Pikes Peak Group Basic Mountain School – Rock Climbing Module Gear List (Updated 2025) – Please print page 1 for shopping; we dive deeper into this list during Zoom Session 1.

<u>Required Equipment for Field Days (we will go over this during Zoom 1)</u>

- Helmet – climbing rated
- Harness - modern, climbing-rated with belay loop
- Climbing shoes (optional, but recommended)
- Basic tube style belay device:
    - Black Diamond ATC or Petzl Verso
    - OR, if planning to continue with CMC climbing advanced classes, upgrade to: Black Diamond ATC Guide or Petzl Reverso

- Tether (choose one)
    - Sterling Chain Reactor
    - Double length nylon runner (120cm)
    - Personal Anchor System (PAS)
        - **NO** Daisy Chains!

- 3 Locking Carabiners (screw gate or auto locking)
    - 1 - for ATC/belay device (a large D- or Pear-shaped locking carabiner is best)
    - 1 - for Tether (Can be smaller D locker – recommend avoiding "thick/bulky" heads – if thicker, then it will impede clipping into bolts/chains)
        - - Optional: add 2nd locker on tether, has proven to be helpful
    - 1 - for rappel backup (Can be smaller D locker)

- 38" to 48" of 5 or 6 mm untied cord for friction hitches (comes out to 10-15" loops with a double fishermans – we'll tie this in class)
    - Optional additional item: Sterling Hollow Block (for rappel backup)

- 55" to 58" of 5 or 6 mm untied cord for foot prusik of 5 or 6 mm untied cord for friction hitches (comes out to 12-15" loops with a double fishermans – we'll tie this in class)

Rock Climbing Gear Overview: The Parts of the Climbers' Safety System

Gear Discussion: Harnesses

The first question you need to ask yourself is what are your goals for this class and the near future? In this document as well as in class, the instructors will present and discuss information about gear items that will allow you to make a more informed decision.
If you are unsure about your goals it is good practice to rent or borrow gear from a friend, and to purchase once you are clear about whether you plan on pursuing this sport and what area to focus on.

NOTE: If you borrow a harness from a friend, please arrange for inspection and proper fit prior to Field Day.

Types of Harnesses

Based on the type of climbing you plan on doing, you will have to choose between several types of harnesses. Harnesses can be used across different types of climbing, however you will experience some disadvantages in one area or the other. Based on your specific goals you should consider the product that is best suited for the climbing you plan on doing most. Alternatively, you can purchase a multipurpose harness that is suitable for both recreational indoor and outdoor climbing.

Sport or Gym harness:
Stripped down for fast and light travel (indoors or outdoors). Lightweight, often speed adjustment possible, however reduced range of adjustment (difficult when using more layers); often only 2 gear loops and limited gear-carrying capability.

Traditional (trad) harnesses:
Should have thicker padding for comfort and large gear-carrying capacity as trad climbing requires more gear than sport climbing. Wide waist belt and leg loops provide comfort, support, and ventilation needed for long or multiple routes and other activities requiring extended periods of hanging (cleaning and equipping routes, etc).

Ice and Mixed harness:
Similar to trad harnesses but designed to cope with winter conditions.

Alpine and Mountaineering harnesses:
Lightweight and simple, great to minimize weight and bulk for alpine climbing or glacier travel; can be used for all types of climbing. These harnesses are designed to fit over several layers, with gear loops for easy racking and leg loops that can be easily adjusted or opened/closed.

Easy to put on during a trip – no stepping through leg loops with heavy boots and crampons; open belay loop allows privacy breaks without untying the entire harness; lightweight, easy packable, and functional. Reduced comfort for trad or sport climbing (no padding); not suited to

carry a large amount of gear.

Women's harnesses:

Some manufacturers offer harnesses for women, tailored specifically to the female body. Especially women with a petite frame should consider these models.

Fit of Harness:

 **Proper fit of your harness is paramount to your safety! Never buy used gear from uncertain or unknown sources.**

Place the waist belt around your waist and tighten it securely. You should have no more than a 2–finger gap of slack between your waist and the harness. Once tightened the waist belt needs to be doubled back, and the end of the belt must protrude from the buckle about 2-3 inches. Make sure the waist belt is long enough so it can be widened to adjust for extra layers. If the leg loops are adjustable, tighten them without maxing out the belt; there must be enough belt length left (approx. 2") to ensure proper and safe fit so it does not come undone during the climb.

