Bellingham
Intermediate Mountaineering
Course Handbook

Contents

Welcome to the Intermediate Mountaineering Course!

The Bellingham Mountaineers Intermediate Mountaineering Course presents the techniques necessary to climb the rock, snow, and ice typically found in the Cascade and Olympic mountains of the Pacific Northwest. In addition to climbing techniques the course emphasizes safety, leadership, and climbing instruction. Course graduates will have the knowledge and skills to organize and lead basic-level climbs and to participate in intermediate-level alpine, rock and ice climbs.

Successful completion of this course requires a significant commitment of time, effort, and money for travel and equipment. It is the student's responsibility to attend all course activities and complete all course requirements. Each student must seriously assess his or her commitment of time and money prior to beginning this course.

Course Timeline:

Because there is a significant amount of learning, practicing, teaching and experiencing the general timeline to graduate the course is five years.

- Within the first three years students should complete all lectures and field trips
- Within the first four years students should have completed the requirements for teaching the Basic Mountaineering Course
- Within five years students should have gotten in all of their experience climbs and rope leads for Basic Mountaineering climbs

Course Texts

Required texts:

- Mountaineering, Freedom of the Hills latest edition
- Rock Climbing Anchors by Craig Luebben
- Climbing Self Rescue by Tyson and Loomis
- Climbing Anchors by John Long 2nd ed
- Alpine Climbing by Houston and Cosley
- Traditional Lead Climbing by Heidi Pesterfield
- Glacier Mountaineering: An Illustrated Guide to Glacier Travel and Crevasse Rescue by Andy Tyson and Mike Clelland
- Backcountry Skiing by Martin Volken

Optional - but highly recommended texts:

- How to Rock Climb, John Long
- Staying Alive in Avalanche Terrain by Bruce Tremper 3rd ed
- Accidents in North American Mountaineering (any recent edition)
- Self-Rescue by David Fasulo (2nd Edition)
- Glacier Travel and Crevasse Rescue by Andy Selters
- Glaciers! The Art of Travel and the Science of Rescue by Michael Strong, Eck Doerry, and Ryan Ojero
- Ice & Mixed Climbing Modern Techniques by Will Gadd

Graduation Requirements

- Attend all Intermediate course lectures or pre-trip meetings
- Complete all Intermediate field trips in a safe and competent manner.
- Instruct at least once at each of the Basic Mountaineering field trips.
- Lead at least one Basic Mountaineering field trip.
- Complete six basic climbs in a safe and competent manner, as a rope leader or climb leader, including at least three rock and two glacier climbs. Each climb must be of a separate and distinct route.
- Complete five Intermediate climbs in a safe and competent manner (either scheduled intermediate climbs or intermediate level club climbs), including at least 2 ice and 2 rock climbs. Each climb must be a separate and distinct route. A total of two climbs may be scheduled private climbs; however, a maximum of one climb of any specific type (ice, rock or mountaineering) may be included.
- Demonstrate leadership and mountaineering competence to the satisfaction of the Climbing Committee. Competence shall include mountaineering judgment, safety, and technical competence in mountain climbing. Experience in organizing and leading mountaineering activities is encouraged.
- Hold a current Wilderness First Aid certification or equivalent when applying for graduation.
- Complete AAIRE Level I or equivalent.
- Submit a written graduation application to the Climbing Committee.

A written request for an extension beyond the allotted five years to graduate may be granted upon approval of the Bellingham Branch Climbing Committee.

Course Extension

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Intermediate Climbs

These climbs can range from 4 pitches on alpine rock to 20+ mixed rock and ice. They vary greatly in length, difficulty and character. However, all require a minimum level of climbing skills, experience and physical stamina. Most intermediate climbs are rated Grade II or III according to the National Climbing Classification System (NCCS). On intermediate rock climbs, most routes are rated from 5.0 up with at least 4 climbing pitches. The typical rock climb includes 4-8 pitches. These climbs often include roped and un-roped pitches of 4th class climbing and 3rd class scrambling. The technical sections of intermediate ice climbs generally consist of hard snow or glacial ice at angles of 35 to 55 degrees for five hundred to several thousand feet. Intermediate climbs often include strenuous cross-country approaches involving brush and hard snow. Intermediate mountaineering climbs will require the same minimum competence and stamina as other intermediate climbs however there may be fewer technical section or the technical sections will be shorter than those on intermediate rock or ice climbs. By talking with other climbers and referring to the *Intermediate Climbs Guide,* it is possible to choose climbs that match your current ability and confidence level. Rope leading on basic climbs will also develop your skills and help increase your confidence.

Prerequisites to participating in Intermediate Climbs and receiving climb credit are:

- Current enrollment as an intermediate student or an intermediate graduate and completion of Accident Management or leader permission.
- Completion of Intermediate Rock 1 FT and Rock 2 FT before participating on intermediate rock climbs.
- Completion of Intermediate Ice 1 FT prior to participating on intermediate alpine ice climbs.
- Completion of Intermediate Water Ice FT prior to participating on intermediate water ice climbs.
- Attaining the summit on those climbs listed as requiring summits or completion of the climb route on those climbs so specified. The student must lead approximately 50% of the route.
- Complete the entire trip in a safe and competent manner. The climb leader has the option of denying credit for the climb if the student did not meet these requirements, even if the summit was reached.
- All climbs must be conducted in a manner consistent with the Climbing Code.

Privately Organized Intermediate Climbs

Two of the five required intermediate-level climbs may be privately organized climbs. However, there is a restriction: only one climb of any specific type (i.e., ice, rock, or mountaineering) may be included. The purpose of these climbs is to give intermediate students the opportunity to organize and lead a climb under the guidance of a Mountaineers' Climb Leader. This also provides the opportunity of climbing with a group of friends. To be recognized for credit, privately organized climbs must conform to the following rules:

- If the proposed climb is NOT listed in The Mountaineers *Intermediate Climbs Guide,* obtain the approval of the Bellingham Climbing Chair before the climb.
- After the climb, file a trip report with the Bellingham Climbing Committee. This report must be filed to obtain climb credit. Please file a report even if you did not reach the summit.

Instructional Requirements

Graduation requirements include instructing at each of the Basic Mountaineering field trips. Teaching enhances your own grasp of concepts and techniques as well as your leadership abilities in working with less experienced climbers. Although you are not expected to be an expert, you should thoroughly re-familiarize yourself with the Basic Mountaineering techniques that are taught in before instructing. Remember that while the intermediate course may be a good place to experiment with new ideas and techniques, the basic course has a large amount of standardized material that is approved in advance by the climbing committee for use in the basic course. Teaching new or different techniques may only confuse students and other instructors.

