbing areas, and follow all regulations of the climbing area.
2. Follow established trails and camp only at designated campsites.
3. Do not leave any trash (this includes food waste!), follow carry-in carry-out principles, use WAG (Waste Alleviating Gel) bags when necessary, dispose of WAG bags in the designated containers.
    a. All food should be closed tightly in your climbing pack when not attended - squirrels are crafty and hungry!
    b. If you see trash left by someone else and have the means to dispose of it safely, do a good deed and take it with you.
4. Any items found at the crag should be left at an appropriate lost and found location, do not take and carry any communal gear such as bolt hangers, fixed anchors, etc.
5. Do not use camp stoves to cook food or start campfires near climbing crags.
6. Respect wildlife, do not climb if you see snakes, birds, or other wildlife on a climbing route.
7. Do not hog climbing routes, keep the rope on a route moving, clean the route if not in use, do not put top-ropes for entire group on classic climbs, do not put on loud music, keep chatter to a minimum so climbers and belayers can hear each other, keep packs and gear away from the trail.
8. Keep radio volumes to an absolute minimum! Clipping a radio close to your ear keeps it readily accessible and allows you to keep the volume in the 1-3 range on a nice day. Crags get crowded and the last distraction you want is the chattering of another party's radio.
9. Learn and understand what the etiquette is for using the bolted, fixed gear at the top of the route while climbing & cleaning. For example, at Rumney, climbers should NOT place their rope into the fixed gear and use it to build a top-rope anchor. Climbers should use their personal gear to build an anchor for top-roping & lowering, and only the last person in a climbing party should use the fixed gear to clean their anchor and lower.

Gear Overview

Ropes

Dynamic Ropes
A dynamic rope, which is the rope you'll climb on, is specially designed to stretch and absorb the energy of a fall. This stretching (which can be around 30% in a big fall) greatly reduces the force on your body and the anchor system. That's why we use dynamic ropes for lead climbing.

Types of Dynamic Ropes
The usual differences between the different types of ropes are as follows.

	Single Rope	**Twin Ropes**	**Half Ropes / Doubles**
Symbol			
Protection	One rope through all protection	Both ropes through all protection	Alternate clipping protection with one rope then the other
Expected Weight	Lightest (unless bringing an extra rope)	Intermediate	Heaviest
Expected Stretch	Least	Intermediate	Most
Expected Lifespan	Most	Least	Intermediate
Expected Fall Distance	Normal	Normal	Potentially Reduced if falling while trying to clip.
Redundancy	None	Increased (2 ropes through 1 set of protection)	Most (2 ropes through 2 sets of protection)
Rope Drag	Normal	Normal	Strategic gear placement can reduce drag without long runners

Note: During the SP we will be using single ropes.

How to inspect the rope:

Before you climb, it's important to **inspect your rope** every time you flake it out (i.e., lay it out to remove tangles and prepare it for use).

- **Look and Feel for Damage**: As you flake the rope, run it through your hands and use a ***pinch test***—gently squeeze the rope between your fingers. You're checking for:
    - Soft spots
    - Flat areas
    - Cuts or fraying in the sheath (outer layer)

- **Pay Extra Attention to the Ends**: The first and last ~2 meters of your rope tend to wear out faster. This is where you tie in most often, and it gets the most use and abrasion.
- **Check the Rope Label**: Look for a tag near one end of the rope with a manufacture date. Rope lifespan depends on how often it's used, the conditions it's exposed to, and its age—even if it looks fine. Manufacturers often recommend retiring a rope after:
    - **Frequent use (every weekend)**: 1–2 years
    - **Occasional use (a few times/month)**: 3–5 years
    - **Rare use**: Up to 10 years maximum (less if stored poorly)
- **Switch Ends Often**: To help the rope wear more evenly, switch which end you tie into throughout the day.

By checking your rope regularly and understanding how it wears over time, you'll stay safer and help your gear last longer. If you ever notice serious damage, stop using the rope immediately and consult a more experienced climber or instructor.

Static Ropes

Most other climbing gear—like slings, webbing, cordelettes, carabiners, and harnesses—is considered static, meaning it doesn't stretch much under load. This is used for things like:

- Building anchors
- Personal anchor systems (PAS)
- Fixed lines

However, static gear should never be used as your primary attachment when there's a risk of falling. Why? Because when a climber falls and is caught by static gear, the impact is much more forceful. A fall of just 5 feet onto a static sling can create enough shock force to seriously injure you or even break gear or anchors—leading to ground falls.

Important Notes

- You can't tell static and dynamic ropes apart just by looking—know your gear and track how it's used.
- Use static gear to build anchors, where minimal stretch is important for keeping things tight and secure.
- Use dynamic ropes to tie in and catch falls, where stretch helps absorb impact.

Slings, Cords, and Cordelettes

Climbers use different types of material to build anchors and friction hitches, and it's important to understand their differences.

Nylon Slings & Cords:

- Nylon slings are usually 16–20mm wide and are bulkier than Dyneema slings.
- You can buy nylon cord or webbing by the foot at most climbing shops and tie it into the length you need—such as for a **cordelette**, **prusik**, or **personal anchor**.
- For building anchors, climbers commonly use **7mm nylon cord**, which must have a **minimum strength of 10 kN** (kilonewtons).
- Nylon is a good material for **friction hitches** (like a prusik) because it has a **high melting point** and better heat resistance during sliding friction.
- However, nylon is more vulnerable to **UV (sun) damage**, so be mindful of long-term exposure.

Dyneema Slings (also called Spectra or Dynex):

- Dyneema is extremely strong for its weight and is more **resistant to cuts and abrasion** than nylon.
- Slings made from Dyneema are **thin (6–14mm)** and always white with colored stitching (since Dyneema can't be dyed).
- It doesn't stretch much—only about **3–5%**, which means it **absorbs very little energy** in a fall.
- Because it has a **low melting point**, Dyneema should **not** be used for friction hitches.

Important Safety Note:

Never run slings, cords, or ropes directly through sharp-edged hardware (like bolt hangers). Always use rounded connectors like carabiners, quick links, chains, or rappel rings to avoid damaging your gear.

Strength Ratings

Both nylon and Dyneema slings are typically rated to **22 kN**, which is more than enough for climbing.

- 1 kN = about 225 lbs of static weight
- A typical lead fall can generate around **2-3 kN** of force on the rope
- Anchors can see forces of **4-6 kN or more**, depending on the situation

Carabiners and Quickdraws

Carabiners

A **carabiner** is a strong metal loop with a gate that opens and closes. It is designed to be loaded along the **major axis**—that means the long, spine side, with the gate fully closed.

