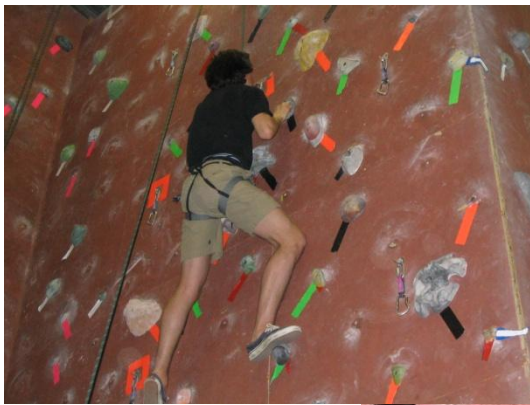


Calgary Board of Education

OPERATION GUIDELINES FOR CALGARY BOARD OF EDUCATION CLIMBING WALLS



January 2011

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Introduction

Rationale

The sport of wall climbing is becoming increasingly popular and schools in the Calgary Board of Education are pursuing climbing in school programs. Five schools in the Calgary Board of Education (2010) have climbing walls built into school facilities and five schools have a bouldering wall.

Climbing as an activity or sport has some inherent benefits:

- Students practice self-discipline in situations that have real consequences. Many younger students have difficulty focusing for extended periods of time. Real consequences demand focused attention and the demand for concentration comes from student peers.
- Wall climbing provides the opportunity for smaller and younger students to excel at a sport that depends more on flexibility, balance and strength-to-weight ratio rather than size and brute force.
- It provides an alternative to traditional physical activities at the school. In addition, it provides a sport opportunity for students who do not excel in the traditional sports or who do not like team sports. It is an excellent individual or small group activity.
- It provides students with the opportunity to challenge themselves and personalize their learning. Students push the degree of difficulty without much prompting. Challenge by choice.
- Climbing walls foster positive relationships amongst students, teachers and parents. Teamwork and trust are integral parts of a climbing wall experience.
- Enhances problem solving skills
- Examines the difference between Real and Perceived Risk.

Climbing at school provides the opportunity to learn a lifelong skill, thereby promoting active learning.

As more schools in the CBE pursue climbing as a “legitimate activity” concerns about safety, liability and risk have risen accordingly. While schools are encouraged to explore activities that promote students being active for a lifetime, concerns about safety, liability and risk must be addressed. The concern has led us to the purpose of this manual and the guidelines contained therein.

Purpose

The purpose of this manual is to:

1. provide teachers and administrators with guidelines for managing and operating school climbing programs safely.
2. provide teaching resources

Disclaimer

Climbing is inherently dangerous. Individuals using this manual do so at their own risk. The authors of this manual, the CBE, are not responsible for the application of this manual for any liability, loss, or injury that results from direct or indirect application.

These guidelines are neither a substitute for climbing experience, or a complete climbing wall instruction or construction manual. Climbing at an indoor climbing wall does not prepare you or your students for climbing in natural environments or on other climbing walls

Before moving on to more challenging climbing, teachers and students must have the appropriate training and experience; in some cases using hired professionals to safely manage the level of risk being assumed.

Further Information

If you have any questions about these guidelines, please call the following people:

- Coordinator, Offsite Activities, CBE
- Learning Specialist, Physical Education
- Climbing Wall Manager
- Superintendent of Learning Innovation

CBE Climbing Wall Acknowledgement of Risk Form

Prior to participation of students in the CBE-sponsored climbing wall program, both on and off site, all parents or legal guardians of such students, as well as the student, must complete and sign the Climbing Wall/Acknowledgement of Risk Form. The actual title of this form is *Consent of Parent or Guardian to Participate in the Climbing Wall Programme and "Acknowledgement of Risk" Form*. A copy of this form is included in the Appendix A and should be used as a master for making further copies as needed. In a situation where an additional single copy is required as a master, contact Corporate Risk Management at (403)294-8451.

This form should be used:

1. If the climbing wall activity is taking place within a CBE school, for CBE students. "Within a CBE school" means:
2. When a CBE school, with its own climbing wall, runs a Climbing Wall Program for its own students.
3. When a CBE school takes its students to another CBE school to use its climbing wall.
4. If a school decides to use the services of an outside climbing wall facility a Master Agreement must be in place between the specific third-party service provider and the CBE. A list of all current Master Agreements can be found on the CBE Offsite Activities Webpage. A subsequent agreement is then put in place between the School and the Service Provider regarding the booking.

Calgary Board of Education Schools with Climbing Walls:

Bishop Pinkham Junior High School	(403) 777-7840
Clarence Sansom Junior High	(403) 777-7700
Ernest Manning High School	(403) 249-3131
Queen Elizabeth Jr/Sr High School	(403) 283-8434
Senator Patrick Burns Junior High School	(403) 777-7400

Calgary Board of Education Schools with Bouldering Walls:

Belvedere Parkway School	(403) 777-6010
Bridlewood School	(403) 777-6259
Cranston School	(403) 777-6267
Evergreen School	(403) 777-6288
O.S. Geiger Elementary School	(403) 777-6950
Royal Oak School	(403) 777-6279

The CBE does not endorse additional bouldering walls due to higher risks and incidents associated with bouldering.

Bouldering outdoors on playground equipment that offers bouldering components is encouraged and supported within the CBE.



Safety Guidelines for Physical Activity in Alberta Schools:

These are the minimum standards in Alberta for Physical Activity in Alberta Schools. The Calgary Board of Education has set its own standards in addition to these. It is important for teachers to be cognizant as to the minimum requirements in addition to the CBE's own policies. When policies overlap, the CBE's policy is the correct one to adhere to. Following is C.B.E. elaboration of "Wall Climb" from AB Safety Guidelines; based on industry standards.

Suggested for Grades 3 to 12

Equipment/Facilities:

- Ropes and associated climbing equipment designed specifically for wall climbing,
- A first aid kit must be accessible on site.
- A correct base anchor plate belay system or belay off the harness, incorporating a mechanical belay system;
- Area of climbing must be appropriate for ability levels of students.

Instructional Considerations:

- No lead climbing or protection placed by students
- Emergency action plan must be designed and communicated to all involved in the program
- Safety procedures must be clearly outlined to students
- Formal instruction must be an integral part of the program for all students
- Instructor/leader should be familiar with climbing facility
- Completed medical forms should be accessible at all times
- Prior to a climb, the instructor should inspect all equipment
- Students should be allowed to select the challenge of their choice, as long as they do not exceed their own limits.
- During instruction ratio: 1 Instructor & 3 Ropes

Supervision:

- On site supervision by a competent instructor
- Suggested guideline 1:10 ratio. Following Belay Test, ratio: 1 Instructor to 8 ropes.
- Teacher must accompany students to the site and remain on site for the instruction if a person other than the teacher is doing the instructing
- A suitable means for transporting an injured climber must be accessible

Climbing Wall Policies and Procedures:

Off-Site Activities

Wall climbing and rock climbing outside of CBE schools is considered a restricted activity. The rules, regulations and policies related to it are documented and subject to the rules and regulations as outlined in the Off-Site Activities and Procedures Manual.

Student Training

Students must understand that they are climbing at a very basic level, in a very controlled atmosphere despite having climbed extensively on the wall and that **the knowledge and experience they gain is limited to that climbing wall**. As climbing systems at other walls or climbing in natural settings will be different, students should continue to seek professional coaching beyond the school's program. **On their own**, students can follow up by taking courses on climbing offered at, but not limited to, the following:

- Calgary Climbing Centre - Strongholds
- U of C Outdoor Program Centre
- Mount Royal University
- The Crux Climbing
- Calgary Climbing Centre - Chinook
- West Side Recreational Centre

Discipline

Students must be aware of all the rules that apply to the climbing wall. There will be no tolerance for students who are found climbing in an unsafe manner. Each school must implement a system that works within its own discipline policy when disciplining unsafe students. Unsafe behavior must be dealt with sternly, as the consequence of not doing so can result in serious injury. (See also School Based Responsibilities). There is a zero tolerance policy for horseplay.

Climbing Ratios:

Climbing Wall Instructors must only supervise the number of students and climbing ropes that they feel comfortable with based on personal experience. These numbers must never exceed:

Instructional or Teaching (Pre Belay Test): 1 instructor to 3 ropes (1:3 ropes)

Supervised Climbing (Post Student Belay Test): 1 instructor to 8 ropes (1:8 ropes)

Bouldering

Bouldering is a climbing activity that does not require the use of top ropes or associated equipment. Bouldering can be performed on a climbing wall (with bouldering limits) or a bouldering wall (height restriction).

Students must demonstrate the knowledge, skills and attitudes required for safe bouldering which include the following:

Bouldering limits: Students must observe the bouldering limit. If a student is climbing unroped they may not climb above the bouldering limit for that wall. Students should be partnered with a spotter and mats must be in place. Bouldering limits are as follows:

- Elementary School – 8 feet
- Junior High School –10 feet
- Senior High School –10 feet

No body part should reach above these limits.

Spotting: Spotters must be trained to spot in a fashion that protects them and provides additional safety for the climber. It is not the spotter's responsibility to catch the falling climber/boulderer. The spotter assists in preventing head and neck injuries by directing the climber's fall to avoid hitting any obstacles or other people. Spotting in bouldering is completely different from spotting in gymnastics.

Proper placement of mats: Mats must be placed at the base of the climbing wall so students are protected in the event of a short fall. Mat surfaces should be flush with one another (no gaps) so students are less likely to twist an ankle. All equipment (climbing holds, Allen keys, running shoes, clothing, etc.) must be removed from the mat's surface.

Top Rope Climbing

Top rope climbing is the safest way to climb because when the climber falls, the fall is stopped immediately. However, any climbing can be dangerous if proper procedure is not followed. A top rope system is set up in the following manner: the rope leads from the climber, up and through an anchor at the top of the climb, and back down to the belayer. As the climber climbs, the belayer takes in the slack rope created by the upward movement of the climber.

General Information

1. Students can climb on the climbing wall only if a climbing wall teacher is in the room. A supervising teacher is a teacher who has passed an approved CBE course given by the school's Indoor Climbing Wall Instructor II.
2. Students who are not involved in the climbing activity must sit and watch rather than participate in other activities. Otherwise the climbing room supervisor(s) must supervise two activities and could miss a potential accident on the wall.
3. Prior to participation of students in the CBE-sponsored climbing wall program, both on and off site, all parents or legal guardians of such students, as well as the student, must complete and sign the Climbing Wall / Acknowledgement of Risk Form (Appendix A).

Site Inspections:

Before Each Use Inspections:

Before each use, all instructors must conduct their own inspection by themselves or with the class. See, "Site Inspection Checklist – before each use" (Appendix J) and is also located on the following page. Following each use, the climbing wall instructor must record the usage and inspection of the wall and equipment on, "Climbing Wall Activity Log" (Appendix E).

Site Inspection Check List (Before each use)

Site inspections must be recorded and logged by a CBE Climbing Wall Instructor before each use! Refer to Appendix E for Climbing Wall Activity Log and record inspection. Inspect thinking F.A.R.E. (Floor – Anchor – Rope – Equipment)

Floor – Visual Check

- Do you have all the necessary mats?
- Have the gaps between mats been fixed?
- Is the bouldering adequately protected?
- Is there anything lying on the mats surface that could hurt or injure a climber/boulderer?

Anchors

Rope Anchors – Visual Check

- Have they been tampered with?
- Is the rope threaded through the anchor properly?

Floor Anchor – Physical Check (pull each floor anchor)

- Does the connection to the floor feel loose?
- Does the webbing look complete?

Rope – Visual Check

- Are the ropes hanging straight? Do they bend or curve when hanging off an anchor?
- Are there tears or excessive wear on the ropes? When you see “White” it’s not right.
- Are the ends of the rope going to infringe the climber from tying a safe knot?

Equipment

Harness – Physical Check (looking for excessive wear or compromised stitching)

- Belay loops
- Tie in points

Carabiners – Physical Check

- Gates and locks function properly

Gri Gris – Physical Check

- Levers
- Device door

Wall Security – Physical Check

- Has the gear locker been compromised?
- Does equipment look out of place?

Walls – Visual Check

- Do the panels on the wall look secure?
- Have the routes setters completed their work?

Annual Site Inspection

The Climbing Wall Manager will be responsible for inspecting the Climbing Walls and Equipment, a minimum of once per year. A Pre-Inspection Criteria indicated below and in Appendix I must be reviewed for the inspection. If there are any questions in regards to integrity of the equipment or the wall, contact the Climbing Wall Manager immediately.

Site Inspections

A physical review of the equipment, climbing walls and operations will be conducted. A report will be issued to document the check. An example of the report is in, "CBE Climbing Wall Report- sample only" (Appendix K). This report will be used as reference by the school to take note and action.

Pre-Inspection Criteria

Equipment

- Outstanding equipment issues are noted in log book or addressed (ie. damaged equipment)

Climbing Wall Inspection

- Climbing Wall is in good working order and per-use inspection is conducted regularly.

Wall Activity Log

- Log is current and up to date

Staff Training Log

- Log is current and up to date
- Assessments of CBE Indoor Climbing Wall Instructor II are conducted (2 assessments within 45 days)

Visiting School Agreement Forms are complete

- Forms are put in the back of the Climbing Wall Binder

Wall Security Check

- Restrictive access to climbing wall were properly executed and enforced.