A good instructor strives to create a friendly atmosphere for the students. Patience, positive encouragement and praise are more effective than harsh criticism and condescension. Make sure your instructions are clear and simple. Students are often confused and overwhelmed by too much information. Treat everyone with courtesy and respect.

The 3Ds can be an effective teaching method:

DESCRIBE - Describe the technique and how to do it. Try to be clear, simple and succinct.

DEMONSTRATE - Demonstrate the technique to the students.

DO - Ask the students to do the technique.

Leadership and Mountaineering Competence

In order to graduate from the Intermediate Mountaineering Course you are required to demonstrate mountaineering competence and leadership. Unlike other requirements, evaluating whether a person has demonstrated mountaineering competence and leadership is subjective. For this reason each Intermediate Course Graduation application is reviewed and approved by the Climbing Committee. To help the committee properly evaluate your application for graduation, keep detailed records of the activities in which you have participated that demonstrate your mountaineering competence and leadership.

Mountaineering competence encompasses more than just rock and ice climbing skills. In addition to technical challenges, climbing a mountain involves additional factors that include: complex route finding, variable weather conditions, moving over unstable terrain, differing capabilities of party members, encountering highly variable technical difficulties and objective hazards such as rock and ice fall.

To demonstrate leadership skills the graduating student should have experience organizing and leading mountaineering activities at the basic level. The leadership requirement is in place because the Intermediate student is expected to develop leadership skills in the mountains.

Here are some recommended ways to develop and subsequently demonstrate your general mountaineering competence and leadership abilities.

Instruct at Basic Field Trips

Instructing basic students helps instill and reinforce your mountaineering skills.

Rope Lead on Basic Climbs

Rope leading helps develop general mountaineering competence, judgment and self-confidence prior to participating on intermediate climbs. Six distinct (different routes) basic rope leads are required for graduation; however, students should feel free and are encouraged to rope lead on as many basic climbs as possible.

Expectations of Rope Leaders on Basic Climbs

As a rope leader on Basic Climbs you will be expected to:

- Assist the climb leader in organizing and managing the climbing party including route finding, setting up rappels, and resolving situational issues.
- Set an example for students to follow, in particular regarding the Climbing Code and environmental impact (see below).
- Demonstrate competence and knowledge in mountaineering skills such as climbing technique, route finding, off trail travel, safety, as well as leadership and teamwork skills, and assist the students in developing these same skills.

Mentored Lead on Basic Climbs

Leadership experience can be gained by acting as the leader of a basic or climb under the guidance of a climb leader. The mentored leader makes all of major decisions including route finding, personnel decisions, evaluating climbing hazards and conditions, and problem solving. The mentored lead also does all of the organizational work for the climb including organizing the team and conducting the administration in the Mountaineers database.

Becoming a Climb Leader

The Climbing Committee administers the Climb Leader List. Applications for membership on the list are sent to the Climbing Committee for consideration. A Climb Leader may lead any technical climb for the club.

The Climbing Committee evaluates the general mountaineering aptitude, leadership aptitude and, most importantly, the judgment of each applicant for the Climb Leader List. Particular attention is given to experience gained through leading private climbs, participating as a leader in the mentored leading program, serving as an assistant leader on Basic and Intermediate climbs, and assisting and teaching at field trips.

Leading climbs for The Mountaineers is a tremendous responsibility. As a climb Leader, you are responsible for the welfare and well being of every member of the party, and for doing your best to make the trip enjoyable and successful. Take careful note that "successful" is not necessarily synonymous with reaching the summit. The summit is only the halfway point of a trip. The true measure of success is that everyone makes it home safely. Leading climbs for the Mountaineers can be one of the most rewarding things you can do. Sharing that moment when a student suddenly realizes what they are capable of doing can be very fulfilling.

<u>Climb Leader Minimum Requirements</u>

1. Must be a current member in The Mountaineers.
2. Must be at least 18 years of age.
3. Must be a graduate of the basic course or hold basic equivalency and have participated in three or more successful basic or intermediate climbs.
4. Must participate in three rope leads of successfully summits of at least three basic climbs. At least one of these climbs must be glacier and one must be rock.
5. Must be the mentored lead of one successful basic climb.
6. Must possess and provide a current Wilderness First Responder, Wilderness EMT, or equivalent wilderness medicine certification.
7. Must complete and submit the climb leader application form and include a climbing résumé that includes dates and routes of climbs completed. Training received by the applicant should be listed with dates and names of the sponsoring organization.

<u>Highly Recommended</u>: Successful completion of Small Party Self-Rescue Seminar.

Bellingham Intermediate Mountaineering Course Graduation Application

Name: _____
Address: _____
Email: _____
Phone: _____
Year of course registration: _____

I wish to apply for graduation using:

- ☐ Using the current requirements
- ☐ Using the requirement when I started

Attached is a copy of a wilderness first aid card expiring:

Intermediate Field Trips- Year attended
Avalanche Level 1: _____
Winter Mountaineering: _____
Accident Management: _____
Rock I: _____
Rock II:_____
Ice I & II: _____
Intermediate Crevasse Rescue: _____
Water Ice: _____

Basic Course Instruction- Year attended
Avalanche: _____
Fundamentals: _____
Rock I: _____
Rock II: _____
Snow I: _____
Snow II: _____
Hard Snow: _____

Basic Course Leadership:
Trip & Year: _____

Successful Intermediate Climbs: Date, Route, Type, Party members-

_____
_____
_____
_____
_____
_____
_____

Successful Basic Climb Rope Leads: Date, Route, Type, Leaders-

_____
_____
_____
_____
_____
_____

Other Leadership Activities:

_____
_____
_____

Winter Mountaineering Lecture:

Prerequisites: None

Required Reading: *Skiing by Martin Volken et al (Ch1 pg 47-79, Ch 2 pg 106-129, Ch 4 pg 167-177, Ch 5 All, Ch 6 All, Ch 8 All, Ch 10 pg 307-323).* Review *Snow Sense*

Optional Reading: *Allen and Mike's Really Cool Backcountry Ski Book by O'Bannon and Clelland, Staying Alive in Avalanche Terrain by Bruce Tremper 3rd ed*

Required Equipment: Maps, weather forecast, avalanche forecast and snowpack history, route beta

Objectives:

- Prepare for a winter ascent

Outline:

1. Differences for winter climbs
    - Avalanche concerns
        - Decision making: data, observations, human factors, weather, snowpack analysis, terrain evaluation
        - Beacon check in the field: send/receive, range check
    - Weather
        - Colder & More volatile
        - Shorter windows
    - Approaches
        - Longer and more time consuming
        - Floatation
    - Route Conditions
        - More variable day to day and morning to night
    - General Gear
    - Climbing Gear-Different climbs=different gear
        - Rock Pro: nuts, pins, cams, tri
        - Ice pro: screws, abalakov, bollards
        - Snow: glacier gear, pickets, axe
        - Snow Belays
    - Snow Camping
        - Planned Shelters
        - Emergency Shelters
2. Trip Planning
    - Gathering info before
        - Route info-Web, books, people
        - Forecasts-weather and avy
    - Route Planning
        - Plot out on map
        - GPS waypoints
        - Time estimations for each leg and total
        - Alternate route choices
        - White out plan

Winter Mountaineering Field Trip:

Required Equipment: Ten essential systems, Overnight gear, Specific gear TBD at Pre-Trip Meeting

Outline: Go outside

Saturday & Sunday:

1. Execute the planned climb or the best suitable alternative
2. Consider the following:
    - In the field
        - Constantly compare expectations with actual observations
        - Record weather & snowpack data
        - Terrain Choices
        - Field evaluations
    - Field Travel
        - Track setting: Steady pace, good angle, efficient line
        - Safety: objective hazards, avy terrain, rock/ice fall, efficiency
        - Speed
    - Transitions
        - Right gear in right order
        - Anticipating needs-good timing
        - Safe spots

Small Party Rock Rescue Pre-Trip Meeting

Prerequisites: None

Required Reading: *Freedom of the Hills* Ch 22, *Climbing Self Rescue* by Tyson and Loomis, see additional material below

Optional Reading: *Self-Rescue* by David Fasulo

Equipment: Paper & pencil, typical day of rock climbing gear including 20 ft 6 or 7 mm cordellette

Objectives: Using written, physical or verbal methods describe the following scenarios:

- Tandem rappel using two ATC's on a 60m rope
- Tandem side by side rappel using and ATC on the rescuer and a figure 8 on the victim with the rope acting as a 2:1
- Leader descends to and injured belayer and both return to the ground
- Belayer ascends to and injured leader and both return to ground

Outline: Our main goal: getting injured people safely back home using the gear we have.

1. What you will learn in this class: 2 kinds of 2 person rappels, how to rescue an injured belayer, how to rescue an injured leader.
2. What you will not learn in this class: risk management, search methods, interacting with SAR, traditional technical rescue, group management to prevent accidents, or first aid.
3. You will probably never use these techniques:
    a. Causes of deaths in mountaineering, from Accidents in North American Mountaineering
    b. Anecdotal accidents from group members
    c. Rarity of technical rescue
4. Students spread out gear – what did you bring and why? Is there anything that you would not realistically take with you? Anything that you left at home?
5. Lesson 1: Students describe how you would rappel with a rescuer and victim?
    a. Discuss loads, logistics, limits of available equipment, safety considerations
        i. Tandem rappel using 2 atc on a standard doubled rope. Describe verbally and visually, then have students demonstrate by doing, drawing, or telling.
        ii. Counter balance rappel- side by side rappel using an atc on the rescuer, and a figure 8 on the victim, with the rope acting as a 2:1. Describe verbally and visually, and then have students demonstrate by doing, drawing, or telling.
        iii. Other methods?
6. Lesson 2: Students describe how a leader would rescue an injured belayer and both return to the ground. Describe verbally and visually, then have students demonstrate by doing, drawing, or telling.
7. Lesson 3: (if there is time) Students describe how a belayer would rescue an injured leader and return to the ground. Describe verbally and visually, then have students demonstrate by doing, drawing, or telling.

Small Party Rock Rescue Field Trip:

Required Equipment: Typecal day of rock climbing gear.

Outline: Everybody demonstrates

a. tandem rappel using 2 atc on a standard doubled rope;
b. tandem side by side rappel using an atc on the rescuer, and a figure 8 on the victim, with the rope acting as a 2:1;
c. leader descends to injured belayer and both return to the ground;
d. belayer ascends to injured leader and both return to the ground.

Saturday & Sunday:

1. Practice/demonstrate techniques on flat ground.
2. Move to vertical terrain and practice/demonstrate the four outlined scenarios.

Scenario 1: tandem rappel using 2 atc on a standard doubled rope

1. Set up a line for a rappel.
2. Victim hooks up ATC closest to the anchor.
3. Rescuer hooks up ATC just below victims.
4. Rescuer and victim connect to each other with a short loop (Option: a yoke, take a long tether, fold in half, tie an overhand in the middle, one tail to rescuer, one tail to victim, two tails to ATC)
5. As rescuer descends, they pull victim down with them.
6. In the field, one ATC often seemed to be enough on a 10mm rope, with a safety backup hitch.

Scenario 2: Counterbalance rappel

1. Victim ties in with figure 8, rope goes up to anchor and back down to rescuer.
2. Rescuer connects to rope with ATC. The vast bulk of the rope is below the rescue's ATC (thrown down the wall, flaked into a bag, possibly held by the victim).
3. Rescuer and victim connect to each other with a short loop.
4. As rescuer lets out the rope, both descend 1 foot for every 2 feet of rope that goes through the ATC.

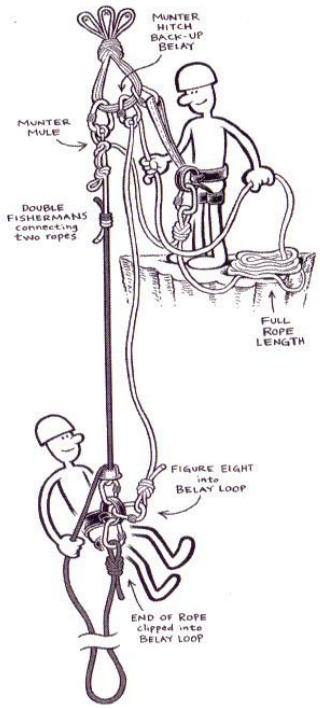
Scenario 3: Leader descends to injured belayer and both return to the ground

1. Leader builds anchor and ties off rope.
2. Leader descends to belayer with prussiks or ATC
3. Leader ties off belayer, removes rope from belayer and anchor, flakes rope.
4. Leader prussiks rope, cleans pro, pulls rope, sets up a rap, and raps down to belayer.

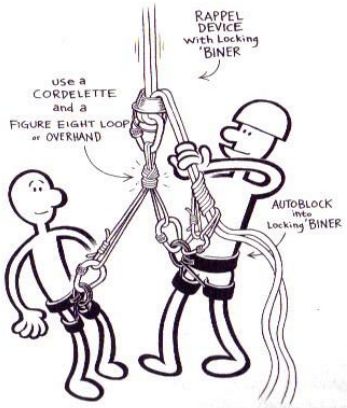
Scenario 4: Belayer ascends to injured leader and both return to the ground.