Fit of harness will be discussed in class, but you can also visit one of the local outdoor equipment stores to have it fitted.

Gear Discussion: Climbing Helmets

Wearing a helmet during climbs (rock, ice, or alpine) can prevent injuries or even save your life. Helmets not only protect your head from falling rock or during a fall, but also from hitting your head on protruding rock features while climbing up.

Materials: The outer shell of rock climbing helmets is commonly made from hard plastic, polyethylene, polycarbonate, or fiberglass. The inner shell is made for fitting comfort and distributing impact force. The inner shell is usually a foam liner or harness (suspension) system.

Foam vs. suspension system: In case of impact the outer shell of fiberglass or polycarbonate composite helmets with suspension system absorbs the impact forces. These helmets are a good choice for ice climbing; they are strong and durable, but tend to be heavier. For rock climbing, foam padded plastic helmets are the most popular choice. They are lightweight, usually ventilated, and offer good protection. In case of impact, the forces are transferred and dispersed to the interior foam layer.

Fit: Climbing helmets should fit tightly, but not be uncomfortably tight. Make sure there is no gap between the head and inner suspension, but still allows room for an extra layer (hat or balaclava) for activities in cold temperatures. The padding should press firmly and uniformly all the way around the head. The chin strap should be adjustable, ideally with one hand only. If you are carrying a pack, be sure you have enough room to look upwards without interfering with the pack.

Ventilation: The holes for ventilation on climbing helmets are small to limit rocks and dirt from getting inside. Some helmets provide an option for plugging top side vents during cold weather. When choosing the color of the helmet, keep in mind that dark colors absorb more heat than light colors; light colors reflect heat and are a better choice for high temperatures.

Headlamp: Depending on your planned activity, the use of a headlamp might be required. Make sure that your headlamp and helmet are compatible; most climbing helmets have a clip for securing the strap of your headlamp.

Face Shield: Some manufacturers offer face shields to be attached to the helmet. Face shields help protect your face from shattered ice and spindrift; ideal for ice and gully climbing.

Do not use helmets used in other sports (e.g. bicycle helmet). Do not sit or step on your helmet. Check it out before climbing; look for signs of wear or damage.

Even climbing helmets are designed to be used in different climbing environments: Rock, big wall, face, mountaineering, ice, and cave climbing are different environments. Choose a helmet with the features required for the particular sport. Check the manufacturer guidelines for recommend use as well as the certification of compliance with one of the following safety standards:

- Union Internationale des Associations d' Alpinisme (UIAA)
- American Society for Testing and Materials (ASTM)
- Community European (CE)

Examples for rock climbing helmets:

Petzl Ecrin Roc Camp USA Armour BD Half Dome Petzl Elios with face shield

(suspension) (foam) (foam) (foam)

Gear Discussion: Rock Climbing Shoes

Rock climbing shoes are the interface between you and the rock, and the wrong fit or style will hold you back. As a beginner, you'll want to stick with an all-purpose climbing shoe until you have mastered the skills. During this time you'll learn techniques and probably climb a variety of rock faces. An all-purpose shoe will be your best bet experiencing different types of climbing and rock composition. As your climbing goals and skills develop, add shoes that address different demands of the sport. However, a pair of all-purpose climbing shoes should always be a staple.

If you own more than one pair of climbing shoes, rotate your shoes to help develop footwork, since each specific model climbs differently. This approach also helps prevent hotspots that can develop when you wear the same pair of shoes day after day.

Materials & Styles:

Shoe uppers are either leather (fully or partially lined, unlined) or synthetic. Thicker soles, leather or other parts add to weight but also durability and might even have a positive effect on your performance. However, weight is not really an issue with climbing shoes.

Semi-flexed lasts are the most comfortable option. If the last has a rocker, the toe turns up slightly to allow the foot to roll. All-day rock shoes and approach shoes have a slight upward rocker (like a running shoe). The shape of ***cambered (down-turned) lasts*** bends slightly downward toward the toes; best use for toe and heel hooking on overhanging rock.

"Flat" or "traditional" shoes are most similar to a snug-fitting walking shoe. The toe box is "roomy" and offers a comfortable toe shape ideal for moderate to intermediate climbs (designed for all-day comfort, steep face climbing or crack climbing). ***Asymmetrical rock shoes*** following roughly the anatomical shape of the foot that has the biggest toe as the longest point; a few radically asymmetrical designs push the toe point even farther to the inside of the shoe to increase power over the big toe and inside edge (designed for bouldering or gym climbing).