Key Rules for Carabiner Use:

- **Never cross-load** a carabiner (load it sideways); this dramatically reduces its strength.
- Avoid **gate-loading** (when force is applied directly on the gate) and **three-way loading** (loading from three directions at once, often seen in improperly clipped PAS setups).
- **Keep the gate closed**: A carabiner's strength is only fully realized when the gate is shut and locked (if it's a locking carabiner).
- **Face the gate away from the rock**: This reduces the chance of the gate being pushed open by the wall or rope under tension.
- Don't let carabiners or other gear get **bent over sharp or narrow edges** while under load—this weakens the metal and can cause failure over time.

Carabiner Strength Ratings
Carabiners are usually marked with strength numbers (in kilonewtons, kN). Typical values:

- **Major axis (gate closed)**: ~20–25 kN
- **Major axis (gate open)**: ~7–10 kN
- **Minor axis (sideways)**: ~7–9 kN

Always use carabiners as intended to maximize their strength and lifespan.

Quickdraws

A **quickdraw** is made of two carabiners connected by a nylon or Dyneema sling called a **dogbone**. It allows you to clip the rope quickly into bolts or fixed protection while climbing and also gives the rope room to move, reducing rope drag and protecting your gear.

Quickdraw Anatomy & Usage:

- The **bolt-end carabiner** goes on the wall. It usually has a **straight gate** or **wire gate** and sits more loosely in the dogbone to allow better movement.
- The **rope-end carabiner** is tighter in the sling (sometimes with a rubber insert) to prevent rotation and reduce the risk of **cross-loading**.
    - This end often has a **bent gate** (easier to clip quickly) or **wire gate** (lightweight, reduces gate flutter).
- Always clip the **rope side with the rope running away from the rock** and the gate facing away from the direction you're climbing.

Avoid These Common Mistakes:

- **Clipping upside-down**: Accidentally putting the bolt-end carabiner on the rope can lead to cross-loading,unclipping during a fall, or damage to the rope (since the bolt end is usually degraded from metal-on-metal contact with the bolt)
- **Sharp edges or grooves**: If a carabiner scrapes against a bolt or gets a groove from use, it can create sharp edges that **damage your rope**. Always inspect carabiners and **retire any with visible grooves or burrs**.
- **Never let the rope move through nylon** (like a sling or dogbone). Rope-on-nylon contact under tension can cause **melting and failure**. Ropes should only run through **metal**—carabiners, quick links, chains, or rappel rings.

Alpine Slings

An **alpine sling** is a versatile piece of gear used to extend the length of protection when a quickdraw is too short. It's made of two carabiners connected by a lightweight **Dyneema sling** (usually 60 cm or 24 inches long). Unlike a standard quickdraw, **both carabiners are loosely attached**, giving you the flexibility to adjust the length of the runner as needed, by tripling up the slings. Alpine slings are especially useful for reducing **rope drag**—the friction that builds up as your rope runs through multiple bolts or changes direction.

Belay Devices

A **belay device** is essential for controlling the rope while belaying a climber. It helps the belayer manage slack, catch falls, and lower the climber in a controlled way. There are two main types of devices you'll see in this course: **Tube-style devices (like the ATC)** and **assisted-braking devices** (like the **Mega Jul** or **GriGri**).

Tube-Style Devices (ATC)

The **ATC** (Air Traffic Controller) is a classic tube-style belay device. It uses **friction** between the rope and the device to slow or stop the rope. Here's how it works:

- The rope runs through the ATC and around a locking carabiner on your harness.
- One strand goes to the climber, and the other is the brake strand.
- To stop the rope, the belayer pulls the brake strand down and back—creating friction that locks the rope in place.

Pros:

- Simple and lightweight
- Good for both belaying and rappelling
- Works with a wide range of rope diameters

Limitations:

- Does not assist in braking

Assisted-Braking Devices

These devices provide **extra braking power** when catching a fall. They're highly recommended for lead belaying—especially when the climber is heavier or newer to lead climbing.

Passive Assisted Braking Device

- Edelrid Mega Jul, Black Diamond Pilot, Mammut Smart, etc.
- Works similarly to an ATC but adds a mechanical **braking assist** when loaded during a fall
- Lightweight and compact, ideal for multi-pitch or alpine use
- Can be a little tricky to pay out slack until you're used to it
- Good for belaying from above (top-down) on a multi-pitch

Active Assisted Braking Devices,

- Petzl GriGri, Madrock Lifeguard, Edelrid Pinch, etc.
- Contains a **cam mechanism** that pinches the rope during a fall, helping to hold it automatically
- Requires a specific hand position when feeding slack and lowering
- Easier on your arms during long belays or while catching frequent falls

Important Safety Notes

- **No matter which device you use, NEVER let go of the brake strand.** Assisted-braking is a backup—not a replacement for good technique. Many climbing accidents have occurred due to belayers not controlling the brake strand while using an assisted-braking device during a climber fall or while lowering a climber.
- Learn and practice proper feeding and catching techniques for your device. Similarly, many climbing accidents have occurred due to belayers improperly handling their device, negating the assisted-braking mechanism.
- Always use a **locking carabiner** to attach your belay device to your harness.
- If you're unsure which device is best for a given climb, ask an instructor.

Caring for Your Climbing Gear

Taking care of your climbing gear is critical for your safety. Each piece of equipment comes with manufacturer instructions—these explain how to properly store, inspect, use, and eventually retire the gear. Make it a habit to read them (many are available online).

Soft Goods: Ropes, Slings, Harnesses, Webbing

- **Wet gear = weaker gear**. Nylon loses strength when wet, so try to keep ropes and slings dry. Once dry, their full strength returns.

- **Sunlight and chemicals degrade nylon**. Avoid exposing gear to direct sunlight for long periods and never store it near bleach, gasoline, or car batteries. UV rays and harsh chemicals can cause permanent damage.
- **Lifespan**: Even if unused, nylon gear has an expiration date. A general rule of thumb:
    - Heavy use: replace after ~1 year
    - Light use: replace after ~5 years
    - Unused: replace after 10 years

Pro tip: Avoid stepping on ropes! Dirt and sand can work into the rope's core and wear down the fibers over time. Coil your rope neatly and keep it off the ground when not in use.