1. Belayer ties off rope and ascends to leader with prussiks.
2. Belayer builds anchor and ties off leader to anchor with load releasing hitch.
3. Belayer descends, cleans pro, unties from lower anchor, and flakes out rope.
4. Belayer ascends to leader, pulls rope, and sets up a rap (good place for a counterbalance).
5. Belayer hooks leader into rope with ATC, then deploys load releasing hitch to transfer load to the rope.
6. Belayer and leader rap down.

Optional Scenario 5 (if there is time): Raises! Rowing haul, C on a C, converting 3:1 to 6:1, others



Belayed rappel.



Assisted rappel.

multiple rappels, the first climber down needs to be able to clip to the anchors independently.

For beginners, the rappel line is prerigged with a load-releasable hitch. This allows the belayer to load the belay line, and unload the rappel line, if the beginner gets something stuck in the rappel device. It also allows the climber to be lowered a greater distance using the second rope, if needed, without much difficulty.

Assisted Rappel

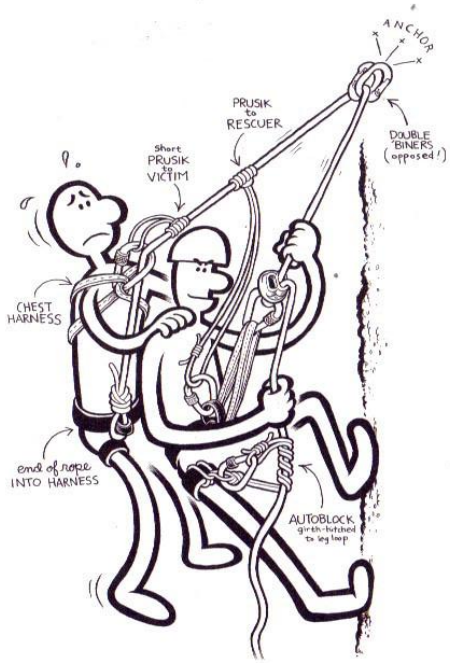
The assisted rappel is a technique used to descend while sharing a rappel device. It can be used if descending with beginners, children, haul bags, or incapacitated climbers. This system works best if the rappel device is extended with slings or accessory cord. Whenever the assisted rappel is used, it must be backed up with an autoblock. If anticipating multiple rappels, leashes should be prerigged.

Counterweight Rappel

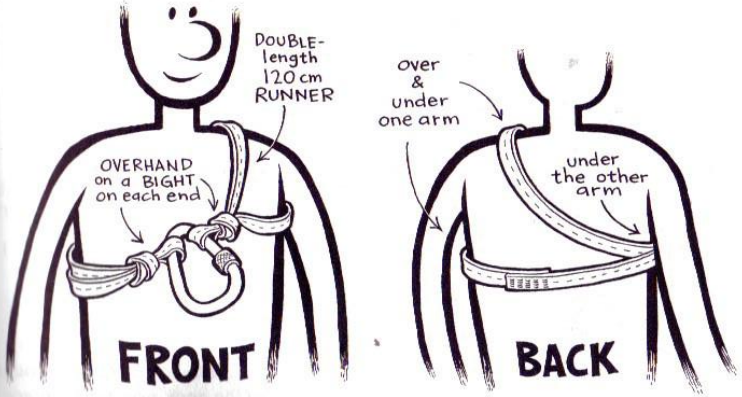
The counterweight rappel is typically used to reach, and then continue descending with, a second in need of rescue. It is also used for leader and toprope rescue after ascending to the stranded climber. If descending with an unconscious patient, he or she can be positioned on the rescuer's back to better manage low-angle terrain. Careful rope management is important because only half the rope length can be used, and you must anticipate options for rappel anchors to prevent running out of rope during the descent. Otherwise, both leader and second may end up hanging from the original rappel anchor, at the ends of the ropes, with no other rappel anchor options in the vicinity. Whenever the counterweight rappel is used, the rescuer remains tied into the rope to close the system, and an autoblock backup is used.

Improvised Chest Harness

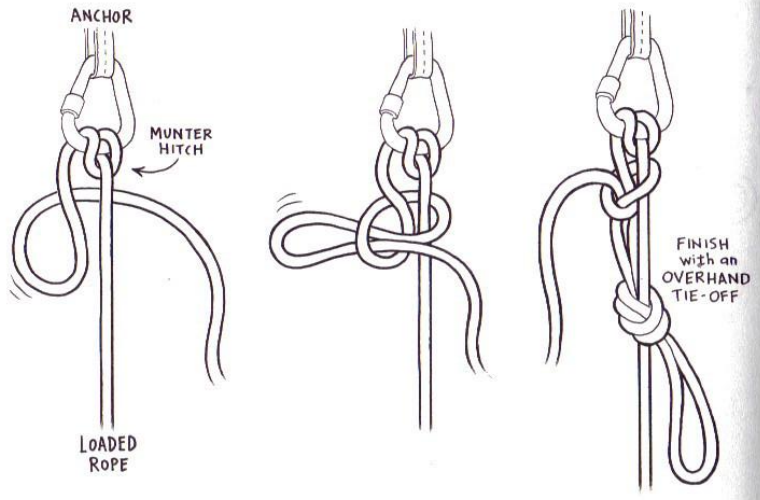
If rappelling with an incapacitated climber, a chest harness can help prevent further injury. The chest harnesses illustrated are only used for self-rescue applications and not for climbing or glacier travel. When using a chest harness, consider the following: Is the head and neck being supported? Is the airway being constricted? Is the chest being constricted? To help prevent constrictions, do not attach a slipped-style hitch or knot to the front of the chest harness.



Counterweight rappel.



A Parisian Baudrier chest harness will support the upper torso.



To create the Munter mule hitch, add a clockwise half twist in the brake strand to form a loop.

Pass the bight over the load strand, similar to the Munter slipped half-hitch, and then through the loop.