Women's (Low-volume) models have lower ankle and smaller heel cups. Some models have a longer toe bed and lower volume forefoot than the male or unisex models. However, don't limit your search for well-fitting shoes to your gender. It might be worth trying them for proper fit, regardless of your gender.

Fit:

Fit is the most important factor in finding a good pair of rock shoes. If possible, compare and try on a variety of models. Ideally, shop for climbing shoes in the afternoon. Your feet can swell up to a full size during the day. Keep in mind that you'll most likely be wearing the shoe without socks, since the inside of shoes are designed to work with skin to reduce slippage.

You want a snug fit, that is comfortably tight, but not painful. Your foot shouldn't be slipping around inside the shoe, so make sure there is no room in the shoe for your feet to move. Your

toes should push into the front of the shoe, being slightly curled or straight. You should be able to fit one or two fingers between the laces or straps for stretching. Your heel should fill out the shoe and it shouldn't lift up and down when you walk. If the shoes are too tight, foot pain will affect your climbing performance and could even cause problems such as blisters, bunions, and calluses.

Most climbing shoes stretch in width, not length, so if you experience pain in the heel or toes, you probably need a different shoe or a different size. If you plan to climb all day, choose a shoe that is comfortably snug. If you plan on short, more difficult climbs then you should consider a tighter fit.

Sizing: Unfortunately, there is no magic formula for sizing rock shoes and everybody's feet are different. Try on lots of shoes to find a pair that fits your feet. It's always best to try them on in person and wear them around the shop for at least five minutes.

All rock shoe companies have multiple lasts, and every time they change rubber, upper materials or the design, it changes the fit—even with the same last. Different models incorporate changes in volume, width and rocker height so each fits differently. You may wear a size 10 street shoe but need a size 8 climbing shoe for a performance fit and a size 9 in the same model for all-day use. Rock shoes come in US, UK, and European sizes, which makes size conversion difficult. Also, keep in mind that a size 42 from one brand will fit differently than a size 42 in another.

Stretch: Rock shoes will stretch, but mostly in width, not in length. Unlined leather will stretch up to a full size (size them so that your toes just touch the end of the shoe, so you can feel (but not see) your toe knuckles pushing against the leather); lined leather shoes will only stretch to a half size or less. A synthetic shoe doesn't stretch much. It does soften up slightly with use, but there is little give, much less than a ¼ size.

I. **Protecting, Maintaining and Inspecting Your Climbing Gear**

Take care of your climbing gear and yes, your life does depend on it. You pay top dollar for climbing gear because it is certified for strength and integrity with regards to its correct use in the climber's safety system. But if a piece of your equipment gets mishandled or abused - or through inspection shows signs of wear and tear - do not hesitate to retire that expensive piece of gear and to replace it.

Inspections of your climbing gear should happen on both a long term and short term basis. In the long term, you should track the use and wear on your equipment and inspect pieces closely at home, particularly after times of heavy use, falls, sharp rock, etc.

In the short term, you should do a quick visual test of your gear every time you get ready to go climbing. And this kind of quick visual check should also be part of the safety check that you and your partner perform at the base of every climb (see the next chapter – Partner Safety Checks). That brings a second set of eyes evaluating the wear and integrity of your climbing gear.

1. Ropes (Do not purchase for this class – PPG supplies ropes for course

instruction use): One of the few non-redundant pieces of gear you have, so a rope failure means a ground fall no matter what. Most ropes last between one and three years, depending on how often you go climbing and how they are stored. Avoid stepping on your rope. Every step grinds dust and dirt into the sheath and core. Use a rope bag. Wash your rope every so often. Uncoil it, put it in a large mesh bag, and wash it in the washing machine in cold water with non-detergent soap. Leave it loose to air dry. Don't dry it in direct sunlight.

- **Core:** The core is the load-bearing part of the rope, which makes it the most important thing to check. Unfortunately (from an inspection standpoint), it's underneath a sheath and can't be seen. This means that you have to inspect a core with a tactile test and trust what you feel. First, go end to end feeling every inch of the rope for soft or hard spots. These indicate a place where the core may have been damaged. Flat spots usually mean that a strand of the core has been damaged. Once you've done this test, go end to end again with the radius test. Take a bite of rope in your hand and rotate it to feel how tight you can make the arc. Go down the rope a couple inches and do it again, and again, and again until you're at the end. If you find a spot that's softer than the rest, it's an indication of damage to the core.