Maintenance Notes

- Please note any outstanding or current safety concerns. ie. springs on Gri Gris, equipment replacement orders

All major safety concerns must contact wall manager immediately!

Belay Tests:

After students have been instructed on the basics of climbing and belaying and have shown demonstrated competencies. Students must take a belay test (Appendix D).

A student may not test twice in one class. If a student fails their belay test, they belay test form must show that they have failed. When testing again, another form must be made.

After a student has completed a belay test; they are able to climb more independently under the direction the Climbing Wall Instructor as they have shown more demonstrated competencies.

The Belay test sheets should be kept in the climbing binder; Belay tests are only valid for the school year. (Appendix D)

Prior to students completing the Belay Test they are deemed to be to still be in the instructional phase and as such the ratio is one instructor per three ropes. After the Belay test, the ratio may increase to one instructor per 8 ropes. This does not mean the students can climb independently; they still must be checked and supervised by the Climbing Wall Instructor.

Practice Belay Attempt

With the first belay attempt on a vertical wall, students should demonstrate that they can take up slack rope in a proper belay fashion while the climber is still on the ground.

If the teacher is not satisfied with the belayer, the student will have to pull more slack into the system and take the rope up again.



Equipment Policies:

Personal

Students should remove all watches and all jewellery. Students should be wearing running shoes or climbing shoes. Students should remove or tuck in any baggy clothing that might obstruct the supervising teacher's view of belay devices, carabiners or harnesses.

Moving Climbing Holds

Students are allowed to move climbing holds under instructor supervision, however they must be roped in and belayed if they are above the bouldering limit, whether they are on a ladder or climbing. The rationale for allowing students to move the climbing holds is that it allows them to design their climbs and challenge themselves. Students should be careful when handling climbing holds as they are quite brittle and can crack or shatter when dropped. Other students cannot be under students who are moving climbing holds as they could be hit by falling holds. To avoid injury from falling climbers or holds, students must not be under any panels that are being climbed.

Anchors

The anchor systems at the top of the wall may not be adjusted or modified by students in any way.

Route Setting

Route setting adjustments is recommended every year. New routes keeps student interest in climbing high and climbing enjoyable.

Route Setting Rules

- The climbing wall area must be closed to all students/teachers not involved with route setting.
- Route setting cannot be conducted as a class.
- Teachers cannot route set from ladders.
- All route setters and belayers must wear proper construction hard hats.
- Route setting off the ground is permitted only when route setter is being belayed.
- Route setters and belayers must keep a minimum of an 8 foot radius from the plum line of the anchor.

Rules & Expectations

Each site with a climbing wall will post rules and educate their climbers to those rules.

1. Climbers must be supervised by a certified climbing wall teacher.
2. No horseplay in the climbing area.
3. No eating or drinking (this includes – gum)
4. Climb only on the wall nothing else.
5. Tuck in loose clothing, tie back long hair.
6. Do not climb un-roped higher than the bouldering limit.
7. Climbing commands must be used for communication.
8. Belayers must lower climbers in a safe controlled manner.
9. You must complete a self check, partner check and instructor check prior to leaving the ground after every belay change.

Students must be made aware of the expectations of participation and assessment.

- ✓ Changed
- ✓ On time
- ✓ Following rules and expectations
- ✓ Participation in all activities
- ✓ Respectful
- ✓ Proper use of equipment
- ✓ Use of self/partner/instructor checks
- ✓ Climbing commands used for communication
- ✓ Use of proper belay technique
- ✓ Equipment properly stored and ropes tied

Instructional Considerations

Each student is given a basic introduction to all aspects of safe climbing at the beginning of their climbing unit. Please refer to the Climbing Wall Instructional Checklist (Appendix F). This information must be maintained for all climbers regardless of previous experience at that school.

A back up belay system may be implemented by the teacher, if desired.

The climber will check their own equipment, that of their partner and vice versa then have the teacher check all equipment before students leave the ground. Students should use the following checklist when checking student belay systems:

- The harnesses are done up correctly, with all buckles doubled back on themselves. The criteria for judging, whether a student needs a smaller harness is if the student can slide the waist strap over the harness below their hips. Students wearing loose clothing that covers their harnesses should tuck it in or find something else to wear.
- All carabiners should be in the locked position. Check quickly by pushing on the carabiner gate.
- The Gri Gris should have the rope fed through it in the proper direction with the carabiner clipped and locked into the harness through the belay loop.
- The harness should be tied into the rope with a figure 8 follow-through knot tied into the appropriate loop(s) on the climbing harness with the appropriate tail length.
- The floor anchor webbing should be attached to the belayer via a locking carabiner clipped into the same belay loop that the carabiner attaches the Gri Gri (the belay loop is located at the front of the harness).

After achieving the CBE belay test, a double check system can be implemented using the above the checklist.

Students will practice each climbing skill individually and demonstrate it to the supervising Instructor.

Climbing Wall Procedures

1. Climbing Wall “Site Inspection” (Appendix J) must be performed before each class and then record the inspection on the “Wall Activity Log” (Appendix E).
2. The Climbing Wall Instructor must maintain a controlled environment in the climbing program. Examples of this are:
 - a. Reasonable noise levels, teachers and students need to be heard.
 - b. Students are working cooperatively with one another and the supervising teacher.
 - c. Students and teachers are focused on the climbing activity.

3. Not leave the climbing room unattended. Students must leave the room or be off the wall if you cannot find an appropriate certified teacher (supervisor) to supervise climbing or to supervise the room to ensure that the students do not climb on the wall while you are absent.
4. Enforce the bouldering limit. If a student is climbing un-rope they may not climb above the bouldering limit that is identified and clearly marked on the wall. Students should have spotters and mats must be in place. The mats (gymnastics mats) should be taped or velcroed so that they do not separate. (See item numbers 5, 6 in Equipment section below.) Spotting in relation to bouldering, must follow CBE policies and procedures. At no point in time is the spotter relied upon to prevent a fall or put themselves in harms way.
5. Ensure that students are using proper belay techniques and that horseplay is dealt with promptly. Horseplay is not tolerated. Students who are not climbing should not be involved in other activities. The climbing wall teacher(s) must not be supervising another activity while instructing/supervising wall climbing.
6. Every time there is a change in belayer and climber, the teacher must check to ensure that the students are using the equipment safely and are following proper climbing practices and procedures.

These checks should include checking:

- carabiners to see if they are locked
- harnesses to see that they are being worn properly
- Gri Gris to see that the rope is properly fed through
- clothing not covering belay devices
- no holds lying on the ground
- check that knot and anchor are secure
- ensure students complete a proper partner check.

The Pre-Climb check must consist of:

- Self Check
 - Partner Check
 - Instructor Check
7. Disallow lead climbing. Teachers/CBE are not trained to teach this skill and it is not allowed. Lead climbing is a prohibited C.B.E. activity.
 8. Manage and supervise the climbing wall by maintaining a position in the room so that they can see the students climbing. The climbing wall teacher's primary role is to watch for slack ropes or other potential errors. While students are actively climbing on the wall, teachers cannot be involved in moving climbing holds from one place to another or showing students how to do certain climbing moves. Doing so impairs a teacher's primary responsibility of over-all wall supervision.
 9. In accordance with industry standards, instructors must never allow more than eight climbs to be operating at one time. The maximum number of students being belayed can never exceed eight.

Lead Climbing (Not Permitted):

Lead climbing differs from top rope climbing in that the rope is not already threaded through an anchor at the top of the climb. The climber must climb to the top and thread the rope through the anchor before being lowered. The climber is protected from falls while leading by clipping into a series of bolts and quick draws, which are already in place on the climbing wall

The Calgary Board of Education does not allow any form of lead climbing. If students are interested in getting more involved in climbing, please direct them to an appropriate course outside of the CBE.

Photo: A climber lead climbing



Before students can climb or use the wall for the 1st time, the instructor MUST:

- Acknowledgment of Risk
- Safety guideline and rules
- Site Inspection
- Video “How to Climb Indoor” 2008 (if roped climbing)
- Visiting school agreement (if applicable)

Roles and Responsibilities

CBE School Based Responsibilities

School Specific Guidelines

CBE schools (School Administration, Indoor Climbing Wall Instructors Level I & II,) housing its own climbing facility will:

1. Enhance and strengthen CBE guidelines for your facility (i.e. top roping set-up).
2. Establish a safe teacher-to-student ratio in your climbing program based on the following considerations:
 - Height of wall
 - Difficulty of climbs
 - Age and experience level of students
 - Instructor experience
3. Write and publish in consultation with the Climbing Wall Manager a climbing wall orientation specific to your climbing wall for teachers from other CBE schools wishing to use your facility.
4. Provide an orientation session to visiting school teachers.
5. Supervise teachers from other schools for at least one period of climbing to establish and ensure safe climbing practices.
6. Report all accidents/incidents/near misses involving a student, volunteer or a teacher by completing and sending the Student/Teacher Incident Report to Corporate Risk Management. Ensure all reports are signed by the School Principal.

Management - School Administration

School-based administration will:

1. Appoint an Indoor Climbing Wall Instructor Level II
2. Ensure that access to the climbing wall is limited to CBE students being supervised by appropriately certified CBE teachers. If CBE staff(s) wishes to use the wall, appropriately certified teachers must supervise them.
3. Require that other Calgary Board of Education schools using the school's climbing wall will provide supervising teachers that have completed a CBE approved course.
4. Require that visiting CBE teachers have passed an orientation specific to the school's climbing wall to the satisfaction of the host school's Indoor Climbing Wall Instructor II (See Appendix C). These teachers must also conduct a climbing class in the presence of the Indoor Climbing Wall Instructor II and manage the wall to the satisfaction of the Level II instructor.
5. Require visiting CBE schools to sign an agreement prior to using the school's climbing wall. (See Appendix B: CBE Visiting School Agreement.)
6. **Disallow outside groups, CBE parents or non-Calgary Board of Education schools the use of the school climbing wall. The CBE has no obligation to provide service to CBE parents or outside organizations and cannot accept this liability.** In addition, schools should exclude anyone from the school population from using the wall that has not been properly trained in the use of the wall. For example, a Grade 8 science teacher cannot take a class to the climbing wall to demonstrate principles in their Energy and Machines unit if the students and/or the teacher have not been properly trained.
7. Ensure that disciplinary policies for safe climbing are followed and that the consequences for not following these practices are clear to all students and school staff.
8. Ensure that all climbing wall construction (including additions or improvements to existing walls, and new walls) is consistent with CBE standards and approved by a CBE appointed engineer.

Climbing Wall Manager

A climbing wall manager (CWM) must be assigned to each school's climbing wall to oversee its operation. The minimum level of certification for a climbing wall manager is ACMG Level III Gym Instructor or equivalent. **Climbing wall managers will be designated by the CBE.** They may either be CBE employees or outside consultants who have the minimum certification and experience to train Indoor Climbing Wall Instructors (I & II) as well as oversee and support the condition of CBE climbing walls and climbing wall equipment.

Training of Staff/Participants

The Climbing Wall Manager will:

1. Conduct CBE approved courses for Indoor Climbing Instructors Level I & II
2. Implement and propose guidelines and policies in relation to the safe and efficient operation of CBE climbing walls.
3. Remain current with industry practices/standards regarding equipment and climbing wall management. Climbing Wall Managers should stay in touch with commercial facilities for recent developments in climbing technology and procedures.
4. Be cognizant of the current minimum standards outlined in the "Safety Guidelines for Physical Activities in Alberta Schools." Implement procedures based on industry standards and practices.

Equipment

The Climbing Wall Manager will:

1. Monitor the school's equipment log and climbing wall inspection log annually and on an ongoing basis to ensure the wall and equipment history is kept up-to-date.
2. Recommend and advise on the CBE climbing wall's equipment inventory. This includes advising and making recommendations on the purchase and the use of equipment.
3. Inspect equipment and remove damaged equipment from the inventory until it is repaired or disposed of. Educate Indoor Climbing Wall Instructors Level I & II how to identify potentially dangerous equipment.
4. Have disposed equipment replaced with new (approved) equipment. Make recommendations for type of equipment to purchase and where to purchase the equipment.

School Specific Guidelines

The Climbing Wall Manager will:

1. Enhance and strengthen CBE guidelines for each facility where appropriate (i.e. top roping set-up).
2. Establish a safe teacher-to-student ratio for each climbing program based on the following considerations:
 - Height of wall
 - Difficulty of climbs
 - Age and experience level of students
 - Instructor experience
3. Provide technical expertise to schools as they write their own site specific guidelines for training school staff and for teachers from other schools who wish to use the school's wall.

Indoor Climbing Wall Instructor II Responsibilities

Each school must have its own Climbing Wall Instructor II, formerly Indoor Climbing Wall Administrator (CWA), appointed to oversee the operation of its climbing wall.

Each INDOOR CLIMBING WALL Instructor II is responsible **only** for the climbing wall in their school. The minimum level of certification for an Indoor Climbing Wall Instructor II is CBE Indoor Climbing Wall Instructor II training course and/or ACMG Level I Gym Instructor.

Indoor Climbing Wall Instructor II's at each school are responsible to the Climbing Wall Manager for ensuring that are properly trained and walls and equipment are maintained so safe climbing experiences can be offered to students.