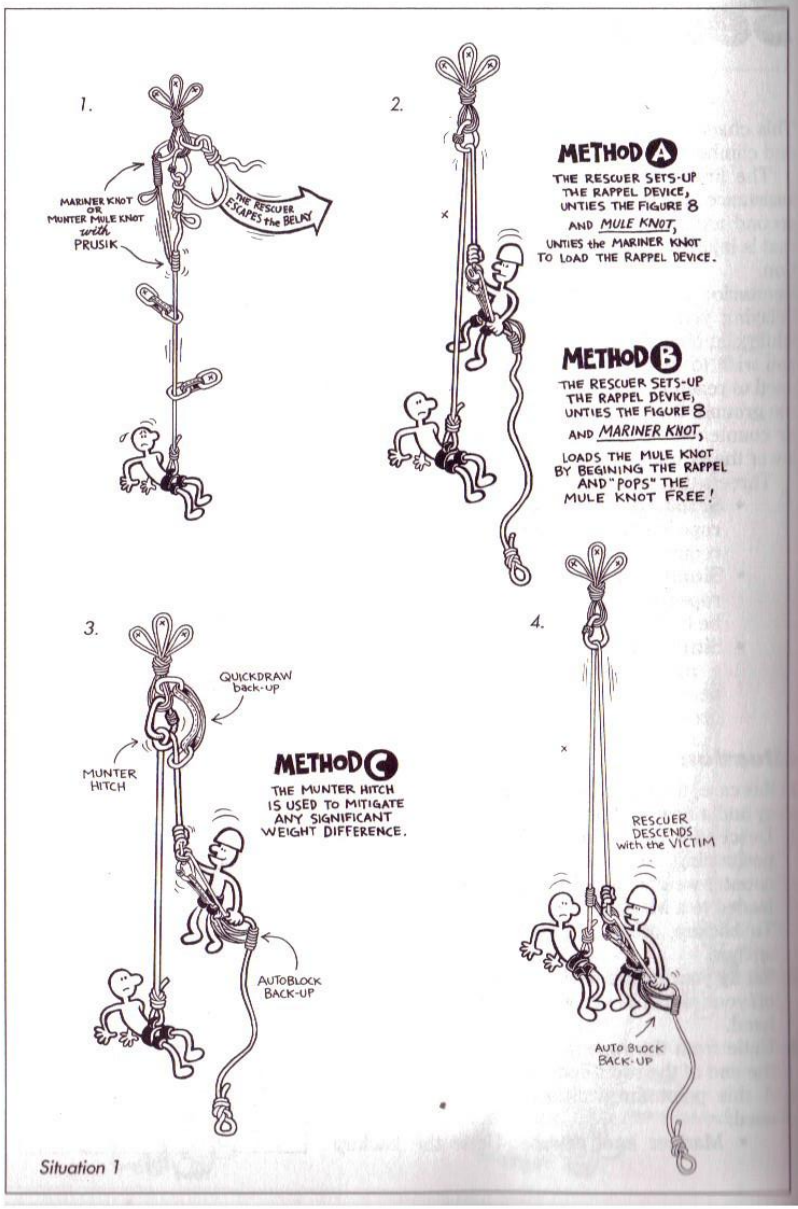
The overhand, tied onto the load strand using the bight, is required to finish the blocking combination.

LOAD-RELEASABLE COMBINATION: MARINER HITCH AND MUNTER MARINER HITCH OVERHAND

Despite its intimidating appearance, the mariner hitch is an easy to tie, and inspect, load-releasable hitch. Although not a favorite among some guides, many climbers seem to like the mariner if they have difficulty remembering how to tie other combinations correctly, or if they do not have a spare cordelette, since it can be tied with the shorter Prusik loop or a sling(s). The mariner can also be combined with the Munter hitch and overhand for a relatively easy to tie, and release, load-releasable hitch when using a cordelette.

As a rule, the mariner hitch alone must be kept under tension to prevent it from coming undone. This hitch often slips a little, but two or three wraps on the carabiner helps reduce slippage. If there is not enough material to tie an overhand knot, back up the mariner by clipping a quickdraw from the protruding loop to a secure section of the anchor system. Allow enough slack in the quickdraw to prevent it from being loaded if the mariner slips. If you need to tie a mariner and friction hitch with shoulder-length slings, girth-hitch two lengths together. This allows enough length for both hitches to be tied correctly. If there is enough material, the Munter mariner hitch overhand is far less prone to slipping (illustrated on the next page).

Rescuing the second using a variation to the counter-weight rappel.



Situation 1

Figure Eight. To load your rappel device, untie the Mule knot used to lock your rappel device in place. The victim's weight is on the Mariner knot. Untie the Mariner knot to load the rappel device.

The advantage using the Mariner knot to descend is that it is already loaded and easily released. The disadvantage is that the weight of the victim may (although rarely) pull you into the rappel anchors when the knot is released.

- Mule knot release: To load your rappel device, untie the Mariner knot used to escape the belay. The victim's weight is on the Mule knot used to lock your rappel device in place. Untie the backup Figure Eight. Weight the Mule knot to load the rappel device. Once weighted, untie the Mule Knot and it will "pop" free to load your rappel device.

The advantage of the Mule knot is that it allows for a very quick transition.

- Munter Mule knot release: Escape the belay and tie a Munter Mule Knot to the rappel anchor using the main rope. To load your rappel device, untie the Mariner knot used to escape the belay. The victim's weight is now on the Munter Mule knot. Untie the backup Figure Eight. Untie the Mule Knot used to lock your rappel device. Weight the Munter Mule knot to load the rappel device. Once weighted, the Mule knot will release and the Munter Hitch will mitigate the weight difference, allowing you to reach the victim. The victim's rope should be on the load side of the Munter Hitch.

The advantage of using the Munter Mule Knot is that it will mitigate any weight difference and prevent you from being pulled into the anchors. This disadvantage is that the knot increases the potential for getting the rope stuck when you retrieve your rappel rope. You will also need to leave a locking pear style carabiner at the rappel station.

5. When you reach the victim, administer first aid if needed.
6. Secure a Prusik knot to the victim's rope and attach the other end to your harness.
7. Continue to descend using a counter-weight rappel.

Note: The above mentioned techniques assume you are belaying with a waist belay. However, if you use a re-directed belay, the escape and rescue takes a mere ten seconds! Simply unclip from the anchors (you are attached to the system with your belay device) and rappel to the victim. Stop your descent by wrapping the rope around your thigh and set up the counter weight rappel.

You and the victim must be attached to the same anchor by slings that have been Girth-hitched to your harnesses. Furthermore, the rope must have been released from the bottom anchor to allow the lowering.

1. Reinforce the anchor. The anchor must be absolutely secure. If it's not, lower to a more suitable point and build a new anchor.
2. Clip the rope to your harness so it is not dropped accidentally. Next, untie the victim from the end of the rope and pull the rope through the piece or pieces of protection above.
3. Re-tie the victim to the end of the rope and clip the rope through the anchors.
4. Tie a knot at the end of the rope.
5. Adjust the slack and lower the victim.