- **Sheath:** Fuzzing of the sheath is normal. What you should be worried about is one section that's worn more than the rest. This indicates a trauma to that piece of the rope, and you can often find a corresponding section of core that's damaged as well. If the sheath has abrasions nasty enough to expose the core, then your rope is finished. You should also keep your eyes open for any singe of the sheath. While this may not be an issue by itself, it's an indication of trauma to a singular section of the rope and should be inspected very closely.

- **Falls:** Ropes are designed to take lots and lots of "normal" falls, but some falls can cause more damage than others. The forces created by a fall have virtually nothing to do with the length of a fall and everything to do with how much rope is available to absorb the fall. A fall factor is calculated by dividing the length of the fall over the amount of rope which absorbs it. For example, if you climb up 10 feet, place a piece, climb another 10, and fall 20-feet, you get a fall factor of 1 (20-foot fall on 20 feet of rope). If you take the same fall without the gear and go past the belay on a multi-pitch route, you fall 40-feet on 20-feet of rope and create a factor 2 fall (as bad as falls get). Anything much over a factor 1 fall should have you thinking seriously about retiring your rope, even if you bought it last week.

- **Trimming:** If a rope is damaged in a single location, then you may be able to cut off the damaged end and keep using the rope. If you do this, make sure that you re-seal the end by melting it with a lighter. This keeps the core from slipping inside the sheath. It's also important to mark both ends of the rope with the new length. Lowering off the end of a newly trimmed rope is a very common climbing accident.

2. Carabiners: Carabiners probably wear out faster than any other piece of aluminum gear. Cams sit in cracks, stoppers sit in cracks, but carabiners get ropes running through

them, they get dropped, and they get dented from repeated falls on bolts. Gate springs wear out, and corrosion attacks them if they get wet.

- **Gate Operation:** The first test you should give your biners is a simple gate test. Open the gate and let it snap closed. That's it. If it sticks, sometimes a good cleaning and then a few squirts of a dry silicone spray will get things moving again. Don't use WD-40 or other oils since they tend to attract more dust and dirt in the moving parts. If that doesn't do the job, then toss it. Screw and auto-locking sleeves also need to be checked. You're looking for a nice smooth operation with absolutely zero sticking.

- **Wear:** For all aluminum products, the tolerance for wear is 1mm. That may not seem like much, but it's enough to compromise a piece of gear's strength. A millimeter of wear can come from a bolt-hanger indentation, from a big scratch received in a fall, and most commonly from rope wear inside the basket. Not only does rope wear compromise strength, but it can also create sharp edges that can cut your rope in a fall.

- **Corrosion:** If biners are exposed to the elements, they can corrode just like any other metal. Corrosion compromises strength, of course, but it can also create abrasion hazards if it occurs along a rope-bearing surface. Take a close look where the steel pin holds the gate to the body of the biner. This is a common place to find corrosion.

3. **Belay Device:** Your belay device is a non-redundant piece of equipment, so a failure will hurt or kill you or your partner. These things do last a pretty long time, but everything needs to go eventually.

- **Wear:** Unless something pretty dramatic happens to crack your belay device, then rope wear is pretty much the only thing that's going to end its career. Like all aluminum products, 1mm of wear is the acceptable limit. In addition to that, you must keep your eye out for sharp edges. The angle of rope wear can eventually create a knife at the edge of your device, and you can imagine how bad that would be to press against your rope.

4. **Dropped Gear:** Climbers talk about micro fractures and how you need to retire a piece of gear if it gets dropped two feet, five feet, from the top of pitch 1, or whatever they heard from a friend who heard from someone else. Petzl has done extensive testing on dropped gear and their findings resulted in a pretty basic rule. If a piece of gear fails a visual and function inspection, then it should be retired (which it should be even if it hasn't been dropped). If a piece of gear has been dropped, no matter the height, and it still passes a visual and function inspection, then it's good to go. In hundreds of samples, Petzl failed to find a single piece of dropped gear that passed inspection but failed at less than its rated strength.

5. **Harnesses:** Climbers tend to use harnesses for way too long of a period.