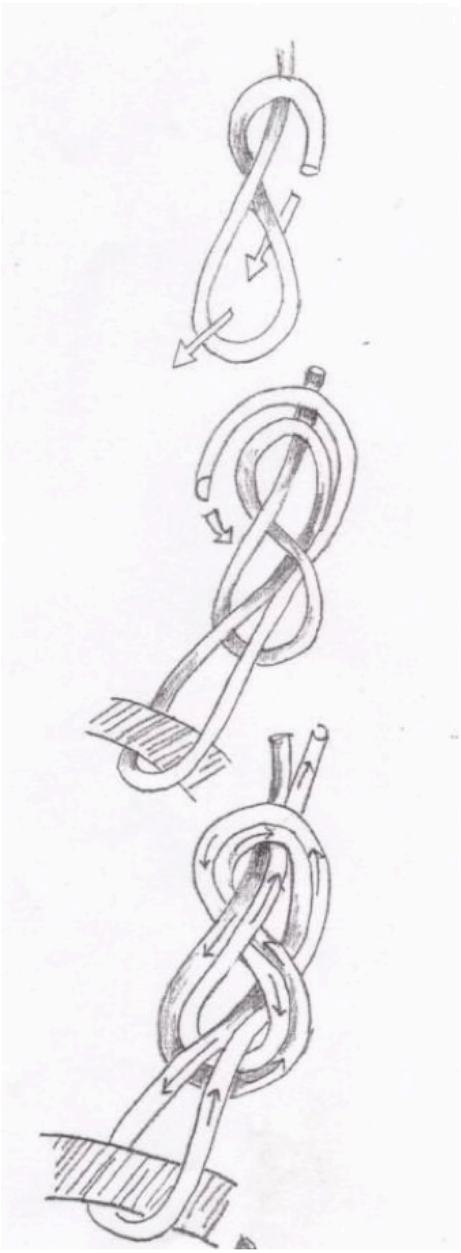
Metal Gear: Carabiners, Quickdraws, Belay Devices

Most metal climbing gear is made of **aluminum**, which resists corrosion, but some pieces (like bolts and permadraws) may be **steel**. To keep all metal gear in good shape:

- Store it dry and away from chemicals.
- Inspect for signs of wear—especially **grooves** caused by repeated use (e.g., from lowering or rappelling). Grooved gear can damage ropes and should be retired.

When in Doubt, Retire It: Some gear, like ropes, harnesses, and PAS, is **non-redundant**—you only get one. If you're ever unsure about its safety, replace it. It's always better to be cautious than to risk a failure while climbing.

Knots overview



- Rewoven Figure 8
- Figure 8 on a Bight
- Double Fisherman's Bend
- Girth Hitch
- Clove Hitch
- Barrel Knot

Rewoven Figure 8

This is the most widely used tie-in knot because it is strong, secure, and easy to visually inspect. The rewoven figure 8 should be tied through the harness tie-in points.

1. Tie a single figure 8 in the rope two to three feet from its end.
2. Pass the free end of the rope through the harness tie-in points, then retrace the original eight. Keep the loop that passes through the harness as short as possible.
3. Tightly cinch all four strands of rope exiting the knot.

On Other "Finishes"

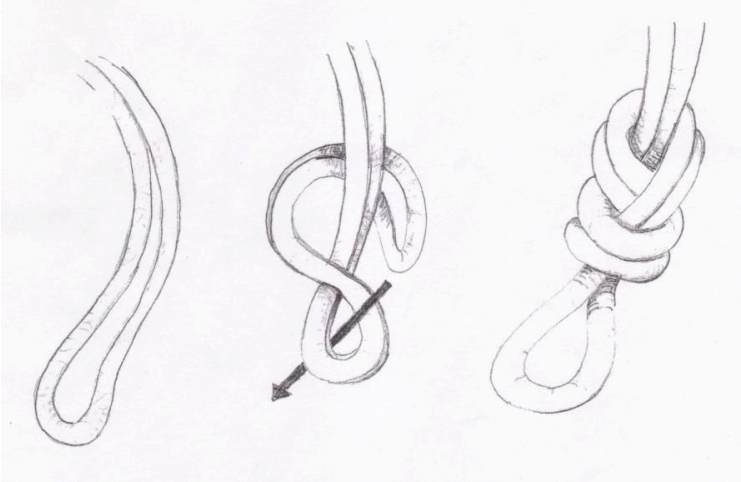
You may encounter climbers using other methods besides a Fisherman's finish to "finish" the rewoven Figure 8, a common one being the "Yosemite Finish".

As always "there's more than one way to do it" but we do not teach these during the Program to avoid unnecessarily bombarding you with more knots than we already do.

The real goal is to leave an adequate amount of tail on the figure 8 (six inches) and then put that tail somewhere so it's not flapping around in the breeze.

Figure 8 on a Bight

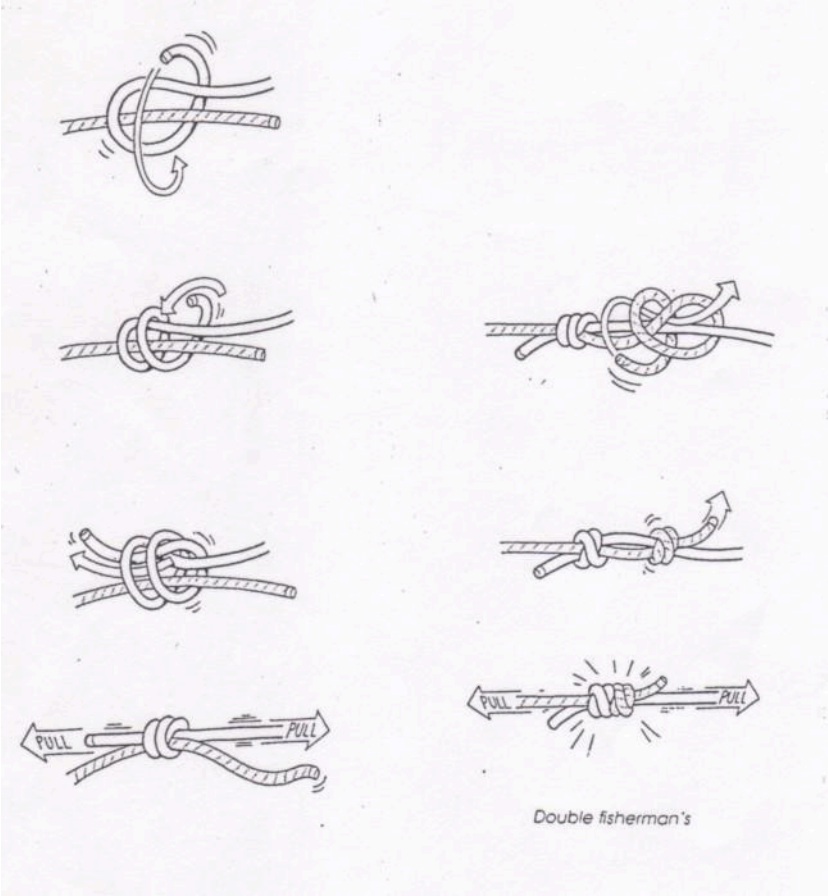
An all-purpose knot frequently used in building toprope anchors. This may seem like a much faster way to tie a rewoven figure 8 (and it is!) but it's impossible to get the knot around your harness using this method so you're stuck doing the long way when you want to tie in.