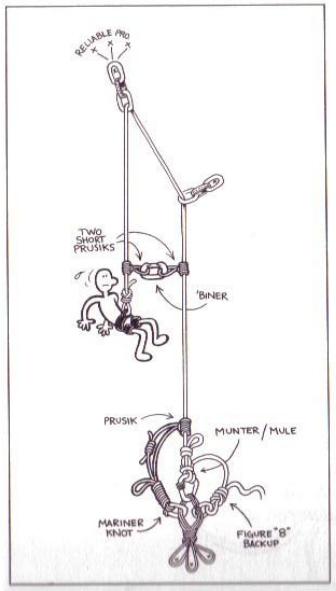
Warning! If the anchor fails, you will not have any backups.

COUNTER-WEIGHT RAPPEL TRANSITION

Scenario: You are prepared to ascend the rope to anchor the victim. However, you are on a route that does not offer a suitable anchor point convenient to the victim. This section describes how you would ascend to the victim and prepare a counter-weight rappel.

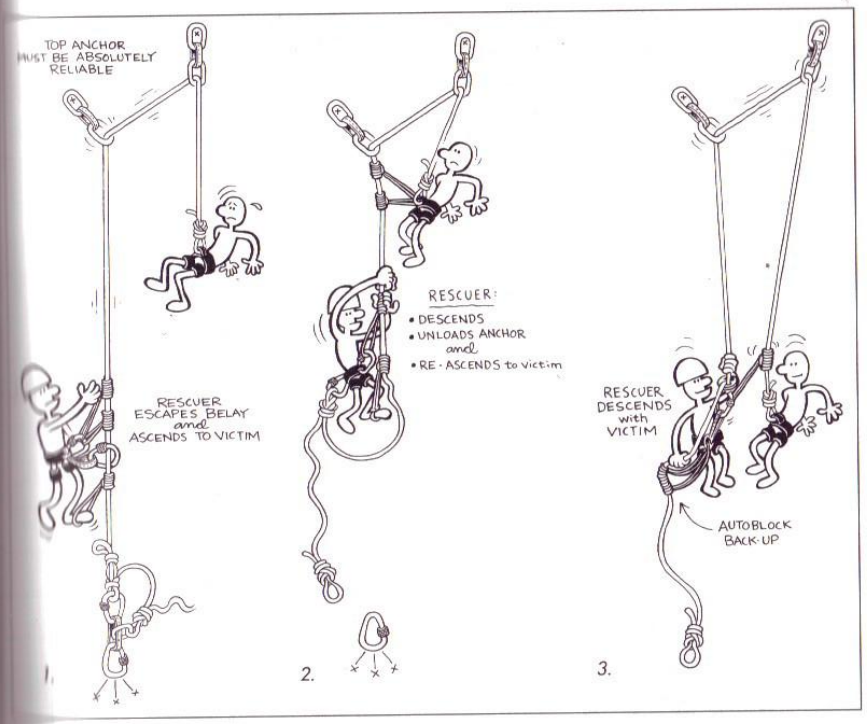
Warning! This method assumes that the top piece of protection can withstand the forces typically applied to a reliable anchor. However, you may not be able to inspect or backup this protection point. If, in your judgement, the top piece of protection is not absolutely reliable, do not attempt this method.

A second technique for setting up a counter-weight rappel.



1. Escape the belay and ascend to the victim as previously described.
2. Once you have reached the victim, secure a Prusik knot to the rope you have just ascended, above the highest Prusik you used to ascend the rope.
3. Secure this new Prusik to either:
   - the loop formed buy the Figure Eight follow-through on the victim's harness (for added safety, two Prusiks are show in the illustration); or
   - another Prusik knot tied to the rope weighted by the victim at a point a half-meter above the victim. Using a carabiner, attach the opposing Prusik knots together.
4. Descend and remove your original belay anchors.
5. Ascend the rope to the victim.
6. Set up a counter-weight rappel and descend.

Note: By attaching Prusik knots, the victim will remain in the same location while the rescuer descends and re-ascends the rope.



The three steps to setting up a counter-weight transition.

ASSISTING THE LEADER TO LOWER

Scenario: You are belaying a leader who has been injured during a fall, or is simply backing off a route, and you wish to lower the climber. Due to the length of the pitch, there is not enough rope to lower the leader to the ground. The climber is able to assist, but his unstable position requires the belayer to remain in control of the rope.

1. Lower the leader to the closest reliable piece of protection.
2. The leader backs up the protection point and anchors to it with a sling and locking carabiner that is Girth-hitched to his harness.
3. Once the leader is anchored, feed out one meter of slack.
4. The leader clips the slack rope through the anchor, ties a Figure Eight loop, and attaches it to his harness using two opposite/opposing carabiners. The leader is still on belay.
5. The leader unties his original tie-in knot and pulls the rope from the top piece.

Leading on Rock Pre-Trip Meeting

Prerequisites: Accident Management is strongly recommended

Required Reading: *Rock Climbing Anchors* by Craig Luebben**,** *Climbing Anchors* by John Long, *Alpine Climbing* by Houston and Cosley, *Traditional Lead Climbing* by Heidi Pesterfield, *Freedom of the Hills* Chapters 10-13

Required Equipment: Gear you have questions about

Objectives:

- Gear & equipment: What's out there & what's needed on climbs
- Trip planning and preparation from a leadership role
- Discussion and demonstration of field trip material

Leading on Rock Field Trip

Required Equipment: Ten essential systems, rock climbing gear
Outline:
Saturday & Sunday:

1. Rendezvous at predetermined claiming area

2. Placing Gear
    - Selecting rock suitable for placement
    - First placement=active
    - Nuts & Hexes-maximize contact
    - Tri Cams
    - Cams-under & over camming, walking

3. Building Anchors
    - Re-emphasize ERNEST
    - Must withhold up & downward force for multi-pitch
    - Equalized cordelette, top shelf
    - Master Point
    - Equalette

4. Clipping
    - Choosing correct sling length
    - Proper clipping
    - Backclipping
    - Z Clipping

5. Belaying from the top
    - Different belay methods

6. Leading
    - On top rope lead up a second rope and clip gear
    - On tope rope lead up a second rope and place gear-placement is critiqued
    - Lead using pre-placed gear
    - Lead using pre-placed gear and place gear-placement is critiqued
    - Lead, follower critiques

7. Make a plan
    - Who leads
    - Anchor method
    - Belay method
    - Rappel/lower

Efficient Rock Climbing Pre-Trip Meeting

Prerequisites: Leading on Rock

Reading: *Rock Climbing Anchors* by Craig Luebben**,** *Climbing Anchors* by John Long, *Alpine Climbing* by Houston and Cosley, *Traditional Lead Climbing* by Heidi Pesterfield, *Freedom of the Hills* Chapters 10-13