Training of Staff/Participants

Indoor Climbing Wall Instructor II's will in addition to the educational responsibilities of a Climbing Wall Instructor I:

1. Ensure that all instructors have completed an approved course. In addition the INDOOR CLIMBING WALL INSTRUCTOR II must have observed at least one class that a prospective climbing wall teacher is conducting and be satisfied that the climbing wall teacher is conducting the class safely.
2. Educate teachers, students, parents and other members of the school community about the safe operation of the climbing wall and enforce all climbing wall safety rules. Communication of climbing wall safety to students and parents could be done via the school newsletter, signage, etc.
3. Ensure that parents have the opportunity for a climbing wall orientation each year (possibly at a school open house). **This does not include the participation of parents.**
4. Maintain a log of staff training undertaken and record periodic assessments of supervising the climbing wall. Orientations performed for other schools and the Indoor Climbing Wall Instructor II's assessment of visiting staff involved must also be included in this log.
5. Remain current with industry practices/standards regarding equipment and climbing wall management. Indoor Climbing Wall Instructor II's should stay in touch with commercial facilities for recent developments in climbing technology and procedures.
6. Be fully cognisant of the current minimum standards outlined in the "Safety Guidelines for Physical Activities in Alberta Schools." Implement procedures based on industry standards and practices.
7. Complete a visiting school orientation (appendix C) for any climbing wall instructor from another CBE school
8. Act as a representative with the Climbing Wall Manager for advice, guidance and policies in regards to the individual schools climbing wall.

Equipment

The Indoor Climbing Wall Instructor Level II will:

1. Maintain Climbing Wall Activity Log (Appendix E)
2. Remove damaged equipment from the inventory until it is repaired or disposed of.
3. Replace equipment that has been disposed of with new (approved) equipment.
4. Maintain a budget for the climbing wall and anticipate any expenses (such as equipment upgrades).

Climbing Wall Instructor I Responsibilities

Climbing Wall Instructor I's must be aware that they are responsible for the safety of their students. They have similar responsibilities as if they were supervising any other school related activity, plus the added responsibility of supervising climbing wall activities.

Minimum Certification:

As part of their training, teachers instructing and supervising students climbing on the CBE climbing walls must have completed a CBE approved course.

According to these guidelines, all teachers must take part in the training offered by the Indoor Climbing Wall Instructor II's and/or CBE Climbing Wall Manager before using the climbing wall.

As training for climbing walls is site specific, being trained to instruct at one location does not mean as a climbing wall teacher, that you are trained to instruct at other locations. Should a teacher wish to instruct any students at a climbing facility other than their own:

- At another CBE facility - the teacher must pass that school's orientation.
- At a commercial facility - the teacher must possess ACMG Level I Gym Instructor Certification. If that facility requires a higher level of certification, the teacher must acquire that certification before assisting.

For CBE Climbing Wall Teacher Instructor I, the CBE is recommending a course developed and taught by the Climbing Wall Manager. This course eliminates certain aspects of the ACMG Level I course that are not applicable to teachers. The ACMG Level I course includes instruction on lead climbing skills that the CBE is not permitting at their facilities. In addition, the ACMG Level I course includes an instructional evaluation component that is not necessary for teaching professionals.

The procedures outlined in the course are part of the CBE's Climbing Wall Operating Guidelines and will:

1. Possess the skills, knowledge and experience to manage the school's climbing wall program safely.
2. Remain current with climbing wall procedures and technology.
3. Develop their program at a pace that will meet the needs and abilities of the students.
4. Be fully cognizant of the current minimum standards outlined in the "Safety Guidelines for Physical Activities in Alberta Schools" and implement procedures based on industry standards and practices.

Each certified Climbing Wall Instructor I will:

1. Know and understand the top rope systems and anchors for the climbing walls they are using.
2. Be knowledgeable of basic first aid and know how to activate Emergency Medical Services at their school, as well as how to leave the facility during a fire drill.
3. Have the school's Indoor Climbing Wall Instructor II supervise their first wall climbing class and record the assessment in the staff training log.
4. Establish procedures in cooperation with the Climbing Wall Manager for removing damaged equipment from day to day use.
5. Complete and record site inspections and wall usage for every session.



Staff Training Courses:

Climbing Wall Instructor I Training Course

Teachers wishing to instruct and supervise students in climbing wall programs must have participated in this course. The CBE requires this as a minimum standard for all. The CBE expects that teachers will take this information and training and apply it to climbing at their school. Teachers should benefit from the experience of other teachers and the professional climbing instructors at the course.

The school's Climbing Wall Instructor II or Climbing Wall Manager will teach this course to teachers from that school.

The course should be conducted at schools that have climbing walls or a commercial climbing facility. Schools will share with the course participants how their particular wall is managed and the modifications in procedure that have had to be made to accommodate their particular wall.

Goal:

The goal of this course is to train potential teachers in the basics of instructing a climbing session at this site. Teachers will initially take this course from the Climbing Wall Manager and update their skills and knowledge **annually**.

Objectives:

The participants will learn the basic skills necessary to teach a climbing session to a class. The Indoor Climbing Wall Instructor II will provide supervision and/or mentoring until he/she is satisfied that the teacher can safely teach the skills in a class.

This is a site-specific course where the Indoor Climbing Wall Instructor Level II will go over the specific hazards or systems specific to this site. Refer to following page "Climbing Wall Instructor Level I Training Course".

Prerequisites

Every teacher must be able to articulate and demonstrate how to climb indoors proficiently (cannot fumble tying knot or belaying).

Climbing Wall Instructor Level I Course Outline

Competencies demonstrated (Teaching Standard!) to receive certification:

- I. Top Rope Climbing
 - fitting harness
 - tying Figure 8 knot
 - belaying
 - check systems
 - belay calls

- II. Bouldering
 - spotting
 - setting the “stage”
 - bouldering movement / skills

- III. Supervision
 - three check system
 - supervisory rope management
 - belay test

- IV. Site Inspection

- V. Reporting
 - climbing wall instructional checklist
 - climbing wall activity log
 - report near misses

Climbing Wall Instructor II Training Course

All school-based Indoor Climbing Wall Instructor II will take this course **annually**. Dated certificates will be issued to all participants.

Goal

The goal of this course is to train teachers interested in supervising an Indoor Climbing Wall Instructor level I for their school's climbing wall. Each Indoor Climbing Wall Instructor II will offer training to the teachers at his/her school who wish to teach climbing skills and offer yearly updates as well.

Objectives

Participants will demonstrate a complete understanding and application of current basic climbing equipment and techniques.

Participants will learn various administrative duties related to the running of a climbing wall.

Prerequisite

Participants taking this course will be experienced teachers who have taken the INDOOR CLIMBING WALL INSTRUCTOR I Training Course and have been teaching at their school's climbing wall. He/she will also have a recommendation from a Indoor Climbing Wall Instructor II and his/her school principal.

Teachers certified at the ACMG Level I Gym Instructor may proceed directly to Module 2. Participants will not be assessed on their movement skills; however demonstration of a thorough understanding and application of the climbing system is necessary.

Climbing Wall Instructor Level II Course Outline

Competencies demonstrated (Teaching Standard!) to receive certification:

- I. Wall Orientation
 - rules
 - identify potential hazards for instructing groups
- II. Supervising
 - teaching a level I course
 - certifying a level I
 - managing a visiting climbing instructor
- III. Route Setting
 - managing the area safely
- IV. Wall Operation
 - equipment guidelines
 - ordering equipment
 - emergency response
- V. Reporting
 - site inspection preparation
 - visiting “Climbing Instructor Checklist”
 - managing climbing wall instructional checklist

Access to Facility

1. Access to the climbing wall is limited to CBE students being supervised by appropriately certified teachers, and that the climbing room will be locked and proper signage posted. If untrained staff wish to use the wall, they must be instructed and supervised by appropriately certified instructors.
2. All visiting CBE schools using a host school's climbing wall provided the supervising teachers that have attended an approved course and that have passed a climbing wall orientation (Appendix C) specific to your school's climbing wall. Part of this orientation would include an assessment of the visiting teacher's ability to manage a climbing class to the satisfaction of the host Indoor Climbing Wall Instructor II.
3. Principals of all visiting CBE schools sign an agreement (Appendix B: CBE Visiting School Agreement) with the host school regarding student conduct, safety and equipment use.
4. Disciplinary policies for safe climbing are enforced and that the consequences for not following these practices are clear to all students and staff from both the "host" school and any visiting CBE school.
5. All climbing wall use must be logged. (Appendix E)

Climbing Wall Equipment

All climbing equipment must be approved by the CE (conformite europeene) and/or Union International Association of Alpinism (UIAA) before it can be sold. (See Appendix H) This includes harnesses, ropes, carabiners and Gri Gris. It does not include the climbing wall itself, the textured surface, climbing holds, floor anchors or top rope anchors. The climbing industry is a fairly dynamic, ever changing industry, for the most current up to date standards please contact the Climbing Wall Manager.

Use of Climbing Wall Equipment:

The CBE climbing wall equipment must be limited to use within the School's climbing wall. The equipment must never be lent out or borrowed. The equipment is under no circumstance ever to be used for outdoor climbing.

Storage of Climbing Wall Equipment

The harnesses, ropes and climbing equipment should be stored in an equipment room or a classroom where access is limited.

Ropes

All climbing ropes must meet the CE international standard for strength; however, some ropes last longer than others. Schools must purchase ropes that have been specifically designed for climbing gyms. Prior to purchasing rope schools should contact the Climbing Wall Manager for purchasing advice and industry standards. Ropes should be a minimum of 10mm in diameter

Rather than purchase rope in standard lengths your best alternative is to buy a spool and cut the rope yourself. The gym rope is a static / dynamic hybrid rope with an extra thick sheath so that stretch is minimized and durability is maximized. For a 15 foot wall you need 40 feet (minimum) to go from the floor to the anchor and back to the floor again as well as a few feet to tie in with. Because the belayer does not stand directly beneath the climber, the rope must be longer to account for this as well as the few feet needed for knots. Adding a few extra feet (for total of 45 feet or more for a 15 foot wall) allows you to trim the ends of the rope as they become frayed. The rope wears more quickly near the end where the figure-8 follow-through knot is tied. Contact the Climbing Wall Manager in regards to the purchasing and/or cutting of ropes.

Care of Climbing Ropes

The condition of the ropes should be part of an inspection routine established by the school. The frequency of the inspections should be determined by how often the ropes are being used. In addition, each time a climbing wall teacher handles a rope they should be looking for defects in the rope. The rate at which the climbing wall ropes are replaced is dependent on the amount of use. Ropes should be replaced every year. A good habit to establish amongst young climbers is to ensure that they do not stand on the ropes. This is not so much a problem in our climbing room as in natural settings where dirt can get ground into the ropes and can work away at the fibres and weaken them.

The main wear spot is at the end of the rope where the students are belaying and tying the figure 8 follow-through knot. Other common wear spots will be determined by your wall. Some overhangs may cause excessive wearing where the rope rubs against the wall. As the rope wears, the mantle (outside layer) of the rope frays. Once the integrity of that outside layer is compromised it should be discarded.

The rope should also be checked for deformities or kinks in the rope which would indicate that the internal structure of the rope has been compromised.

Belay Devices

A belay (friction) device is used by climbers to control the rate of descent of a climber, hold, or to catch them in a fall. The CBE requires use of a belay device called a Gri Gris, made by Petzl (see Figure 1).

Most belay devices require that the belayer play an active role if a climber falls by controlling the rope using a brake hand. The Gri Gris differs as it has a cam device that will not allow the rope to move through the device under tension. If a climber falls, the device locks up, whether or not the belayer has their hands on the rope. The Gri Gri provides greater safety for climbing students.

All people climbing on your wall must use the school's belay device (Gri Gris). Although students may have their own belay devices such as a figure 8, ATC ('Air Traffic Controller') or sticht plate and be familiar with how to use, their climbing partner may not. This lack of familiarity, may lead to an accident.

Insist that students keep a brake hand on the rope, so they can transfer their skills to other belay devices outside of the CBE. Gri Gris are not common belay devices amongst climbers because of the expense and weight. Other belay devices require that the brake hand be in place to stop the rope from feeding through the device.

Avoid having students bouncing/jumping up and down on the rope intentionally in a form of horseplay.

Gri Gri's are still not without fail, they do produce a safer margin of error but good technique must still be taught and emphasized.



Figure 1: Petzl Gri Gri Belay Device

Climbing Harnesses

All harnesses must be CE approved. The harnesses are made of webbing similar to seat belt webbing and are designed to support people around the waist and thighs (see Figure 2). It is important that climbers have a waist that is smaller than their hips so that they cannot fall out of the harness if they are upside down. For those students with small hips, disproportionate weight, purchase chest harnesses (Figure 3) that when used with the sit harness, will prevent the climber from slipping out of the harness system. These harnesses also work well for adults who have a wider girth.