1. Make a loop in the rope.
2. Twist the loop around both strands.
3. Pass the loop through the loop that you created by twisting around the strands.
4. Pull the loop and strands to make it tight.

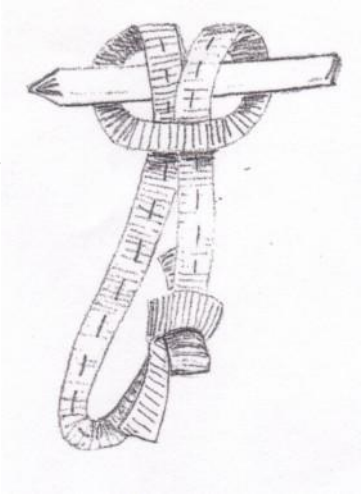
Double Fisherman's Bend

The Double Fisherman's is often used to make a loop out of a piece of cord to make a Prusik loop or an anchor cordelette.



1. Coil the free end of one rope twice around the second rope, and pass it back through the inside of the coils.
2. Repeat the above procedure, this time coiling the second rope around the first, but in the opposite direction so the finished knots are parallel to each other.
3. Pull on all four ends coming out of the knots to cinch them snugly against each other. The remaining tails should be about three inches long.

Girth Hitch



The girth hitch works well for tying off trees and chock stones. When slinging chock stones with a girth hitch, be sure that the hitch is near the outside of the chock stone. This limits the load on the chock stone and is less likely to rotate the chock stone out of the crack. The girth hitch is also good for attaching a sling to your harness for clipping into anchors, and for connecting slings together.

1. Pass a loop of sling around another sling, tree, chock stone or other fixed object.
2. Pull the sling through itself, fastening it to the object you passed it around.

Clove Hitch

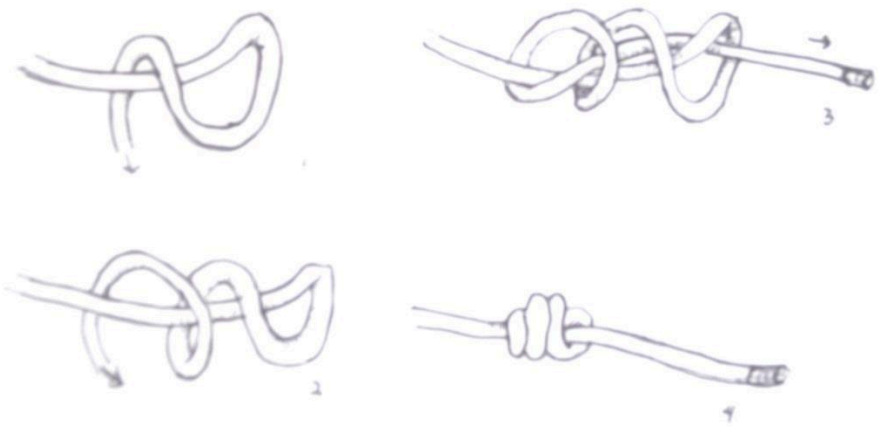
The clove hitch is often used for attaching a climber's rope to a carabiner on an anchor. It provides quick adjustment, and uses a small amount or rope, but has a tendency to loosen when not loaded. Be sure it is kept tight at the bottom of the carabiner, away from the gate. The reliability of a clove hitch can be improved by using a locking carabiner. The LOAD strand of the clove hitch should be situated near the spine of the carabiner. Once you've mastered this knot you should learn to tie it on a carabiner one-handed, this skill is useful when you've just arrived at an anchor and need to use your other hand to keep from falling off the rock.

1. Twist two coils of rope into the rope, then pass the second coil in front of the first.
2. Clip both coils into a carabiner, with the load strand situated near the spine of the carabiner.
3. Cinch the clove hitch tight.

Barrel Knot

A good knot for the ends of the rope when rappelling or belaying a single pitch lead climb to keep the rope from passing through the belay device if you've gone too far.

1. Coil the free end of the rope around itself twice, working back up the standing end.
2. Pass the free end of the rope through the coils you've created, parallel to the standing end.



Lead climbing and belaying

Lead Climbing

One of the most exciting milestones in sport climbing is learning how to lead climb. During the program, your instructors will demonstrate a real outdoor lead climb. This demo will also set up the anchors for your first **mock lead climbs and belays**, which are done with a backup top-rope for safety.

Getting Ready to Lead: Preparing for a Climb

Before you begin a lead climb, there are several important steps to take. These are often second nature to experienced climbers, but as a new outdoor leader, slowing down and being methodical is key. With practice, these habits will become automatic.

1. Choose Your Route

- Use a **guidebook** or **Mountain Project** to gather info about the route, including its difficulty, number of bolts, length, and the type of anchor at the top (just know that this information isn't infallible, updates to the bolting, anchors, or natural changes such as recent rock fall can occur).
- Scan the route visually to:
    - Locate the bolts.
    - Anticipate the movement (cruxes, rests, clipping stances, rest spots).
    - Estimate how many **quickdraws** you'll need—always bring a few extras in case the guide is outdated or you drop one.

2. Evaluate the Belay Spot

- Outdoors, finding a good belay stance is more complex than in the gym. Look for:
    - A **flat, stable surface**.
    - A position close to the first bolt but **not directly below** the climber's path to avoid being landed on in a fall.
    - **Hazards** like loose rocks, roots, or uneven terrain that could cause tripping or snag the rope.
- The belayer should be ready to **adjust position** dynamically as the climber moves, so clear a ~2-meter (6 feet) radius of obstacles. Lay out the **rope on a tarp**, keeping it clean and tangle-free.

3. Flake the Rope

Flaking the rope (stacking it onto a tarp or coil) helps remove twists or tangles that could interrupt the climb or belay.