- **Tie-In Points:** First, check the leg and waist tie-in points. These are your connections to the rope, so they need to be in tiptop shape. If either of these points has enough wear

to make you feel the slightest bit uncomfortable, then you should retire the harness. Some models use a non-load-bearing cover on these points to fight wear and tear. If this piece gets worn all the way through, then your harness is done.

- **Belay Loop:** Like your tie-in points, belay loops should be very closely inspected. While the belay loop is the strongest part of the entire harness, it's subject to the same wear and tear as everything else. If your belay loop is compromised, then it can put your life and your partner's life in danger. Check the bar stitches and look for any signs of fraying or wear. Then look at the rest of the belay loop for uneven wear. Like ropes, nylon can get a touch fuzzy without compromising strength, but if one section is worn more than the rest, then it's time for the garbage.

- **Buckles**: Now take a look at the buckles. There should be absolutely no corrosion and none of the metal should be worn enough to create anything that even resembles a sharp edge. Either of these, and your harness goes in the trash.

- **Stitches:** Next, go through all the load-bearing stitching. All load-bearing stitching must be a different color than the fabric it's sewn into. Industrial rope access guidelines state that a single picked thread is grounds for retiring a harness. This may be a bit harsh, but it should give you a good idea of how little it takes to compromise your harness's strength.

- **Overall:** Once you've gone through your checklist, give the rest of the harness a good once-over with an eye for serious abrasion on the rest of the nylon.

6. Slings: Checking slings is essentially an easy version of checking a harness. You have the same basic components without the buckles. Slings get loaded over edges, wrapped around horns, and subjected to falls over and over again, so they can get wrecked pretty quickly. Another important consideration is that Spectra (a.k.a. Dyneema) does not last as long as nylon, so anything that's even remotely worn should find its way to the trash.

- **Stitching:** Like harnesses, start with the load-bearing stitching (different color than the sling fabric). Look for any abrasion or picked stitches, and remember that the industrial standard is one-picked stitch before it's in the garbage.

- **Overall:** Slings can get fuzzy, much like a rope, but still be in usable shape. What you want to look for is a singular piece on the sling that has more wear than the rest. If you see this, get rid of it.

7. Helmets: Of all climbing gear, helmets are probably the most common to be used well beyond their prime (but … then at least they're being used!). Many helmets in use these days won't protect from major impacts of rockfall or other traumatic assault.

- **Shell:** Look over your shell for any scratches or marks deeper than 1mm. Lines of discoloration (usually lighter than the helmet's color) are known as crazing and indicate that the shell was under enough pressure to deform the helmet.

- Unfortunately, this decreases the shell's structural integrity. Any one of these things can cause a shell to split under a fraction of the impact force that it was designed to absorb. Even a crack at the ends can propagate across the entire lid from a straight-on top impact.

- **Webbing:** For helmets without a foam liner, the webbing works in conjunction with the shell to absorb an impact. If the webbing is torn or frayed, then it can fail under impact. If this happens, the only thing protecting you from a falling object is a 3mm piece of plastic. Obviously, this is not going to get the job done.

- **Foam:** In-mold helmets use foam to absorb impacts. It's designed to deform when an impact occurs, which makes it good for only one hit. The foam almost always cracks when it takes a big enough hit to come into play. Check the foam regularly, and don't ignore cracking just because your helmet has never taken a hit while you were wearing it.

8. Shoes for climbing (Optional for Basic Rock Course):

- Wear your rock shoes on the rock, for climbing. Don't wear them on the trail or the approach. Walking in climbing shoes allows dirt and gravel to grind into the rubber and wear down its surface prematurely. Dirty soles also have less grip when you get on the rock.
- Take your shoes out of your pack when you get home; this helps prevent mildew and odors.
- Leave shoes out to dry afterwards, preferably out of direct sunlight.
- If your shoes start to get ripe, you can wash the uppers by hand with soap and water.
- Rub the soles and rands lightly with a wet rag, removing as much dirt as possible, then wipe them dry.
- Brush the bottoms with coarse sandpaper or gently use a wire brush from toe to heel, brushing just enough to restore the black color. Try not to remove any rubber.
- Keep an eye on the high-wear areas of your shoes and take care of them before holes appear.
- If you wait long enough for holes to appear in the rubber, or for the rands to wear through, resoling is more difficult and more expensive. Plus, your resoled shoes may not perform up to their old standards.