Figure 2: Climbing Harness



Figure 3: Chest Harness

Climbing Harnesses consist of a variety of parts:

- Tie-in Points: Harnesses usually have two tie in points, one for the legs and one for the waist. There are some UIAA approved harnesses that have one defined tie in point.
- Belay Loop: Joins the leg loops and the waist. This is the point where students will attach the Gri-Gri Belay device.
- Buckles: Hold the harness together and prevents it from falling off. Teachers must ensure that the buckles are done up correctly and are doubled backed.
- Gear Loops: Gear loops are not necessarily on all harnesses. Gear loops are designed for holding climbing gear on the harness, they are not designed to support any body weight, and as such they **MUST NOT** be used or relied upon as tie in points. The teacher must ensure this.

Putting on Harness:

To put on a harness:

1. hold it in front of you, making sure the leg loop straps aren't twisted.
2. step each foot through a leg loop and pull the harness up so that the leg loops are at the top of your legs.
3. close the waist belt around the small part of your waist, and thread the belt through the buckle.
4. **after threading the belt through the buckle, double back the webbing and thread it through the buckle once more.** The webbing should now be pointing behind you.

Care of Climbing Harnesses

Harnesses are to be checked during each class and must be removed if they are not functioning properly. Common problems are excessive fraying of the webbing or missing buckles on the webbing that keeps the leg loops from sliding down while students are climbing.

Carabiners

Carabiners are used to link belayers with their belay devices and floor anchors. All carabiners are CE approved and the CBE requires that you use locking carabiners (see Figure 4). Locking carabiners are equipped with a positive locking device. The two types generally available are auto-locking which are self-locking and screw gate carabiners that must be manually locked by the user. Non-locking carabiners are used for directional only; see Figure 5.



Figure 4: Locking Carabiner



Figure 5: Non-locking Carabiner

Students must lock all their carabiners before climbing. It is recommended that students do not over tighten the sleeve on the locking carabiner.

Students and instructors must always complete a “pinch test” of the carabiner to ensure that the gate is locked. This is achieved by pinching the gate, if it does not open, it is locked, and is considered safe.

Carabiners must never be cross loaded or loaded in more than two directions of pull. This severely weakens the strength of the carabiner; see Figure 6.



Figure 6: Carabiner usage

Climbing Holds

Most commercially made climbing holds are made of sand and urethane. Contact local commercial climbing gyms or the Climbing Wall Manager for the current industry standard.

Floor Mats

Gym mats at the base of the climbs are good for protection of participants in the event of a short fall. Mats are necessary and the type of mat required is determined by the type of floor (i.e. suspended wood floor vs. concrete) and height of the climb.

Mats must be placed at the base of the climb so students are protected in the event of a fall. Mat surfaces should be flush (no gaps) with one another so students are less likely to twist an ankle. All equipment (climbing holds, Allen keys, running shoes, clothing, etc.) must be removed from the mat's surface.

Chalk

Schools should NOT use chalk, as some students may be allergic to it. In addition the use of chalk requires that the holds be cleaned more frequently and that the climbing room be properly ventilated to eliminate the dust. Most climbing gyms do not allow chalk in free form but must be contained in cloth balls so that the amount of dust can be controlled.

Other Reminders

Other items to keep in mind when managing climbing equipment are:

- Do not drop or throw carabiners or Gri Gris. As a result of dropping or throwing carabiners or Gri Gris, microscopic cracks can develop that compromise equipment strength. Any dropped or suspect carabiners should be discarded.
- Store climbing gear in an appropriate place to prevent damage by light or moisture and to prevent theft.
- Do not lend school equipment to students or teachers. The climbing equipment must never leave the school. Gear that is designated for the school wall must only be used there. It must not be taken outside. Teachers must be aware of the history of equipment. Lending out of school equipment may compromise equipment safety.
- Maintain an equipment log that records the purchase date of the equipment and its history to date.
- Remove any damaged equipment from the inventory until it is repaired or disposed of.

Care of Climbing Wall

As part of a school maintenance program you must maintain a climbing wall log in which the following is recorded:

- Condition of top rope anchors recorded daily. (Visual Inspection)
- When the anchor ropes were last replaced and what they were replaced with.
- Condition of climbing surface and repairs made to the surface.

Climbing wall inspections will be conducted on an annual basis, facilitated by the Climbing Wall Manager.

Knots

Climbers will tie into the rope using a figure 8 follow-through knot, leaving a minimum length of one hand span as a tail. The knot must join the leg and waist loops of the harness. **Tying into the belay loop on the harness is not acceptable. Clipping into a double figure 8 knot on the end of the rope is not acceptable.** If the student can fit a closed fist through the loop between the harness and the figure 8 loop, the student needs to bring the knot closer to the harness. *See figure 7.*



Figure 7: Figure Eight Knot tied into a harness

Belay Safety Rules

Belay Devices

Students must use the belay devices provided by the school (Gri Gri's). This rule is in effect to provide consistency for the supervising teachers and for the students who may not have had a proper introduction to another belay device. Gri Gri's make it easier for a novice belayer to hold a fall.

Gri-Gri's have diagrams involving the proper operation and use of the device. The instructor and the student should familiarize themselves with these diagrams on the belay device. The diagrams are to be used as a tool in addition to proper instruction and supervision and are no substitute for experience and training; see Figure 9.

Once the rope is correctly loaded into the belay device, the student should check to ensure that the belay device is functioning properly. This is achieved by pulling or having the climber pull the climbing rope and ensuring the belayer and the device stop the rope from going through the device; see Figure 10.

Figure 9: Properly installing the Gri Gri

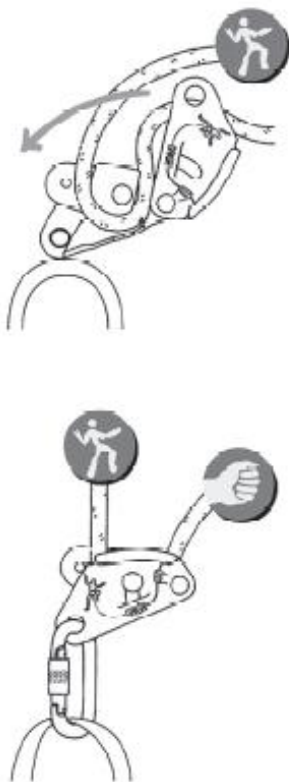
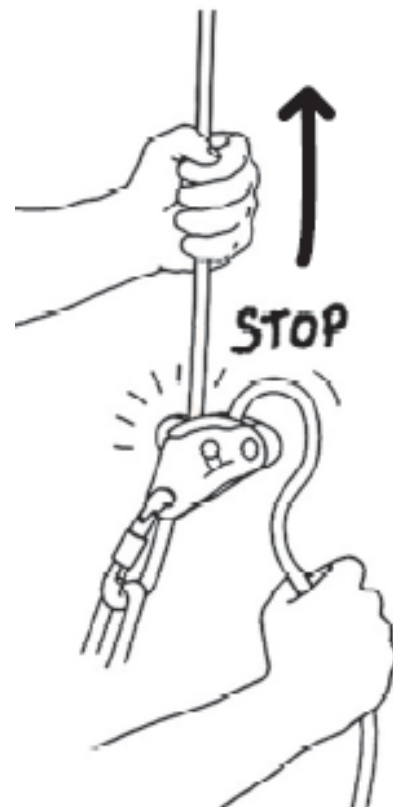


Figure 10: Checking the belay device



Taking in Rope

1. Both hands grasping tightly, the rope is fed through the belay device.
2. The brake hand brakes the rope in a downward motion.
3. The guide hand releases and clasps the rope below the brake hand. The brake hand is still in the brake position, never releasing the rope.
4. The brake hand slides up the rope while the guide hand holds the rope firmly in brake position.
5. The guide hand resumes the pull position on the rope and the series of movements begin again.

The belayer takes in rope as the climber ascends the wall, and lowers the climber by letting out rope in a controlled manner. If the climber falls, the belayer bends the rope across the belay device with the brake hand, creating enough friction on the rope to stop it from moving through the device. See Figure 11. This halts the climber's fall.

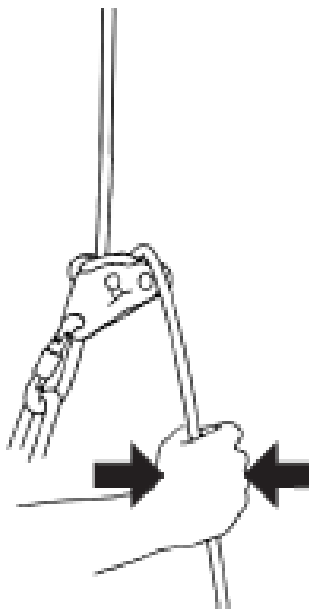


Figure 11: Catching a fall

Lowering Technique

Climbers should be lowered slowly and should be in the proper seated position with legs placed against the wall; see Figure 12. Climbers should not bounce or swing as they are being lowered. Similarly belayers are often tempted to lower climbers quickly. Climbers may also be tempted to swing upside down at the top of the climb to put their feet on the ceiling. Students behaving in this fashion should be disciplined promptly.

After using the correct climbing calls (see climbing commands on page 40-41) the belayer will take all of the climber's weight on the rope. Using two fingers, the belayer will pull back the "lever" on the Gri Gri and gradually lower the climber. With inexperienced belayers, a backup belay is advised. If the belayer loses control of the lower, the belayer is advised to release the lever and pull tight on the brake hand. The belayer must never release the brake hand on the rope when lowering.

Practice Lower

Once the first belay attempt is completed the climber should climb to the bouldering limit of the wall.

1. The belayer MUST take up the rope and have it reasonably tight.
2. The climber calls “TAKE” and the belayer will apply tension to the rope.
3. Belayer announces “GOT” implying that he or she is prepared to take weights.
4. The belayer has both hands on brake position at this point; the climber sits back on the rope and says “Down/Lower”.
5. The belayer checks to make sure that the climber isn’t holding onto the up rope or wall.
6. The belayer uses one hand to operate the belay lever on the Gri Gris and with 2 fingers controls the climber’s descent, with the brake hand still in position on the rope.

Appropriate verbal climbing commands MUST be used through out!

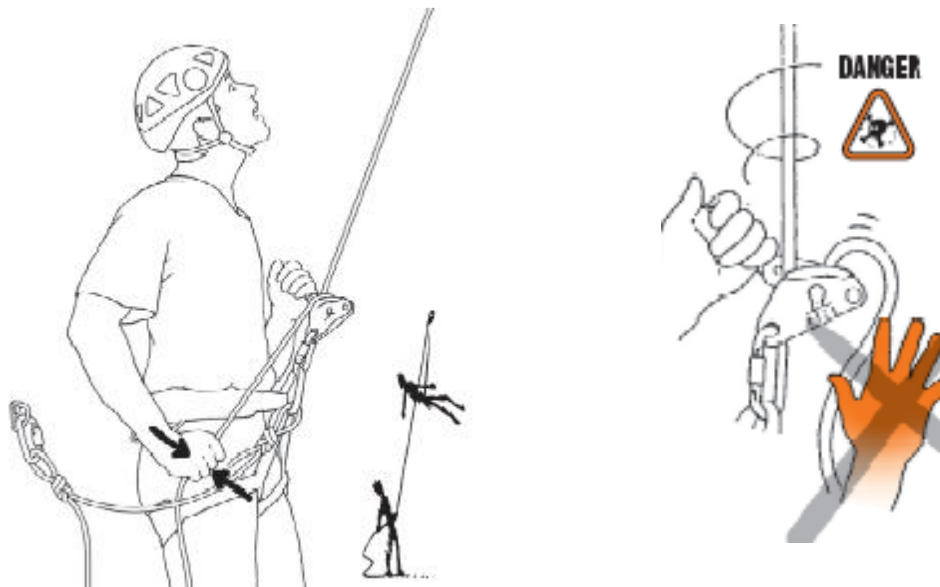


Figure 12: Lowering a Climber

Falling

Falling is a natural part of climbing. To improve, a climber must be willing to attempt moves that are difficult. This means falling.

The belayer is relied upon to stop and catch a fall. When the climber falls the belayer pulls down on the rope and locks off the brake hand. The brake hand should always be holding the rope, ready to catch a fall.

Practice Catching a Fall

Have the climber climb 2-3 meters off the ground as they did in practice lowering.

1. The climber releases hands and feet from the holds without warning.
2. The climber should use hands and feet to protect him or herself from hitting the wall.
3. The belayer should have both hands in brake position on the rope.
4. Proceed in a controlled lowering exercise as described above.

Note that it is extremely important that the climber be higher than two meters off the ground when they take their fall to prevent the climber from hitting the ground, due to rope stretch.

Fall Factor

The fall factor is **the ratio of the length of a fall to the total length of rope between the climber and the belayer**. For example, if a climber has clipped a bolt 12 metres up the wall and has climbed 4 metres beyond that bolt when she falls, she will fall 8 metres, with 16 metres of rope out. This means that her fall factor will be $8/16$, or $1/2$. The fall factor, more than the length of the fall, determines the force on the climber's body and on the bolt. The higher the fall factor the greater the force. With a lower fall factor, the stretch in the rope absorbs the shock of the fall and the climber is caught more gently, but when there is no rope out, the climber and the bolt take the impact. The belayer should always leave a little slack in the rope, especially right after the climber clips a bolt. In top rope climbing the fall factor is very minimal.

Fall factors do exist in top-roped climbing, but are more important in lead climbing. The fall factor when climbing top-roped should never be very high as long as there is not excess slack and/or a proper belay system.