4. Close the System

One of the most important safety steps when lead climbing is closing the system. This prevents the end of the rope from slipping through the belay device, which could leave the climber unprotected and result in a serious fall. Even on short routes, unexpected rope usage (like zigzagging around features) can shorten your effective rope length.

- **Barrel knot**: Tie a stopper knot in the tail end of the rope—this is the most common method.
- **Hard closure**: For added safety, the belayer can tie into the tail of the rope.

5. Racking Up: Choosing the Right Gear

Before you leave the ground, make sure you're bringing the right equipment for your route:

- **Quickdraws**: Bring at least the number of bolts on the climb + 3 extras (2 for the anchor, 1 spare).
- If you're helping to **build a top-rope anchor**, also pack a **quad anchor** setup (cordelette or slings + carabiners).

6. Review communication signals:

Clear communication between climber and belayer is essential for safety. Voice commands help both partners stay coordinated—and potentially prevent serious accidents. Always **agree on commands with your partner before the climb begins**, especially if you use alternate wording or speak different native languages. From the moment your belayer says **"Belay on"**, they are fully responsible for your safety until you clearly call **"Off belay!".**

To avoid confusion—especially at busy crags—it's helpful to use **names** in your commands (e.g., "Hannah, on belay?"). If you hear your name and a command that doesn't apply to your situation, always **pause and clarify** before acting.

7. Consider weight difference:

A significant weight difference between climber and belayer can affect how safely and smoothly a fall is caught. If the belayer is much lighter than the climber, a lead fall can **pull the belayer off the ground**, **cause a hard slam into the wall**, or result in a **loss of control** during the catch. It's essential to plan for this in advance.

Strategies to manage weight imbalance:

- **Use a ground anchor**
  Secure the belayer to a fixed object like a bolt, tree, or large rock using a PAS or sling. This helps prevent them from being lifted unexpectedly.
- **Consider assisted-resistance devices**
  Devices like the **Edelrid OHM** are designed specifically for situations with large

climber–belayer weight differences. The OHM attaches at the first bolt and increases rope friction, allowing a lighter belayer to catch a heavier climber more effectively. *Note: Make sure you're familiar with how to use it before relying on it in a real lead scenario.*

- **Discuss the plan**
  Before the climb begins, the climber and belayer should talk through:
    - How much slack is appropriate
    - Whether a **soft catch** is expected
    - What to do in the event of a fall near a ledge or low bolt

We encourage students to stick to a **core set of standardized commands** used widely in outdoor climbing:

Climber Says	**Belayer Responds**	**Purpose**
"On belay?"	"Belay on."	Confirm belay is ready before climbing
"Climbing!"	"Climb on." / "Climb away!" / "On you!"	Climber is starting; belayer confirms
"Slack!"	*Feeds slack* — "Slack."	Climber needs more rope
"Up rope!"	*Takes in rope* — "Up rope."	Rope is too loose, take in slack
"Falling!"	*Brakes rope, prepares for catch*	Climber is falling — warning to belayer
"Take!" or "Tension!"	"Got you!"	Climber requests tight rope
"Ready to lower!"	"Lowering." / "On me."	Begin lowering process
"Off belay!" or "In direct!"	"Belay off."	Climber is secure on anchor; belay can stop
Unclear command	"Repeat?"	Ask for clarification if unsure

Pre-Climb Checklist

1. Entering the System

Before you leave the ground, always double-check your setup with your climbing partner.

- **Climber**: Tie in with a figure-eight follow-through knot. Make sure it goes through both tie-in loops of your harness and has a 6-inch tail secured with a backup knot.
- **Belayer**: Set up your belay device correctly, with the rope running through in the right direction (climber side and brake side) and your locking carabiner closed and locked.
- To test the setup, give the climber's rope a hard upward tug to confirm that the belay device catches properly.

Both partners should check that they are tied into the same rope and perform a complete **partner check** before climbing.

2. Stick-Clipping the First Bolt

Always **stick-clip the first bolt** before the climber leaves the ground—**no exceptions.**

Even if the start feels “easy,” using a stick-clip reduces the risk of a ground fall due to unexpected slips, rock breaks, wet holds, or loose terrain.

3. Creating an Action Plan

Before climbing, agree on what the **climb and descent plan** will be.

This avoids confusion or accidents (like being taken off belay when expecting a lower). A good action plan includes:

- The route and how you plan to protect it (e.g., number of quickdraws needed).
- What happens at the anchor (e.g., building a quad, cleaning, lowering, rappelling).
- Any environmental considerations: weather, daylight, energy levels, or terrain hazards.

Example:
“I’m going to lead this using my own draws. At the anchor, I’ll build a quad, clip the rope through it, and get lowered so the next person can top-rope.”

4. Safety Checks

Before the climber leaves the ground, perform a full safety check:

- **Harness Check** – Harnesses should be cinched tight around the waist, such that they cannot be pulled down under your hip bones; this prevents the climber from falling out of their harness in case they invert while on the wall. All buckles on the harness should be buckled correctly. Leg loops should be mid-thigh, snug but not tight, and not twisted. The tie-in loops should also not be twisted.
- **Knot Check** – Verify that the climber’s figure-eight follow-through knot is tied correctly with a sufficient (at least 6 inches) tail.

- **Belay Device Check** – Confirm that the belay device is threaded correctly with the brake strand in the proper position.
- **Carabiner Locked** – Check that the belay device carabiner is on the belay loop, and locked.
- **Helmet** – Both parties must wear climbing specific helmets. They should be low across the forehead, not tipped back.
- **PAS-** A double-length nylon sling, Metolius PAS, or similar fixed-length slings should be girth hitched through both tie-in loops on their harness. A Petzl Adjust, Beal Expresso, or similar adjustable-length slings should be girth hitched to the belay loop. If in doubt of whether a PAS should go on belay loop or tie-in points, girth-hitch the PAS to both tie-in points on the harness.
- **Rope End**: Barrel knot tied in the end to “close the system” and prevent unintentional rope run-through

While Lead Climbing

- Proper clipping technique. Avoiding back-clipping, z-clipping and skipping clips.
- Inspect the route while climbing - grooves, cracks, and horns tend to catch the rope, creating rope drag or causing the rope to get snagged. Keep the rope away from these cracks or naturally-forming corners before moving forward.
- Choosing a **good stance** for clipping (bolt between chest and waist).
- Controlled rope handling: pull rope steadily to avoid getting short-roped.
- Quickdraw orientation: **“spine to the line”**—gate faces away from the climber’s direction of travel.
- Never put fingers through the gate of a carabiner; if aid is needed, grab the dogbone (the sling between the carabiners).
- Rest spots can be used to plan out the next few moves.
- At the top of the climb, if you're building a simple lowering anchor, clip **two opposite and opposed quickdraws** into the bolts, clip the rope into both quickdraws, call “Take,” and get lowered.