Objectives: Build on knowledge and skill gained during leading on rock to become more efficient on multi-pitch rock climbs using the following techniques:

- Simulclimbing
- Cow's Tail and other various belay techniques
- Advanced anchors and determining how to select
- Additional useful knots such as: garda hitch, klemheist, Yosemite finish
- Discussion of aid and French technique
- Climbing using different rope scenarios, coils, double, half etc
- Pitch transitions- swapping leads and block climbing

Efficient Rock Climbing Field Trip

Required Equipment: Ten essential systems, rock climbing gear

Outline:

Saturday & Sunday: Practice:

- Simulclimbing
- Cow's Tail and other various belay techniques
- Advanced anchors and determining how to select
- Additional useful knots such as: garda hitch, klemheist, Yosemite finish
- Discussion of aid and French technique
- Climbing using different rope scenarios, coils, double, half etc
- Pitch transitions- swapping leads and block climbing

Leading on Alpine Ice Pre-Trip Meeting

Prerequisites: Leading on Rock, Accident Management

Required Reading: *Freedom of the Hills* Ch 18 & 19

Optional Reading: *Climbing Ice* by Chouinard (out of print but excellent)

Required Equipment: Gear you have questions about

Objectives:

- Gear and equipment: What's out there and what's needed on climbs
- Ice Types and climbing grades
- Trip planning and preparation from a leadership role
- Slide show and discussion

Leading on Alpine Ice Field Trip

Required Equipment: Ten essential systems, Overnight gear, Ice Axe, Harness, Helmet, Slings & Biners, Crampons, Tools, screws if you own them

Saturday: Hike to camp & set up

1. Walking on ice (in balance)
    - No crampons, no axe
    - No crampons, with axe
    - With crampons, no axe
    - With crampons, with axe
2. Crampon Techniques
    - Duck walk (pied canard, French Technique)
    - Walking (pied marche)
    - Flat Footing (pied a' plat)
    - Rest Position (pied assis)
    - 3 o'clock (pied troisieme, American Technique),
    - Front point
3. Step Cutting-
    - Uphill- traversing with a big step for the corner of the switchback
    - Downhill-Straight down cuts, toe in and tilted slightly down.
    - Cut steps full foot size
4. Ice Axe Technique
    - Cane position (piolet canne)
    - Cross Body Position (piolet ramasse)
    - Anchor Position (piolet ancre)
    - Low Dagger (piolet panne)
    - High Dagger (piolet poniard)
    - Traction position (piolet traction)
    - Banister position
5. Practice ascending on top rope
    - Climb no axe or tool
    - Climb axe
    - Climb axe & tool

Sunday:

1. Screw Placement:
    - Screw types and lengths
    - Longevity of placement
    - Angle of screw in relation to the ice
    - Selecting ice for screw placement
    - Clearing the outer ice and creating a starting point with an axe
    - Screw tight, but make sure hanger has a bit of play
2. Anchors/Hanging Belays:
    - First screw at neck level, use longest screw
    - Second screw high and to either side, use rope and clove hitches
    - Follower tethers into one and clove hitches into another
3. Rappelling:
    - V-thread
        - Back it up with something a good distance from the anchor. Last man pull the piece
    - Improvising with natural anchors

Advanced Crevasse Rescue Pre-Trip Meeting

Prerequisites: Accident Management

Required Reading: *Alpine Climbing* by Houstan and Cosley Ch 7, *Glacier Mountaineering: An Illustrated Guide to Glacier Travel* pages 110-116, see additional material

Optional Reading: *Glaciers! The Art and Science of Rescue* by Michael Strong, Eck Doerry, and Ryan Ojerio, *Glacier Travel & Crevasse Rescue: Reading Glaciers, Team Travel, Crevasse Rescue Techniques, Routefinding, Expedition Skills*, by Andy Selters, *Travel and Crevasse Rescue* by Andy Tyson and Mike Clelland

Required Equipment: Standard Glacier Gear

Objectives:

- Practice rescue planning and execution in a leadership role
- Practice crevasse rescue techniques beyond the basic Z-Pulley
- Practice victim advocate skills

Outline:

1. Glacier Rigging
    - Equipment- 2 Person
    - Rope Management
        - When-Deciding to rope up
        - How – 2 Person
        - Analyzing Route & Conditions
        - Rope Tension & Direction
2. Belays & Anchors
    - Snow
    - Ice
3. Haul Systems & Physics
    - Importance (and problems) of tension release knots
    - Ratchets - types
    - Choosing a haul system
        - Direct
        - Drop Loop-preferred for single or small teams
4. Potential Problems
    - Smaller diameter ropes
    - Cordellete diameters
    - Prusik diameter and materials
    - Rigging post fall
5. Overview of rescue scenarios to be practiced in the field
    - Answer questions
    - Mock set ups as needed
6. Field Trip Planning and Preparation

Advanced Crevasse Rescue Field Trip

Required Equipment: Ten essential systems, Overnight gear,

Basic Minimum Setup:

- 10 biners (min 4 lockers- butterfly, tether, victim pulley)
- 2 pickets
- 2 anchor slings
- 2 spare slings
- cordelette other cordage
- 1 pulley for drop loop (w/ locker)
- chest prusik and foot loops

Add for significant weight differential:

- 2 hero loops
- 1-2 pulleys (prusik minding pulley for Z system)

Outline:

Saturday:

3. Hike to camp & set up
4. Practice 2 person rescue – Drop Loop
5. Practice rappelling to the victim and victim assistance

Sunday:

1. Practice middleman rescue
2. Break camp and hike out

Two Man Rope Team Setup:

- 60 Meter rope highly recommended
- Approximately 12 meters in between climbers
- Retie foot loops so there is no slip knot in system (use bowline or figure 8). Then foot loops can be used for master loop in rescue scenario
- Clip butterfly to belay loop, then coil extra

Rappel to victim for victim assistance (3 Person Rope Team):