Climbing Commands

Standardized sets of commands are designed to eliminate any confusion during the climb and must be used by all students climbing and belaying.

Have student's review climbing wall commands with their partners and use them throughout the climbing session.

- Climbing rooms are noisy due to verbal communication between climber and belayer. It is important not to confuse your commands with other climbing groups.
- Students must use these commands and concentrate on their tasks.
- Use first names and whenever possible establish eye contact when using the verbal commands.

One of the most common causes of accidents on the climbing wall is due to **MISCOMMUNICATION!**

Before Leaving the Ground

ROLE	VERBAL COMMAND	MEANING
Belay:	“On Belay”	All safety pre-cautions are in place. If you fall now I will have you on the rope.
Climber:	“Climbing”	I am beginning to climb. This is the final opportunity for a check to ensure that everything is ready.
Belay:	“Climb on”	I’ve acknowledged that you are climbing and I’m taking up the slack in the rope.

While Climbing

ROLE	VERBAL COMMAND	MEANING
Climber:	“Take”	Tighten the rope until it supports my full weight
Climber:	“Slack”	Too much tension, feed some slack out to me.
Climber:	“Falling”	Alert the belayer in the event of a fall.
Climber:	“That’s Me”	Often used in climbing situations where the belayer cannot see the climber and the climber wants to let the belayer know that all the slack has been taken up.

Lowering

ROLE	VERBAL COMMAND	MEANING
Climber:	“Take”	Tighten the rope until it supports the climber’s full weight
Belay:	“Got You”	The belayer is in the brake position and the climber can lean back.
Climber:	“Down”	Lower climber to ground.

End of Climb

ROLE	VERBAL COMMAND	MEANING
Climber:	“Off Belay”	You do not need to protect me with a belay any longer
Belay:	“Belay Off”	You are no longer on belay.

The First Time Climbing Team: Demonstrated Competencies

This is an important supervision element as the belayer may not have experienced belaying a climber. It is strongly recommended that this pattern be used for beginner/novice climbers and is an option for belay-testing more experienced climbers that are still learning.¹

1) Set the Stage for Success

- Observe the belayer moving rope through the Gri Gri as they were shown without a climber on the rope. Hold light tension on the rope.
- Ensure that the student understands their role in belaying and catching a fall.
- Warn the climber to climb slowly so the belayer will not be flustered and slack in the rope does not accumulate.

2) The First Climb

- Provide an instructor check after self check and partner check to ensure both belayer and climber are set up properly
- Consider having the climber only climb to bouldering height before lowering. This reduces stress and the possibility of error.
- Use a back-up belayer for the lower and with the preceding belay. This is valuable for young students, students with a large weight difference (belayer/climber), anxious or nervous belayers and provides a safe redundant system.

3) The Second Climb

- Consider practicing catching falls that are both planned and surprised.
- If they have demonstrated competence to satisfaction, the level of supervision may be reduced but not removed. Ensure checks are still prudent.

4) Subsequent Climbs

- Watch belayers for deterioration of skills, especially later in the class as students get tired or overconfident.

¹ Spear, B. *The ACMG Climbing Gym Instructor Technical Manual*; June 2003

Common Issues in Belaying:

Remember that challenges may be apparent at the beginning or appear later in the program. If focused attention is required, alert other instructors so that they can share some of the supervision duties.

Frightened Climber:

The climber may climb erratically if at all. The partner will not be able to practice belaying smoothly.

Actions:

- Calm climber down – Ensure they feel control over the choice to climb.
- Consider switching the groups so the belayer can practice belaying/lowering.

Frightened Belayer:

May freeze or make errors while belaying.

Actions:

- Attempt to calm, more “ground practice”
- Instructor proximity and calm coaching
- Consider switching pairs so the climber can practice climbing/lowering.

Fast Climber with a Slow Belayer:

This can occur with a fast climber and a novice belayer or a short armed belayer and long legged climber. A rushed belayer will tend to make mistakes.

Actions:

- Slow the climber down.
- Ensure the climber does not create a dangerous rope loop (excess slack)
- Consider using a back-up belay.

Weight Differences:

Pulling the belayer around may result in decreased confidence and competence.

Actions:

- Carefully position a lighter belayer close to the wall.
- Anchoring the belayer to the floor may be helpful
- Consider using a back-up belay.

Experienced Climber:

They may have previous experience belaying. Their technique may be different and/or have been taught incorrect methods. They may have a closed mind to new techniques or be “offended” that their system is “unsafe”.

Actions:

- Acknowledge their experience, even if it appears to be less than they realize.
- Calmly indicate how standards have changed and that the CBE climbing wall has specific protocols. Ask them to try the instructor’s approaches with an open mind.

Climbing Techniques

When you watch an expert climber move up a wall, the movements join together smoothly, fluidly; almost as if the climber were doing a choreographed dance. This graceful motion comes only with a lot of practice and very good technique. There are some things that beginners can do right from the start to improve their technique.

Teaching Movement

- a) Start with basic skills. Bouldering is an excellent activity for teaching movement skills.
- b) Have students identify their center of balance, prior to climbing; will be advantageous in developing balance on the wall. To do this, have students stand on one leg and slowly move their other leg to the side. The students will be forced to compensate for the shift in weight by using their core muscles or their arms for balance.
- c) Triangles are a very stable position, a climber with their feet at equal height and spread apart and the hands narrow (forming a triangle) will be in a balanced and restful position. This is a very important position for beginners. At times, certain routes will force a beginner out the triangle position and force the climber to adapt their center of balance.
- d) Examine the route before you start climbing, and plan where you will move. Try to identify areas of difficulty and plan a course of action.
- e) Try to maintain three points of contact on the wall at all times (i.e.: two hands and one foot; two feet and one hand).
- f) Eye each handhold for the best part. It may be easier to grab the side or the underneath of the hold rather than the top.
- g) Straighten your arms. If you try to flex your way up a route, you will exhaust yourself before you make it to the top.
- h) Stand on your feet. Beginning climbers have a tendency to over-grip holds, muscling their way with their arms instead of relaxing, straightening their arms, and using their footholds. It takes a bit to realize how sticky the rubber on your shoes actually is, but once you start trusting your feet, your arms will thank you.
- i) Place your feet carefully. You can't stand on them if they're flailing desperately beneath you! Look down and decide where you want your feet to go. Most of the time, you will have a hold on which to place your foot. You can use footholds by placing either the toe of your shoe or the inside or outside edge of your shoe onto the hold. Experiment with all three. At times there will be no foothold. In this case, you will have to "smear" your foot by placing the toes and pad of your foot flat against the wall, dropping your heel to create friction between your shoe and the wall.

See Appendix L: Activities and games for developing Climbing Skills.

See Appendix M: For climbing quiz questions and responses

Climbing Route Grading System

In North America, we use the Yosemite system of grading climbing routes. Climbs are graded according to difficulty on a numerical scale. This grading system includes the following classes:

- a) Class One: Easy walking/hiking. Think well-maintained trail.
- b) Class Two: Rough walking/hiking. Think off-trail hiking.
- c) Class Three: Scrambling, Steeper, looser terrain that requires the use of hands/feet.
- d) Class Four: Exposed scrambling. You need to use hands and feet and may want a rope.
- e) Class Five: Technical climbing. You definitely need a rope.

Class Five climbing is further divided into the following decimal grades

- 5.0 - 5.5:** Easy climbing. Most beginners can experience success immediately.
- 5.6 - 5.8:** Intermediate climbing. Routes are difficult for many beginners, requires technique.
- 5.9 - 5.10:** Hard climbing. These routes require technique as well as strength.
- 5.11 - 5.12:** Expert level climbing.
- 5.13 - 5: 15** Elite climbing. The grade number is open ended

Climbing Wall Grades are all 5.0 and higher

Rank your Climbing Wall Routes in terms of difficulty so students have a grade to strive for!

Educational Assessment and Activities:

Climbing Wall Instructional Checklist

The Climbing Wall Instructional Checklist (Appendix F) is an instructional tool for teachers to use to ensure that they have taught key areas and that students are able to demonstrate competencies in regards to the climbing wall and topics that should be covered.

The teacher and the student should initial the checklist to ensure that this information is correct and accurate.

Lesson Planning

When planning for a lesson, break down the lesson into a smaller series of topics.

For example, when teaching or introducing students to a climbing wall, break down the activity of climbing into smaller skill sets.

Example:

Lesson 1: Introduction to Climbing

Topic 1: Introduction and Equipment

Topic 2: Harness

Topic 3: Knots

Topic 4: Belaying 1 (Practice without a climber)

Topic 5: Belaying and Lowering (Practice with a climber)

Global Demonstrations

Global demonstrations are effective to introduce complex, multi skill tasks to students with very limited contexts for the experience.

A Global Demonstration is used to show the whole final process of an activity. For example, before students are taught to climb they would be shown the whole process of how the activity should look. ie. A climber climbs the route and is lowered off.

The teacher can then deconstruct the activity with the students into smaller segments. ie. Harness, knots, belaying and climbing. The purpose of a global demonstration is for students to have an idea of the “big picture”

Final Practice

The final practice element is crucial to any lesson that is taught. Ensure that students have ample time to practice the skills that have been recently taught. Do not overload students with skills until they can successfully demonstrate a competency.

The instructor should offer feedback and coaching during practice sessions for new skills. This is often the time to correct poor habits and prevent them from becoming habitual.

References and Resources for Teachers:

Climbing Video Resources:

Prior to students using the climbing wall each year, it is recommended that the students watch an introductory safety and climbing wall procedures video.

The CBE recommends that schools use the video, **How to Climb Indoors (2008)**. This is a valuable resource to teach students how to safely climb indoors and to refresh their memories from past climbing experiences. Produced by Flashed, Calgary, AB.

The Association of Canadian Mountain Guides: Climbing Gym Instructor Technical Manual.

By Brian Spear; June 2003

An excellent resource that provides more depth into standards, operations, lesson planning and advanced climbing techniques.

The Self Coached Climber: Book and DVD

By Dan M. Hague and Douglas Hunter; 2006

An excellent resource dealing with specific movement skills and climbing techniques. It offers an instructional DVD that demonstrates a variety of games and drills that work on a variety of climbing techniques.

Flashed: How to Climb Indoors DVD

By Flashed Climbing; 2008

Ordering information available from: info@flashed.com

A highly recommended instructional video that should be a prerequisite for students to watch before they use a climbing wall for the first time. This video deals with Knots, Harnesses, Belaying and Climbing.

How to Climb 5.12, 2nd (How To Climb Series)

By Eric J Horst; 2003

An interesting book on improving climbing technique through strength, practice and conditioning.

Learn to Climb Indoors

By Eric J Horst; 2006

A book written for beginner climbers looking to learn how to climb indoors. It covers the basics for a student who has never climbed before.

Glossary of Terms:

ACMG:	Association of Canadian Mountain Guides
Administrator:	Principal or administrative designate
Anchor:	A structural connection point which is used to secure a rope or webbing to the wall or the floor.
Back up Belayer:	In addition to the belayer, a back-up belayer is holding the rope with both hands after it has passed through the belay device and brake hand.
Belay:	A method of protecting the climber from the effects of a fall using a rope.
Belay Device:	A friction device used by the belayer in the event of a fall, stopping the climber from falling.
Belay System:	All the components of the system used to prevent the climber from falling. Belayer, belay device, and back up belayer (if applicable).
Bouldering:	Climbing on short walls to a certain height, without the use of a rope. Every fall is a ground fall. Spotters and crash pads should be used to limit the consequences of hitting the ground.
Brake Hand:	The hand used by the belayer to control the amount of rope running through the belay device. This hand is used to lock of the rope in the event of a fall.
Carabiner:	Alloy snap links equipped with a spring loaded gate used to connect the climbing rope to anchors, belay devices to harnesses, climbing rope to the wall, etc.
Climbing Commands:	Verbal signals used in climbing and belaying.
CBE Indoor Climbing Wall Instructor Level I:	Teacher appointed by each school to instruct at their climbing wall. These teachers have passed the CBE Climbing Wall Instructor I course.
CBE Indoor Climbing Wall Instructor Level II:	Teacher appointed by each school to administer wall, train teachers and instruct students at their climbing wall. These teachers have passed the CBE Climbing Wall Instructor II course.

Climbing Wall Manager:

An individual designated by the CBE for the whole system. They are responsible for training Climbing Wall Instructors I & II as well as overseeing the conditions of CBE climbing walls and climbing wall equipment.

Chalk:

Magnesium Carbonate; a drying agent used to prevent hands from slipping off of holds. DO NOT use on CBE walls due to allergies and dust factor.

Climbing Rope:

Specially designed and manufactured rope used in climbing which helps prevent or lessen the consequences of a fall. Available in Dynamic (stretches) and Static (no stretch) variety.

Crux:

The hardest moves and/or section of a climbing route.

Gri-Gris:

A specialized belay device manufactured by Petzl. It is a friction assist device used to increase the ease and safety of catching a fall.

Lead Belaying:

The process of belaying a lead climber

Lead Climbing:

The process of climbing a route without the rope already above you. The climber clips the rope into protection as he/she climbs. No lead climbing allowed in CBE schools.

Lower:

The process of a climber being lowered by another climber to the ground.