Lead Belaying

Your top priority as a belayer is to **maintain control of the brake strand at all times** and give the climber the right amount of rope as they ascend. Always keep watch of your climber; they should have your full focus and attention while you are belaying.

While watching your climber, keep note if there are any instances of backclipping, z-clipping, stepping behind the rope, or the rope getting caught by a crack or corner, and call out to your climber to correct such an instance.

Belayer stance tips:

- Be close to the wall but **not directly under** the climber for the first few bolts—move as needed to stay safe.
- Clear your area of tripping hazards and position yourself on stable ground.
- Adjust slack based on the climber's location. Less slack near the ground; more as they gain height to allow a soft catch.

Slack Management:

- Be prepared to give a lot of slack for clips above the climber's head—then pull it back in quickly after the clip.
- As the climber is further from the ground/ledge, the "smile" in the rope can be introduced to make clipping easier and allow for a soft catch.
- When a climber is below their last piece of protection the belayer can gradually take in slack as the climber ascends, as with a toprope belay, but care should be taken to keep the rope loose (unlike many toprope belays).
- If a climber shouts "Watch me!", stay focused and ready for a potential fall—but **don't put tension on the rope**, which could short-rope them.

Feeding Slack:

- **ATC**: Push rope in on the brake side while pulling on the climber side.
- **Assisted-braking devices (e.g., Gri-Gri)**: You may temporarily disengage the brake cam (e.g., with your thumb) to give slack fast—just **release the cam immediately afterward** to restore normal function.

Catching a Lead Fall

Assessing Fall Risks

When a climber falls on lead, they can fall a significant distance—twice the height above their last clipped quickdraw, plus any extra rope given for clipping, plus rope stretch. These falls can be long and impactful, so it's important for belayers to stay alert and react quickly.

As your climber ascends, continually assess potential fall risks:

- If there's a ledge, the ground, or an obstacle directly below the climber, you may need to give a hard catch to reduce the chance of impact.
- If the climber is likely to fall into open space or swing gently into the wall, a soft catch is more appropriate to reduce the force of impact on the climber and gear.

Giving a Hard Catch

Hard catches are used when the climber is close to the ground or above a ledge, tree, or other obstruction they could hit during a fall. Hard catches ***should only be used when necessary*** (when the distance of a soft catch would subject the climber to a significant impact) - hard

catches hurt, and can injure a climber - you're choosing the lesser of two evils in this circumstance.

To give a hard catch:

- Pull your brake hand down sharply while tightening your grip—just like catching a top-rope fall.
- Your whole system (belay device, rope, harness, and body) will absorb the fall's force.
- Resist the pull towards the wall—brace with bent knees and feet ready to press against the wall.
- In extreme situations, you may need to take in extra slack quickly—either by pulling in rope with your belay device or moving backward/downward to keep the climber from hitting the ground.

Giving a Soft Catch

When there are no immediate obstacles below or near the climber, a soft catch helps reduce the impact of the fall.

To give a soft catch:

- Pull your brake hand down firmly and grip the rope securely, just as with a top-rope catch.
- Instead of resisting the force, allow yourself to be lifted—this cushions the fall for the climber.
- A small hop toward the wall can help direct your momentum and soften the impact. It takes practice to get the timing right - you want to start the movement when the rope begins to pull against your harness.
- Keep knees bent and feet forward, aiming to plant them gently against the wall once lifted.
- Try to keep at least one foot between your hips and the wall to avoid slamming into it face-first. This requires keeping your hips pointed up (toward the climber) rather than forward.
- This is why your belay stance matters—standing relatively close to the wall ensures the fall's pull is more upward than forward, making the catch more controlled.

Taking a Lead Fall

Falling is a normal part of lead climbing, but there are important ways to reduce risk and stay safe when it happens.

1. Know Where Not to Fall

Some areas of a climb—called "no-fall zones"—can be dangerous to fall from, even with a great belayer. These might include:

- Traverses, where falling can cause you to swing sideways into the rock.
- Low sections, where there's still risk of hitting the ground.
- Areas with ledges, bulges, or blocks you could hit during a fall.

Before committing to a climb, evaluate the route. If it has a no-fall zone, make sure the climbing through it is well within your comfort and ability level. If not, choose another route.

2. Watch Your Rope Position

Always make sure the rope stays between you and the wall—never behind your leg. If it slips behind your leg, pause and step over the rope so that it's in the correct position again. This helps avoid dangerous rope entanglements during a fall (like being flipped upside down or rope burn across your leg).

3. Talk to Your Belayer

- Say "Watch me!" if you're about to make a tough move and think there's a real chance you might fall. This alerts your belayer to be extra focused.
- Say "Falling!" as soon as you start to fall. It helps them react faster and prepare for the catch.
- Important: Saying "Watch me" or "Falling" does not mean "Take in all the slack." The belayer should already be managing slack properly to allow for a safe, dynamic fall. Removing slack at the wrong time can lead to a hard catch and injuries.

4. Fall Smart

- Avoid pushing off the wall unless you need to clear an obstacle. Pushing can increase the swing when the rope pulls you back toward the wall, making the impact worse.
- Stay loose and **exhale**. Tensing up makes the jolt worse at the bottom of the fall. Exhale while falling signals your nervous system that everything is okay.
- Don't grab the rope, quickdraws, or wall features—this can cause serious finger injuries.
- As you approach the wall again, aim to land with your feet against it, knees and elbows slightly bent, and hands ready to help brace or balance you.
- Look down while falling to spot potential hazards and orient your body for a safe return to the wall.

Setting Up the Mock Lead & Belay

As part of the lead climbing demonstration, instructors will set up a **mock lead system** so all students can practice both leading and belaying in a controlled environment.

To do this, instructors will build a **quad anchor** using two bolts. Two of the strands will be used to create the **primary point**, where a pair of locking carabiners will be clipped to set up the **top-rope backup**.

If there's enough space on the bolts, instructors will also add **two outward-facing quickdraws** to the same bolts. These act as a separate mock anchor setup, simulating what a typical top-rope anchor might look like when built with sport draws. Students will use this setup to practice **clipping into quickdraw anchors** during their mock lead climbs.

This configuration gives students hands-on experience with:

- Clipping into quickdraw anchors at the top of a climb.
- Understanding different anchor setups.
- Learning when it is or isn't safe to clip multiple carabiners into the same bolt or hardware.