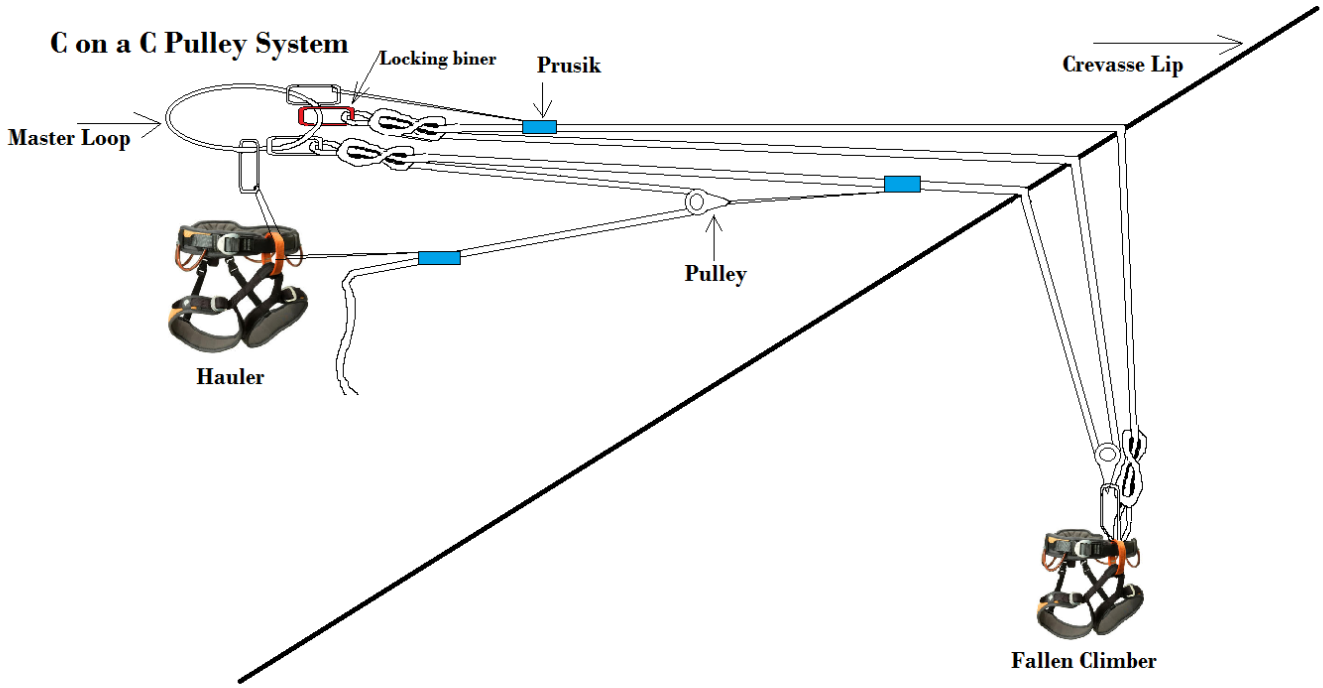
- Pad the lip of rappel
- Tie stopper knot on end of rope and backup with catastrophe knot
- Rappeller takes C pulley with them
- Have an extra biner to facilitate set up
- Clip the rope directly to the victims harness
- Hauler needs to stack Z on C if rappeller stays with victim
- Do not assist with haul and stay lower than the victim (no crampons)
- Foot pulley for up righting victim only
- Wait to attach foot prusik until ready to ascend

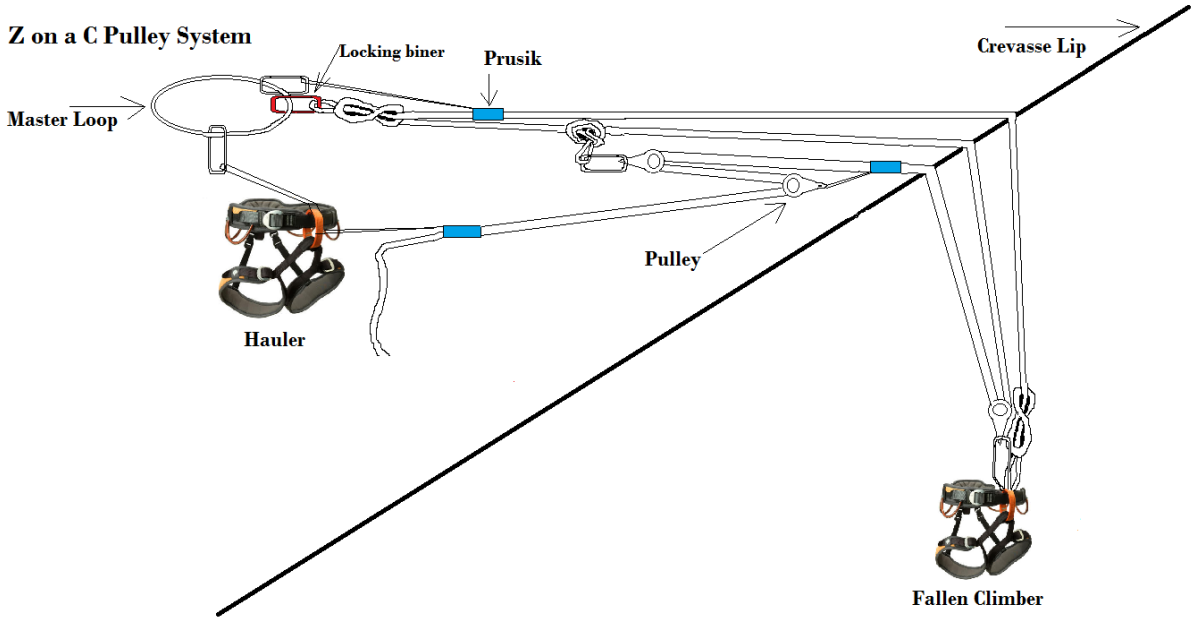
Middle person falls in:

- Do not cross over crevasse unless absolutely safe.
- Communication is critical between end persons to determine who will perform rescue.
- When releasing from self arrest, try to stay low and “slide” out of self arrest position versus standing straight up.
- Non hauler stays in self arrest until anchor is set and the lip has been padded.
    - Then they set up their own anchor (single piece acceptable),
    - Then, subsequently set another anchor closer to the crevasse to free rope for being belayed across.
- Middle person should wait to self prusik until they are certain which side of the rope is the haul line.

C on C (Diagram Included):

- Use Basic Setup
- Create Anchor with Master Loop
- Attach Victim's line to Master Loop with prusik & back it up with a figure 8 on a bite
- Drop C loop to victim
- Tie a bite on the haul line and then attach to anchor.
- Attach pulley/prusik on haul line and feed excess line through pulley, then pull.
- To tend victim prusik hands free you can put a prusik on the haul line and clip it to your harness





Water Ice Pre-Trip Meeting

Prerequisites: Leading on Alpine Ice, Accident Management

Required Reading:

Equipment: Gear you have questions about

Objectives:

- Prepare for a weekend of climbing

Water Ice Field Trip

Required Equipment: Ten essential systems, Overnight gear, Specific gear TBD at Pre-Trip Meeting

Outline: Go outside

Saturday & Sunday:

1. Using the skills learned during Leading on Alpine Ice execute the planned climbs or the best suitable alternative, swapping leads when possible