Pitch:

One rope length in distance from one belay to the next.

Protection:

The gear in which a climber clips a rope to the wall/cliff to safeguard against a fall.

Rappel:

A roped descent where the climber lowers himself.

Route:

The path taken on a climb.

Slack:

Extra loose rope in the climbing system.

Spot:

To provide additional safety for a boulderer. It is not used to prevent a fall. Specific training must be taught in order to spot properly.

Sport Climbing:	A style of climbing involving lead climbing and clipping the rope into pre-set protection. The climber is not required to place any traditional climbing gear.
Take:	The command said by a climber to the belayer. The belayer will remove any slack in the rope and hold the climbers weight on the rope.
Top-Rope:	A belay from above the climber; the rope is above the climber, preventing the climber from falling a far distance.
Quick Draw:	A short piece of webbing with carabiners attached at both ends. One end attaches to the protection and the other attaches to the rope.
UIAA:	Union International Association of Alpinism
Webbing:	A flat nylon or spectra material used in a climbing environment.

Operation Guidelines for Calgary Board of Education Climbing Walls

8. We (Parent/Guardian and Student) have been informed of our rights to obtain as much information about indoor climbing walls and the CWP as we feel necessary, including information beyond that which was provided to us by the school or CBE to the extent we require. We are not, in any way, relying solely upon information provided by the CBE respecting the nature and extent of the risks and hazards associated with the CWP.
 9. We are fully aware that there are risks, and hazards involved in the CWP, and we freely and voluntarily assume these risks. We **ACKNOWLEDGE** that the Student, as a participant, may suffer personal and potentially serious injury due to these risks and hazards.
 10. The Student has been informed that he/she is to abide by the rules and regulations including directions and instructions from the school's Indoor Climbing Wall Instructor II and as imposed on students while participating in the CWP.
 11. The student shall participate in all of the introductory sessions and meet all prerequisites which include: the proper use and storage of equipment, bouldering, spotting, belaying, descending (anchoring and overhand techniques), and prior to his /her participation in the climbing activities associated with the CWP.
 12. In the event that the Student fails to abide by the rules and regulations imposed on the student which participating in the CWP, disciplinary action may result, including suspension of their permission to participate in the CWP.
 13. We acknowledge that it is our responsibility to advise the CBE of any medical or health concerns of the Student that may affect his/her participation in the stated programme or activity. **(Medical Concerns :)** _____
-
14. We consent that the CBE through its employees, agents and officers at the school may secure such medical advice and services as those individuals, in their sole discretion, may deem necessary for the student's health and safety, and that we shall be financially responsible for such advice and services.
 15. We understand that the CBE or Other Service Provider fully accepts that it is the responsible toward the students who undertake CWP, and is legally liable to the parent/guardian and the student for such loss, injury or damage which occurs as a result of the negligence of the CBE or Other Service Provider which the Student is engaging in the CWP under their respective supervision.
 16. We shall indemnify and hold harmless the CBE or Other Service Providers, their agents, trustees, employees, officers, volunteers and contractors, or any of them, from liability for injury, loss or damage suffered by the CBE, Other Service Provider or by any other person(s), or any of them, including liability for property damage caused by or arising out of the student's negligence in the CWP.
 17. Based on our understanding, acknowledgement and consent as described herein, we agree that
 _____ has my permission to participate in the CWP.
 (*Print Student Name*)
- Date:** _____
- Print Name of Parent or Guardian** _____ **Print Name of Student** _____
- Signature of Parent or Guardian** _____ **Signature of Student** _____

Personal information is collected under the authority of Alberta's Freedom of Information and Protection of Privacy Act (FOIP) and the School Act for the purpose of participating in school trips. This information will be used to see if the candidate(s) meet the criteria and will be treated in accordance with the privacy protection provisions of the FOIP Act. If you have any questions about the collection, contact your school principal or Corporate Risk Management, 403-294-8578.

Appendix B: CBE Visiting School Agreement

It is important that CBE schools with climbing walls have an agreement with other CBE schools wishing to use their wall. The following information should be considered for the agreement:

The CBE visiting school must be trained by the host Indoor Climbing Wall Instructor II before teaching on the host's climbing wall. They must also be in compliance with the Legal Liability and Safety Considerations listed on page 2 of "Safety Guidelines for Physical Activity in Alberta Schools."

The CBE visiting school agrees to comply with all CBE guidelines pertaining to climbing walls and to any guidelines specific to the host school's climbing wall. For example, all students from the visiting school must have signed the Acknowledgement of Risk Form.

The CBE visiting school agrees to cover the cost of having host Indoor Climbing Wall Instructor II's conduct a climbing wall orientation for the visiting school and to take the time to supervise at least one class being taught by each visiting school teacher, i.e. substitute costs.

The CBE visiting school will be responsible for appropriate use of climbing wall equipment and replacement of any damaged or stolen equipment.

The CBE visiting school will conduct an inventory before and after each climbing session to ensure that all of the gear has been returned.

The CBE visiting school will set aside and report any damaged equipment to the host school's Climbing Wall Instructor II.

The CBE visiting school will pay for the rental of the host school's climbing wall.

The CBE visiting school administrators will sign this agreement and agree to the conditions stated.

Operation Guidelines for Calgary Board of Education Climbing Walls



Calgary Board of Education

Climbing Wall - Host School Name: _____

CBE Visiting School Information: _____

Date: _____

Visiting School Name: _____

Visiting School Phone: _____

Visiting School Fax: _____

Visiting Certified Climbing Wall Teacher Name: _____

Number of Visiting Students Participating: _____

Grade level(s): _____

As the visiting CBE (school name), we agree:

(Initial)

_____ supervising teacher(s) is trained as ACMG Level 1 Gym Instructor, or CBE Indoor Climbing Wall Instructor II (certificates available on request)

_____ all participants will comply with all CBE Operation Guidelines for Climbing Walls and school specific guidelines

_____ all parents/guardians and participating students have completed/signed Consent of Parent or Guardian to participate in the Climbing Wall Programme and "Acknowledgement of Risk Form"

_____ to be responsible for appropriate use of the climbing facility, equipment

_____ to conduct an inventory before and after each climbing session

_____ to set aside and report any damaged or missing equipment

_____ to report any damaged or missing equipment to the host school Climbing Wall Instructor II

_____ to be responsible for the replacement cost of damaged or stolen equipment

_____ to pay the following costs related to the orientation and use of this facility

➤ substitute coverage-climbing wall manager half day _____ full day _____

➤ facility user fee _____

➤ damaged or missing equipment _____

CBE Host School Name

CBE Visiting School Name

CBE Host School Principal

CBE Visiting School Principal

CBE Host School Indoor Climbing Wall Instructor II

CBE Visiting School Climbing Wall Instructor

Appendix D: CBE Belay Test Documentation

Student's Name _____ Date of Birth _____

Home Room _____ Date of Belay Check _____

Testing Indoor Climbing Wall Instructor II's Name _____

Yes **No**

Pre-Climb

- | | | |
|--------------------------|--------------------------|----------------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Tester has explained that only one belay test can be given in one day. |
| <input type="checkbox"/> | <input type="checkbox"/> | Climber has read, understands and can explain wall use rules as they apply |
| <input type="checkbox"/> | <input type="checkbox"/> | Student has watched a Belay Safety and Climbing Video |
| <input type="checkbox"/> | <input type="checkbox"/> | Acknowledgment of Risk form is on file. |
| <input type="checkbox"/> | <input type="checkbox"/> | Make sure protective mats are in place. |
| <input type="checkbox"/> | <input type="checkbox"/> | Secures harness properly (doubles webbing back through buckle) |
| <input type="checkbox"/> | <input type="checkbox"/> | Tie in with a figure 8 knot to correct point on harness |

Climber

- | | | |
|--------------------------|--------------------------|------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Inspects belayer's harness, belay set-up and locking carabiner |
| <input type="checkbox"/> | <input type="checkbox"/> | Demonstrates proper verbal commands: "Climbing", "Take", "Lower" |

Belayer

- | | | |
|--------------------------|--------------------------|---------------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Sets up proper belay and secures locking carabiner |
| <input type="checkbox"/> | <input type="checkbox"/> | Correctly ties belayer's anchor to floor and attaches to carabiner |
| <input type="checkbox"/> | <input type="checkbox"/> | Inspects climber's harness, tie-in points and figure 8 knot |
| <input type="checkbox"/> | <input type="checkbox"/> | Demonstrates proper verbal commands: "Belay On", "Climb On", "Got", |

Lowering

- | | | |
|--------------------------|--------------------------|------------------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Eliminate slack without ever removing brake hand from rope |
| <input type="checkbox"/> | <input type="checkbox"/> | Catch climber properly on one or more falls |
| <input type="checkbox"/> | <input type="checkbox"/> | Safely lower climber to the ground |

All items must receive a check mark in the "Yes" column to pass. Only one belay test can be taken on one day. Results of belays tests, including failures, must be kept at the school.

Staff Comments: _____

Appendix F: Climbing Wall Instructional Checklist

School: _____

Student: _____ I.D. #: _____

This checklist is valid only for the **current school year**. The student must initial each topic each year to indicate they are up to date on the instruction and knowledge of that topic.

TOPIC	School Yr ____ to ____ Grade: _____			School Yr ____ to ____ Grade: _____			School Yr ____ to ____ Grade: _____			School Yr ____ to ____ Grade: _____		
	Student Initials	Staff Initials	Date	Student Initials	Staff Initials	Date	Student Initials	Staff Initials	Date	Student Initials	Staff Initials	Date
Acknowledgement of Risk Form												
Safety Guidelines and Rules												
Video - "How to Climb Indoors"												
Facility Safety Check												
Harness												
Tying in												
Floor Anchors												
Climbing Wall Commands												
Belaying												
Lowering												
Belay Test												
Bouldering												
Spotting												
Flooring/Mats Position												
Hold Type Identification												
Overhang Techniques (knee drop)												
Equipment Storage												

Understanding the definition and meaning of concepts and terms used will become part of the process and procedures of learning to climb in a controlled school setting.

Appendix G: New Climbing Walls

Do You Want A Wall?

It is important to educate people about your wall. This includes the caretaking staff, the school administration and teachers whose programs might be affected by the wall. They should all be aware of the added responsibility, additional costs, benefits to students, training responsibilities, security requirements, and equipment needs and maintenance thereof.

Location of Climbing Wall

The location of the wall will be the first big decision your school will have to make. The ideal environment for your wall is:

- a room that can be locked to deny access at non-supervised times.
- a supporting wall 20 - 24 feet high that is solid enough to anchor a climbing wall to.
- a supporting wall that does not form a wall to an adjoining classroom (incredibly noisy).
- a system of storage that is secure and protects the equipment from light and dampness.
- a suspended wooden floor rather than a concrete floor or mats that can be left out.
- a nearby maintenance ladder which can be secured.

Stages have many of these characteristics because they have the height, strong supporting walls, and wooden suspended floors. Often the stage has a type of locking curtain, which will deny unauthorized access, and many have storage facilities nearby.

Gymnasium walls are locations for a climbing wall because of their height and perceived accessibility. However, gymnasiums may not be the best location for a climbing wall for the following reasons:

- it is hard to control access to the gymnasium, increasing the likelihood of unsupervised climbing activities.
- building a climbing wall in the gym takes away valuable wall space used in other physical education activities.
- lower climbing holds will have to be removed to deny access to the wall in non-supervised times.
- gymnasiums are heavily used before, during, and after school. Access for climbing may be limited.

CBE Design and Construction Services will determine whether or not the supporting wall you have chosen is strong enough to support a climbing wall.

Wall Construction

In order to construct a climbing wall, teachers must work with school administration. In addition, any work completed will also involve representatives of CLC based Environmental Services, Design and Construction Services.

CWA Climbing Wall Association has established a set of guidelines for climbing wall construction and management which will likely become the industry standard in Canada. The CBE is adopting these guidelines for climbing wall construction and is requiring that an engineer approve your wall design prior to construction. CBE Design and Construction Services will include the cost of the engineering assessment as part of the quote you receive for the construction of your climbing wall.

CWA

Canadian Round Table

President

Seth Johnston

University of Alberta, T6G 2H9

780-492-2746

seth.johnston@ualberta.ca

Design and Construction Services will arrange to have contractors bid on the contract after you have sent them an S-18. Schools must use CBE approved contractors to build their walls. You should have a good idea of what you want your wall to look like so that you get an accurate bid from the contractors. Be as specific as possible about your design otherwise you may find that you do not get the wall you thought you were asking for, or your wall may end up costing more than you budgeted for.



Appendix H: Equipment Guidelines

Contact the Climbing Wall Manager prior to ordering. Orders should be processed by June 1st of the School Year.
For all equipment, if there are doubts regarding the integrity or safety of equipment, contact the Climbing Wall Manager.

Slings/Daisy Chain Inspection – Physical Check (no check reference necessary)

- 2 year max. – replacement guideline
Must have a min. 10KN rating stated Petzl

Gri Gri/Belay device – Physical Check Reference number inside Gri-Gri on axle (check on inside lid)

- 10 year max. – replacement guideline
Use only Petzl Gri Gri's for belaying

Locking Carabiner – Physical Check Reference – tick mark under barrel after it has been locked

- 10 year max
Recommended: Petzl auto locking carabiners

Ropes – No physical check reference -- All rope is replaced after June 1st of every year

- 1 year max.
10mm to 11 mm gym line rope

Harnesses – Physical check (mark on CE tab or the first letter of the brand of harness)

- 4 years
Petzl brand suit case style auto locking harness

****Note:**

- Proposed standards are established with the intention of a uniform safety standard for CBE Walls.