Top-Rope Belay Technique
The Sport Program (as with nearly every climbing gym) expects Students to use the "Pull-Brake-Under-Slide" belay method (aka "PBUS") with the brake hand "palm down" (so that the arm is in a natural position, not twisted, when in the brake position.

Some climbers may have learned to belay "palm up" and/or with the "Slip-Slap-Slide" technique. This technique can be used to pull rope in faster, but to avoid confusing Students with two different belay techniques we teach PBUS exclusively.

Lead Climb & Belay — Skills Sign-Off Checklist

- Top-Rope Belaying
- Mock Lead Climbing
- Mock Lead Belaying
- Building a Quickdraw Anchor
- Lead Climbing
- Lead Belaying
- Taking a Lead Fall
- Catching a Lead Fall
- Knots:
    - Figure 8
    - Figure-8 on a Bight
    - Overhand on a Bight
    - Double Fisherman's Bend
    - Girth hitch
    - barrel knot
    - clove hitch

Week 2: Building and Cleaning Sport Anchors

Overview:

- Program Rules
- Ground Practice
    - Intended Sign-offs
        - Bolt Board: Building a Quad Anchor
        - Bolt Board: Cleaning Anchor using Open Hardware
        - Bolt Board: Cleaning Anchor using Closed Hardware
- Lead and Set a Route for Top Rope
    - Intended Sign-offs
        - Building a Quad Anchor & Set Up a Top Rope
- Cleaning Anchors
    - Intended Sign-offs
        - Cleaning a Sport Anchor using Open Hardware
        - Cleaning a Sport Anchor using Closed Hardware

Quad Anchor

A quad anchor is a pre-tied piece of equipment that connects two fixed anchor points (typically bolts) using a loop of climbing-rated cord or sling (often 6mm or 7mm accessory cord or Dyneema). It creates **two primary points** and allows for some limited load movement while maintaining **equal tension** between both bolts.

When Do You Use a Quad Anchor when Sport Climbing?

- You have **two solid, but unequal-height bolts**
- You're setting up a **top-rope anchor to use for an extended period of time**
- You want **load equalization across the two bolts** due to a wandering route

Gear Needed

- 1 x 20 ft loop of 7mm accessory cord (tied with a double fisherman's knot)
  OR
  1 x 240 cm Dyneema sling
- 4 x locking carabiners

SERENE-A Principles

Use this acronym to guide all anchor building:

- **S**: Solid — bolts or gear must be reliable
- **E**: Efficient — easy and quick to set up and take down
- **R**: Redundant — backup components in case one fails
- **E**: Equalized — load should be distributed evenly
- **N-E**: No Extension — anchor should limit how far it will extend if one point fails
- **A**: Angles — keep angles between strands 30-45° to avoid force multiplication

How to Build a Quad Anchor

1. Fold your loop into four equal strands. This creates a quad-length loop.

2. Clip each end of the loop into a bolt using locking carabiners. Make sure both bolts are solid and at a similar height.

3. Tie two overhand or figure eight knots, spaced 6–8 inches apart. These knots isolate the primary point and limit extension.

4. Clip your two locking carabiners into the inner strands between the knots. The lockers must be:

- **Locked**
- **Reversed and opposed** (gates facing opposite directions)
- **Clipped to the same two strands** (not just 1 or all 4)
- **Screw-down** if using screw gates ("Screw down, so you don’t screw up.")

Setting Up a Top-Rope from a Lead Climb

After you've led a climb and reached the anchors, you may want to set it up for others to climb on top-rope. This is a common and useful practice when you want to let other climbers follow the route without leading.

Steps to Set Up a Top-Rope from a Lead Climb

1. Once you reach the anchor, clip in and build a secure anchor using a quad or other approved method. Make sure the anchor is solid and follows the **SERENE** principles.
2. Pull the rope through the anchor so that the **climber's side of the rope** now runs through all of the quickdraws you placed on the way up. This setup allows the next climber to follow the route and **unclip each draw as they climb**. It’s the best way to clean steep or meandering routes safely.
3. Keeping the rope clipped into the quickdraws during the top-rope climb provides an added layer of safety. If something were to go wrong at the anchor (rare but serious), the remaining quickdraws could catch the fall.

4. When lowering someone after a top-rope climb, they should **clip back into select quickdraws** (usually ones with a lot of potential swing risk). These directionals **keep the rope close to the bolt line** and prevent large swings for the next climber in case of a fall.

Cleaning Anchors

Cleaning an anchor means removing your gear from the top of a climb and leaving the route ready for the next climber. We will use the principle of **Add, Test, Subtract**: always add protection and test it **before** removing anything else from the system.

Cleaning Open Hardware (Quickclips, Rams Horns, Mussy Hooks)

You'll practice cleaning routes that have open hardware anchors, such as quickclips or mussy hooks. These are designed to allow you to thread the rope through them and lower directly, without needing to rebuild the anchor. Before climbing, clearly communicate your **Action Plan** to your belayer and instructor.

Step by step cleaning script:

1. **Clip in Directly:** Once you reach the anchor, clip a personal anchor system (PAS) into a **bolt** (not the open hardware). This keeps you safely connected while you transition.
2. **Load the Rope into the Fixed Hardware.** Grab the rope you're tied into and thread it through **both pieces of open hardware** (e.g., through both mussy hooks or quick clips).
3. **Weight the Rope and Test the System.** Sit back and **fully weight the rope** that is now running through the open hardware. Ask your belayer for a **"take"** to confirm they're ready and have you on belay.
4. **Clean Up**
    - **Remove the gear** you used at the anchor
    - Once the new system is fully loaded and tested, you can remove your PAS.
    - You're now ready to be lowered.

Important safety tips:

1. Never climb above open hardware. Anchors like mussy hooks or rams horns are not designed to catch a fall from above — doing so can lead to equipment failure.
2. Stay tied in the entire time. There is no need to untie when cleaning open hardware. Always maintain your tie-in to the rope and communicate clearly with your belayer.
3. Use the "add, test, subtract" method:
    - Add: Secure yourself to the anchor bolts (not the open hardware).
    - Test: Thread the rope through the open hardware, then ask for a "Take" and fully weigh the system.
    - Subtract: Only after the system is fully weighted should you remove your personal anchor system and other gear.
4. Last draw backup" technique:
    - The second (follower) climber clips the belay strand into the last quickdraw on the route.

    - This acts as a catastrophe backup in case the rope isn't threaded correctly through the anchor and the climber begins to lower off the end.
    - Important: Be sure to remove the backup before lowering fully
5. Always communicate your action plan clearly before leaving the ground, and confirm understanding with your belayer.

Cleaning Closed Hardware (Rappel Rings, Chain Links)

You'll also practice cleaning routes with **closed hardware**, like rappel rings, which require more involved steps to safely clean the anchor and lower. This skill is essential for safely finishing routes outdoors while preserving anchor hardware.

Important: In both of these scenarios outlined below, you will remain '**on belay**' throughout the entire setup.

Method 1: Rope bight

This method is suitable for anchors with a point which is big enough to feed a bight of rope through. This method works for anchors with sufficiently large points to allow a bight of rope to be fed through.

Step 1: If it is not already, clip the climbing rope into your gear anchor as you finish the climb. Call for **"Take"**.

Step 2: Clip your Personal Anchor System (PAS) into one of the anchor bolts. Make sure the carabiner is locked.

Step 3: Ask your belayer for **"Slack"**, then sit back to check that your PAS is holding your full weight.

Step 4: Pull up about 4 ft of rope. Push a bight of rope through **both** rappel rings or anchor chains coming down from the anchor bolts. Do **NOT** thread the rope through the bolts themselves.

Step 5: With the bight of rope thru both rappel rings or anchor chains, tie a figure-8 on a bight. Clip the knot to your belay loop using a locking carabiner. Make sure the carabiner is **locked**.

Step 6: Call for **"Take"**, to test that the newly tied figure-8 on a bight with locking carabiner is taking your weight, your PAS is now slack, and the load is going through both fixed anchor points.

Step 7: Untie your original figure-8 knot from your harness. Pull the long tail out from the anchor. It should now be visually clear that the rope is going from the belayer through both fixed hardware points to the figure-8 on a bight attached to your belay loop.

Step 8: Remove the quickdraws/quad anchor from the bolts. You may need to ask for **“Slack”** if the chain tension makes it hard to remove them.

Step 9: Ask your belayer for another **“Take”** before continuing. Double-check that the rope is holding your weight and your PAS is still slacked or loose.

Step 10: Remove your PAS, and call for **“Lower”**.

Method 2: cleaning chain anchors

In some cases, it's not possible to push a bight of rope through the anchor due to the rope's thickness or the design of the anchor hardware. In these cases, you'll need to use a slightly different approach. Just like in the first method, you'll stay **on belay** throughout the entire process.

Step 1: If it is not already, clip the climbing rope into your gear anchor as you finish the climb. Call for **“Take”**.

Step 2: Clip your Personal Anchor System (PAS) into one of the anchor bolts. Make sure the carabiner is locked.

Step 3: Ask your belayer for **“Slack”**, then sit back to check that your PAS is holding your full weight.

Step 4: Pull up about 4 ft of rope through the gear anchor.

Step 5: Tie a figure-8 on a bight. Clip this knot to your belay loop with a locking carabiner. Call for **“Take”**. The weight should now be from the belay strand, thru the gear anchor, thru the figure-8 on a bight & locking carabiner, to your belay loop.

Step 5: Untie the original figure-8 tie-in from the harness.

Step 6: Feed the end of the rope through both fixed hardware/chains Do **NOT** thread the rope through the bolts themselves.

Step 7: Tie the end of the rope into both hard points of your harness using a re-woven figure 8.

Step 8: Call for **“Slack”** to fully weight your PAS.

Step 9: Remove the locking carabiner and untie the figure-8 on a bight. Call for **“Take”**. Confirm the new re-woven figure 8 tie-in knot is holding your full weight, the rope is going through the fixed hardware of the anchor, and that your PAS is now slack.

Step 10: Remove the quickdraws/quad anchor from the bolts. You may need to ask for **“Slack”** if the chain tension makes it hard to remove them.

Step 11: Ask your belayer for another **“Take”** before continuing. Double-check that the rope is holding your weight and your PAS is still slacked or loose.

Step 12: Remove your PAS, and call for **“Lower”**.

Backing Off a Climb

Sometimes, a climber may need to stop their ascent due to the difficulty of the route, changing weather conditions, or personal factors such as fatigue, fear, or physical limitations. It’s important to recognize when it’s time to back off and prioritize safety over completing the climb.

If this happens, the climber should:

- **Communicate clearly** with their belayer about their intention to come down.
- **Downclimb, if possible**, to the nearest clipped piece of protection.
- **Request a lower** from the belayer and descend safely.

Retrieving Gear After Backing Off

If gear has been left behind, such as a quickdraw at a bolt, consider safer alternatives to retrieve it rather than re-engaging with a difficult or unsafe climb:

- **Approach from above**: Is there a trail or scramble path that leads to the top of the climb?
- **Ask for help**: Is another climber or party nearby who plans to climb the route and can clean your gear on the way up or down?
- **Use neighboring climbs**: Is there an easier route nearby with a shared or accessible anchor that allows for a safer descent to clean the gear?
- **Come back tomorrow**: It might sound silly, but this is not uncommon and other climbers will often retrieve gear that has been clearly unintentionally left and post it on forums to try and find the owner.

These options are often much safer, more efficient, and less stressful than reattempting the same climb under poor conditions.

Bail Carabiner (or Quickdraw) Option

When bailing from a sport route, you’ll often need to leave something behind clipped to the last bolt to lower off safely. That’s where a **bail carabiner** comes in handy. If the carabiner is non-locking, it should be taped close (you always bring tape in your bail kit, right?).

What to Use as a Bail Carabiner:

- An **old or retired non-locking carabiner** (still in safe condition)
- An **inexpensive steel carabiner** (durable and ideal for permanent use)
- A **basic aluminum keylock carabiner** (easy to clip/unclip and won't snag)

You can also leave behind an **old quickdraw**, especially on overhanging routes where it's safer to lower from a draw than a single carabiner.

What NOT to Use:

- Locking carabiners (unless you're prepared to lose it)
- Personal gear you still need
- Damaged or sharp carabiners
- Wiregates that can get stuck in anchor bolts

Pro tip: Keep a designated **"bail 'biner"** on your harness—clearly marked or set aside—so you're prepared without losing essential gear.

A Word on Gear Sacrifice

It's worth reiterating: climbing gear can be expensive, but **no piece of gear is worth your safety**. Attempting a risky or improvised maneuver to retrieve a single quickdraw can lead to serious injury or worse. If you have to leave a piece of gear behind, think of it as part of the cost of safe climbing—not a failure.

REFERENCES:

Safety Standards for Climbing Gear: https://www.theuiaa.org/safety/safety-standards/