If there is anything that appears abnormal contact the Climbing Wall Manager immediately.

Appendix I: Pre-Inspection Criteria

Equipment

- Outstanding equipment issues are noted in log book or addressed (ie. damaged equipment)

Climbing Wall Inspection

- Climbing Wall is in good working order and per-use inspection is conducted regularly.

Wall Activity Log

- Log is current and up to date

Staff Training Log

- Log is current and up to date
- Assessments of CBE Indoor Climbing Wall Instructor II are conducted (2 assessments within 45 days)

Visiting School Agreement Forms are complete

- Forms are put in the back of the Climbing Wall Binder

Wall Security Check

- Restrictive access to climbing wall were properly executed and enforced.

Maintenance Notes

- Please note any outstanding or current safety concerns. ie. springs on Gri Gris, equipment replacement orders

All major safety concerns must contact wall manager immediately!

Appendix J: Site Inspection Check List (Before each use)

Site inspections must be recorded and logged by a CBE Climbing Wall Instructor before each use! Refer to Appendix E for Climbing Wall Activity Log and record inspection.
Inspect thinking F.A.R.E. (Floor – Anchor – Rope – Equipment)

Floor – Visual Check

- Do you have all the necessary mats?
- Have the gaps between mats been fixed?
- Is the bouldering adequately protected?
- Is there anything lying on the mats surface that could hurt or injure a climber/boulderer?

Anchors

Rope Anchors – Visual Check

- Have they been tampered with?
- Is the rope threaded through the anchor properly?

Floor Anchor – Physical Check (pull each floor anchor)

- Does the connection to the floor feel loose?
- Does the webbing look complete?

Rope – Visual Check

- Are the ropes hanging straight? Do they bend or curve when hanging off an anchor?
- Are there tears or excessive wear on the ropes? When you see “White” its not right.
- Are the ends of the rope going to infringe the climber from tying a safe knot?

Equipment

Harness – Physical Check (looking for excessive wear or compromised stitching)

- Belay loops
- Tie in points

Carabiners – Physical Check

- Gates and locks function properly

Gri Gris – Physical Check

- Levers
- Device door

Wall Security – Physical Check

- Has the gear locker been compromised?
- Does equipment look out of place?

Walls – Visual Check

- Do the panels on the wall look secure?
- Have the routes setters completed their work?

Appendix K: CBE Climbing Wall Report (sample only)

RE: Annual Wall Consultation, October 2009.

(Conducted by: Levente Pinter, for Walson Tai.)

Your Consultation Is Based On Site Specific Criteria

Your consultation has been developed on the basis of your unique facility requirements as understood by Walson Tai and applies only to the site consulted.

Your Report Is Prepared For Specific Purposes And Persons

To avoid misuse of the information contained in your report, it is recommended that you confer with Walson Tai before passing your report on to another party who may not be familiar with the background purpose of the report. Your report should not be applied to any other locations.

Note: *Though our consulting is intended to be as thorough as possible, it may not be 100% accurate. Although the chance of missing data is low, clients cannot hold Walson Tai responsible. Walson Tai will not be held liable or responsible for any losses or damages.*

Summary of services: On October 27th, 2009 a visual overview of the climbing wall was conducted. The climbing surface and structure was reviewed. Bolted connections were visually and physically checked and photographed. Climbing equipment and anchors were reviewed to identify any safety concerns.

Total Immediate Action:	0
Total Recommendations:	1
Total Suggestions:	4

Note:

Immediate Action: Must be done immediately. May need to restrict access to area or equipment. Talk to your consultant.

Recommendation: Should be executed in a timely manner. Could be considered a preemptive measure. Talk to your consultant.

Suggestion: A notice or useful tip to make managing the structure easier, and or in a safe manner.

CLIMBING WALLS

There are 3 sections of the climbing wall:

Main wall (approx. height 22'-24' base: 16'), **Right Hand Wall** (approx. height: 15'-20' base: 10') and **Bouldering Wall** (approx. height 10'). (see image: Walls @ boys&girls.jpg) There are 7 routes numbered left to right (image: boys&girls route #s).

STRUCTURE

The walls appear to have been built well. With a few exceptions the workmanship shows signs of quality and experienced builders. The walls are built with a wooden frame construction and attached directly with bolts into the existing east facing block wall. All accessible bolts were checked for tightness, numbered and photographed. These bolts should be inspected on an annual basis to ensure there is no change.

Appendix K: continued

Main Wall: The structure of the main wall is a wood frame construction utilizing primarily (2x6) lumbers. There are 3 main vertical beams with the addition of horizontal studs to increase the frequency of the connection points and provide rigidity. The main wall does not show any signs of shifting or damage. Studs (horizontally placed) approximately 2' apart. The L- brackets used at attachment points have been mounted correctly on the underside of studs. It would be preferable to have used joist hangers instead of L-brackets or L-brackets on both top and bottom. Plywood and t-nuts appear to be in very good shape. There is a small crack in the texture near the top of the wall. It appears that this crack is from the original texturing process however should be monitored to ensure that the crack is not increasing in size and that there is no shifting taking place in the wall.

Right Hand Wall: The structure of the right hand wall is also built on wooden frame. The frame is made up of primarily (2x6) lumbers. The bolted connections at the top of the wall are visible and accessible. All connection points appear to be in good shape and are firmly in place. However the remainder of bolted connection points are inaccessible as the wall was designed to lay as flush to the existing wall as possible, thus eliminating any access potential behind the wall. Plywood and t-nuts appear to be in very good shape.

Bouldering Wall: The bouldering wall has relatively minimal framing and is attached directly to the existing exterior gymnasium wall (attachments made on the interior of wall beams). There are no signs of shifting cracking or any form of damage. Plywood and texture appear to be in good shape. The bouldering wall appears to be very solid and stable. (see image: bouldering jpg.)

Suggestions:

Confirm the structure of the climbing walls were designed and approved by a structural engineer.

CLIMBING ANCHORS

Wall Anchors: The climbing anchors are attached directly to the top of the wall. The anchors consist of a bolted hanger, quick link and chain. All climbing anchors appear to be in good shape with very little signs of wear. There is also a directional anchor on the main wall to help minimize the swing potential of a falling or resting climber. This anchor is only for a directional anchor and is not intended to be a load-bearing anchor. This wall is for top roping only! **Do not attempt to lead climb!**

Floor Anchors: There are a total of 7 floor anchors. These anchors are recessed into the floor and have a threaded sleeve to attach a bolt and hanger to. The floor anchors appear to be in good shape. The bolts should be tightened enough to securely hold the hanger fully flush to the floor, when in use. The floor anchors should only be used as a back up to help secure a lighter belayer to the ground. **Floor anchors should not be used as a primary anchor to secure the climber. Belay devices must be attached directly to the belayer's harness as the primary anchor point.**

Suggestions:

- Back up climbing anchors with additional hangers on the inside of climbing wall and chain directly to existing wall (behind climbing wall).

Appendix K: continued

Note:

Harness and rope manufacturers recommend a maximum of a **5 YEAR life span** for any nylon equipment used in climbing. It is important to inspect each piece of nylon equipment **before each use**. Ropes should be inspected for damage to the sheath of the rope (outside protective layer). Things to look for are excessively fuzzy or frayed ends or sheath. Inner core showing (know as a core shot), ends of ropes missing core, due to sheath slippage, brittle nylon (indicative of UV or chemical damage), flattened or thin areas, excessively dirty areas and any other inconsistencies.

Harnesses should also be visually inspected prior to use. Inspect the entire harness and focus on looking at the tie in points to ensure the reinforced areas are not frayed or damaged. Other checks include the stitching to make sure it is not coming out and that the buckles are intact and not worn down. Check the nylon for any potential concerns as described with the ropes.

Nylon equipment, such as ropes harnesses and slings that are older than 5 years old or if the date is unknown the item should be retired. Even if the harness, sling or rope looks good and shows little or no signs of wear and tear it should still be retired. Nylon weakens over time and the damage may not be visible. All harnesses, slings and ropes should be dated, logged and inspected before each use.

When retiring ropes or harnesses they should be cut up and discarded so that no potential for further use exists.

ROPES

Currently there are 7 (red & black weave) climbing ropes in use. The ropes appear to be in good condition however should always be inspected before each use. Look for signs of wear and inconsistencies. Replace as necessary.

HARNESSES/SLINGS: There are 2 types of harnesses currently in use.

Mammut: (blue) 7 harnesses checked and look to be in good condition. However the harnesses look to be an older style and are most likely over 5 years old (maximum life span recommended for nylon products).

Rock Empire (batch 2008) (fully adjustable): (black) 16 harnesses checked and appear to be in good shape.

Check logs to confirm no harness is older than 5 years old. Harness serial codes can be checked with the manufacturer if the date is unclear. Replace any harness older than 5 years or if the age of harness is unknown.

Daisy chain slings: (7) Daisy chains are used for attaching the climber's harness to the floor anchors when required. Slings appear to be in good shape, however should be closely monitored for abrasion!

CLIMBING HARDWARE:

(5) Petzl Gri-Gri (caming belay device)

(7) OcuN (friction plate belay device)

(5) Locking Carabiners

(6) Non-locking carabiner

All devices visually and physically checked for proper operation and excessive wear.

Appendix K: continued

HANDHOLDS:

The handholds being used are all relatively similar in size. There is approximately one hold per sq.ft.

Suggestions:

If budget allows, purchase new holds in a variety of shapes and textures from numerous handhold companies to provide a greater selection of hold types and create more interesting movement challenges. Remove, clean, and re-set handholds to provide movement challenges with a range of difficulty.

FLOORING: The flooring under the main wall and the right hand wall is gymnastic mats approx. 2.5" thick, medium density open cell foam protected with blue vinyl covers. When folded down onto the floor to be used for climbing there is potential for gaps in between the mats. The thickness of the padded mats below the top roped walls seems inadequate for the height of the wall. The flooring should provide a safety back up and protection to minimize accidents. For the purpose of bouldering the mat in place does seem to provide reasonable cushioning however the bouldering mat is not big enough to protect the entire landing zone. The current flooring also has the ability to shift and slide out which also increases the potential for injury.

Recommendation:

Replace flooring with 6" flooring system commonly found in climbing gyms. Flooring is composed of 2" closed cell foam as a top layer to displace the force of a falling climber and 4" of open cell foam to help absorb the impact (kinetic energy) of a falling climber. There are climbing gym flooring systems available to accommodate the need to fold the mats out of the way when not in use. Flooring should extend far enough away from the wall to cover any potential fall zone.

FOR QUESTIONS OR CONCERNS, PLEASE CONTACT:

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Appendix L: Activities and Games for Developing Climbing Skills

Pointer

This is mostly a traversing game since it requires a partner to "point". The person designated as the pointer will use a broom handle or any pole to point out the next hold. The climber begins climbing. The pointer taps the next hold. This should be timed so that the next hold is tapped just ahead of the person climbing. A good pointer makes it challenging but not beyond the climber's ability. The game ends when the climber falls. The climber and pointer then switch positions.

Add-on

Two climbers with similar ability play the game. Begin by agreeing on the first sequence of three to five moves. The first climber gets on the wall and climbs or traverses this sequence of moves. When the first climber finishes, he/she adds one more move. The moves can be marked by tape or memorized. Each time a climber completes the sequence he/she adds on another move. You can play "hands only" where any foot hold can be used, or specify both handholds and footholds. Continue to repeat this pattern until exhaustion.

Great climbing game for building endurance and memorizing sequences.

Memory

The first person points out a sequence of 4 to 10 moves. There are no markings placed on the wall. The second person has to climb the route remembering each hold.

The value of this climbing game is it teaches you to remember the holds in the route, making it an easier transition from preview to climbing.

Take Away

Create a route of about 20 holds. Mark the holds with tape marks. Each climber climbs the route. After each successful climb/traverse the finishing climber removes the tape. If the next climber cannot climb/traverse it without falling the turn is passed to the next person. If no one can do it the original climber must prove it can be done. If he cannot do the move, the mark is put back on.

Tag

Several people on a bouldering wall play tag. The first person is "it" and tries to climb to another person and touch them. The person being "tagged" then must tag someone else excluding the person just touched. The previous person earns a rest and can climb down until the next person is tagged.

Greatly improves endurance/stamina. This is a good climbing game for youth teams.

One Arm / One Foot

Two or more climbers decide on a sequence and attempt to send it using one arm. This can be done as an add-on or take-away climbing game. This game improves dead-point ability and greatly strengthens your arms/legs.

The version of this climbing game using one foot will greatly improve body tension and trunk strength.

Appendix L: continued

Quick draw Climbing Game

Designate 8-10 'goals' (e.g., holes in the wall, big holds) and place the same number of draws in a location near them (say hanging on another hole. Person must then climb back and forth from the pile of draws, taking one draw at a time to the goals (one for each goal). This also makes players think about strategy, whether to go for the far away goals first or last.

Training Value: Improves Endurance, Strength.

Round-About

One person is 'in'. They select a place with quite a few good holds. The other partner has to try to climb around then in circles while the person 'in' has to try to stop them by getting to the holds before they do. When the person goes for more than 10 seconds without changing a hand or foot they swap places.

Blind Climb

Blind fold a climber. Start to climb by feeling with hands and feet all around the wall. See who can get the furthest without falling.

Training Value: Improves awareness and sense of touch for feet and hands.

Get Dressed!

Hang different items on the wall (hats, gloves, exercise pants, shorts, jackets, shoes, vest etc.) or even on the ground. The idea is that the climber must pass through the wall and whenever he or she finds something, they must put it on! Try the same thing but now undressing.

Training Value: Teaches resting positions and endurance.

Amputee

This climbing game is where one person boulders from one point to another. Other people from a set distance throw a soft foam Frisbee at the climber. If a limb of the climber is hit then climber can no longer use that limb. If the climber's head is hit they lose. If climber is hit in the back three times they lose. If climber falls they lose. If climber gets to the last point then climber wins. A spotter returns the Frisbee to the throwers.

Training Value: Works strength, balance, and endurance

Twister

Lay out a section of the wall just like a play field for the game "Twister" (™). It has the same rules as normal twister.

Training Value: Improves endurance and balance.

Appendix L: continued

Horse

Works with two or more people and is basically the same as the basketball version. The first person chooses a point to begin and a point to end. They then roll a dice to see how many holds they can use the starting and ending holds. If the first person completes their route then the rest of the players must complete it, getting letters for failure. If the first person doesn't complete the problem, then it goes to the second person and so on.

Training Value: Strength, balance.

Lapping

This climbing game includes as many players as wanted. The first climber traverses across the walls and makes the most laps as he can. Then the second climber breaks the record of laps the first climber did. If he does, he wins, and if does not, he loses.

Training Value: Endurance/stamina.

4x4

Pick four routes you know you can do on the bouldering wall. Do each one four times, make a loop and see how many times you can do each one.

Training Value: Bouldering.

Time's Up

For as many players as desired. Start with a ten second time limit. First player gets ready, and a time keeper says when to go. The climber gets to as many holds as he/she can before the time keeper yells, "Time". Second climber tries to beat that number, (same path if you want to make it harder). If the climber does, he wins, that's the new goal. After everyone goes, end of round one, add time, and start round two. Game continues until one remains, or everyone is tired.

Training Value: Endurance, stamina, fluidity, memory, recognition.

Eliminator

Works best with a maximum of four players. Find a route each of the players can do. The first player chooses a hold to take away. If you come off you have three chances. The first player then goes to the back of the queue and this goes on until there is only one player left or no holds left. Works best with fingery holds.

Training Value: Strength, perseverance.

Appendix L: continued

Shark Attack

This climbing game can be played with as many climbers as you can fit on the wall. It is very similar to musical chairs. The climbers start in a circle in the middle of the floor facing inwards - when you shout "Shark Attack!" they must get onto the wall as quickly as they can. The last person on the wall is the loser. The loser is either out of the game, or "looses" an arm or leg. You can add many variations to this game e.g. climbers may not use legs, etc.

Training Value: A bit of fun and competition!

Graffiti

Pick a section of wall with lots of holds, and a starting jug at a moderately low height. Start matched on the jug, and see how many other holds you can move to and hold. The end hold must be matched, and held for 2 or 3 seconds. Use a few different colors of tape to see who can tag the most number of additional holds. Each time one is matched and held, it is tagged with the appropriate colored tape, and then is off limits.

Training Value: Footwork and balance

Lucky Draw

This climbing game is great for a group of climbers or for training by yourself. Write down all the climbing moves you can think of (eg. lay-back, gaston, drop-knee, pinch, dyno etc...) then cut it out fold them and put into a hat. Now draw three papers and make a boulder route using those movements. or get someone to do that movement and others must guess what it is.

Training Value: Use of techniques.

Add On – Pointer

Ever thought of combining your two favorite bouldering games? Your partner chooses your first moves (1-3 moves depending on you), then he/she must do those moves and the next moves you chose and so on until one of you can't do the move. You find out your partners weakness and find your strength and end up working both your strength and weakness.

Training Value: Endurance, memory and technique.

Over and Under

One person climbs on to a wall and traverses several moves along, the next person traverses to them and has to go over them. The next person traverses along and goes over the first person and under the second person (between their feet and hands). Once everyone is on the wall, the first person goes over and under everyone and it starts again if you have enough wall! This can be played with as many people as you want and the more people, the longer you have to stay on for. Good for all ages from young to old, just watch the falling off.

Training Value: Endurance and use of foot work.

Appendix L: continued

Simon Says

You can play this with a group of people. There is a leader, this leader gives the group 15 seconds to get off the ground and stay there. After that time, the leader calls out various commands: "Simon says... move your left foot." for example and everyone must move the nominated limb to a new hold unless the command is not prefixed with "Simon says". Players are out if they fall off or do not obey the commands.

I went to the wall and used...

One person starts at one end of the bouldering wall. Their spotter calls out "I went to the wall and used a..." then they call out a move e.g. crimp, undercut smear etc. After the move has been completed the climber steps off and the partner repeats the move. The new spotter calls out the next move to be used. "I went to the wall and used a crimp and a smear." Repeat the moves for as long as you can manage it.

Training Value: Develops stamina, balance.

Leap Frog

As many people can do this. It is like its said. On a bouldering wall, the last person must climb past the other person. Now that lead guy is at the end and must do the same. The leaper cannot use the same hand or foot holds that the person that they leap are using. And the head guy should leave some space for the leapers. Unless he/she wants to make it hard.

Taps

There will have to be a person on the floor to keep track of totals. This game was made up to assist the young climbers with concentration. What they have to do is climb like normal but every time they use any hand they have to first tap their head and then count out loud starting at one. The goal is to have the climber try to beat their personal best by trying to lessen the number of times they use their hands.

Training Value: Concentration.

Arch Runner

For this climbing game find a decent wall at least 20 feet long (horizontal) and about 12-16 feet high, and some colored chalk or tape (something to mark holds). Start at one end and climb all the way up, then all the way across, and down. Run back to the starting point and repeat, however you may not reuse old moves. Ground starts are allowed and recommended. Depending on the number of holds on the wall, try to get at least 4 or 5 runs in under a set time. The idea of running back to the start keeps the heart rate up and hinders setup for the next climb, forcing you to think on the wall. Also, try to stay at least 2/3 up (like it's an arch of a bridge).

Training Value: Endurance, quick thinking on the wall, strength, and reduces use of unnecessary hand moves.

Appendix L: continued

Tap Its

Working in pairs or more, one person chooses a hold for each hand and one foot. With the other foot they then see how many holds they can touch while their partner counts. They then swap places using the same holds, the person that touches the most wins. All about flexibility and realizing where and how far they can reach. They are not allowed to move the other foot or hands.

Training Value: Realization of reach and flexibility.

Freeze

This climbing game is most fun on a traverse. All participants engage in traversing at the same time in the same direction at different locations on the route while one stays on the floor and randomly calls out "freeze." When that command is given the climbers must cease all movement, even if in the middle of moving from one hold to the next, for a pre-decided amount of time. Climbers may not move until given a "go" from the officiator timing the freeze. If a climber moves while in a "freeze" or falls off the wall he/she is out until next round. Last man standing (hanging) wins. Difficulty level can change based on the route or the time to hold a "freeze."

Training Value: Endurance strength, body position technique.

Appendix M: Indoor Sport Climbing Quiz Questions & Responses

1. Why are indoor climbing gyms a good place for beginners to be introduced to the sport of climbing?

- *certified instructors*
- *safe, controlled environment*
- *low risk*

2. a) Why were the first indoor climbing walls created?

- *for climbers to train for real rock*
- *dry area to climb on during poor weather*

b) How have indoor climbing walls evolved since their introduction?

- *Now indoor climbing is its own sport; some “climbers” excel in the gym but have never climbed on real rocks.*

3. List at least three reasons why people sport climb.

- *exercise*
- *socialization*
- *training*
- *personal satisfaction/fun*
- *physical challenge*

4. Name three pieces of equipment that climbers need in order to be safe. For each piece of equipment, describe how it is used as part of the safety system in climbing.

- *Harness: With the rope, provides the link between belayer and climber. When used properly, holds climber’s body in an upright position while on the wall and continues to do so if you fall. Waist belt webbing of both harnesses must be doubled back.*
- *Rope: “Catches” falling climber, absorbing much of the shock.*
- *Belay device: Creates friction on the rope, enabling belayer to catch, hold, or lower the climber with little effort.*
- *Figure 8 follow-through knot: Connects the rope to the tie-in point on the climber’s harness.*

5. What is the most important step to remember, safety-wise, when putting on your harness?

- *Always double back the waist belt webbing of the harness. Both partners must check each other’s webbing before climbing.*

6. a) What does it mean when we say that a rope is “dynamic”, and why is this an important quality of a climbing rope?
- *A dynamic rope has a stretchy, or elastic quality. This is important because the elasticity of the rope absorbs much of the shock when a climber falls.*
- b) If you cut out a cross-section of a climbing rope, what parts would you see?
- *A braided nylon core protected by an outer nylon sheath*
- c) Standard climbing ropes are approximately how long and how thick?
- *50 to 60 metres long; 10 to 10.5 mm in diameter*
7. a) Name two common belay devices.
- *ATC and Gri-Gri. Also acceptable are Pyramid, Sticht plate, and Tuber.*
- b) How do belay devices help a belayer to stop a climber’s fall?
- *Belay devices help stop a climber’s fall by creating friction on the rope, which allows the belayer to stop the fall in a controlled manner with little effort.*
8. a) What is the name of the standard tie-in knot for climbers?
- *Figure 8 (follow-through) knot.*
- b) Why is this a good knot for climbers to use?
- *It is strong, secure, and easy to check.*
9. a) Define belaying.
- *Belaying is managing and maintaining control of the rope to hold, catch, and lower a climber. This action safeguards the climber against a fall.*
- b) Describe the steps that the climber and belayer must go through before climbing.
- Before climbing:**
- *both partners put harnesses on, doubling back waist belt webbing*
 - *put rope through belay device and clip device and rope into locking carabiner attached to belay loop on belayer’s harness*
 - *climber ties the rope into their harness’s tie-in point with a figure 8 knot*
 - *climber and belayer check each other’s equipment*
 - *begin dialogue and start climbing*

10. Describe the difference between top rope climbing and lead climbing.

Top rope climbing:

- *rope is already set up through an anchor at the top of the climb*
- *because the rope is above the climber at all times, falls are stopped very quickly and easily*

Lead climbing:

- *rope is not threaded through anchor; climber must climb to anchors and thread rope before being lowered*
- *climber is protected from falls by clipping in to a series of bolts and quickdraws*
- *climber usually falls farther and the falls are more difficult for the belayer to control*

11. What is fall factor?

- *The ratio of the length of a fall to the total length of rope between climber and belayer*

12. Describe three strategies that beginning climbers can use to improve their climbing technique.

- *plan your moves before you climb a route*
- *maintain 3 points of contact on the wall at all times*
- *look for the best part of each handhold*
- *climb with straight arms (avoid flexing excessively)*
- *trust your feet and stand on them*
- *place your feet carefully*

13. What does a climber want when she commands her belayer to “take”?

- *She wants the slack in the rope to be taken in quickly, usually because she is about to fall.*

14. Why do climbers use chalk?

- *To keep their hands drier*
- *To avoid slipping off handholds due to sweaty hands*

15. a) How do belay devices help a belayer to stop a climber’s fall?

- *Belay devices help stop a climber’s fall by creating friction on the rope, which allows the belayer to stop the fall in a controlled manner with little effort.*

b) Name two common belay devices. How do these belay devices differ from one another?

- *ATC and Gri-Gri. Also acceptable are Pyramid, Sticht plate, and Tuber. Gri-Gri is a self-locking belay device that automatically locks the rope in a fall, while the belayer’s braking action alone stops a fall with the ATC, Pyramid, Sticht plate, or Tuber.*

16. What is the name of the standard tie-in knot for climbers? Why is this a good knot for climbers to use?

- *Figure 8 (follow-through) knot.*
- *It is strong, secure, and easy to check.*

17. Describe the difference in the actions of a top rope belayer and a lead belayer.

- *When belaying a top rope climber, the belayer takes in rope as the climber moves up the wall. When belaying a lead climber, the belayer lets rope out as the climber ascends.*
- *Before climbing:*
 - *both partners put harnesses on, doubling back waist belt webbing*
 - *put rope through belay device and clip device and rope into locking carabiner attached to belay loop on belayer's harness*
 - *climber ties the rope into their harness's tie-in point with a figure 8 knot*
 - *climber and belayer check each other's equipment*
 - *begin dialogue and start climbing*

18. a) What is fall factor?

- *The ratio of the length of a fall to the total length of rope between climber and belayer*

b) Is it better to have a high or a low fall factor? Why?

- *It is better to have a low fall factor. When the fall factor is high, it means that there is a greater amount of force on the climber's body. With a low fall factor, the stretch in the rope absorbs much of the shock, and the climber is caught more "softly" or gently.*