

REFERENCE GUIDE



CASI
ACMS

CANADIAN ASSOCIATION OF
SNOWBOARD INSTRUCTORS





**CASI
ACMS**

**CANADIAN ASSOCIATION OF
SNOWBOARD INSTRUCTORS**

CANADIAN ASSOCIATION OF SNOWBOARD INSTRUCTORS

186 Hurontario Street, Suite 201
Collingwood, ON
L9Y 4T4
CANADA

www.casi-acms.com



/casiacms

PRODUCED IN CANADA

© 2021 Canadian Association of Snowboard Instructors
All rights reserved.

ISBN: 978-0-9950608-0-7

CASI-ACMS



The purpose of this Reference Guide is to serve as the resource manual of the Canadian snowboarding technique for snowboard instructors.

PREFACE

Because technique is constantly changing with advances in snowboarding, it is the responsibility of each member of the Canadian Association of Snowboard Instructors to change and update their riding and teaching methods.

This guide is made up of the following sections:

INTRODUCTION

Provides a short overview of the Canadian Association of Snowboard Instructors (CASI), its mandate, and a list of the people responsible for the operation of the Association. It also includes the Code of Ethics for CASI members to follow.

RISK MANAGEMENT

An instructor's first and foremost concern. This section outlines some safety and risk management considerations for instructors to be aware of when teaching.

TEACHING THEORY

Introduces the instructor to various skills, attributes, and tools, which will assist in becoming an effective instructor.

THE SKILLS CONCEPT

This is an outline of the five basic riding skills, as well as their application to snowboarding.

TEACHING BEGINNER SNOWBOARDERS

An instructor's guide to teaching the QuickRide System™ - CASI's beginner teaching methodology. The QuickRide System provides a comprehensive framework for progressing new snowboarders through the early stages of learning.

SKILL DEVELOPMENT

This is a combination of teaching methods (through explanation and illustration), skill development manoeuvres, progressions, tactics and outcomes for intermediate, advanced and expert riders. It is designed as a reference, to assist instructors in teaching snowboarders beyond the novice stages.

APPENDICES

Includes information regarding Physics & Biomechanics in Snowboarding, Basic Anatomy, Teaching Children, Instructor Training, Terrain As a Teaching Tool, Equipment Considerations, and any supplementary information to the other sections.

COMMENT:

This guide is only one of many resources for understanding snowboarding technique and teaching others. Experience, exposure to other professionals, certification courses, clinics, seminars, and other reading material all contribute to the on-going development of a proficient

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

What is CASI?	7
CASI's Organizational Structure	7
Code of Ethics	8

CHAPTER 2: RISK MANAGEMENT

Safety Rules	9
The Alpine Responsibility Code	10
Slope Designations	11
Smart Style	11
Teaching in Freestyle Terrain	12
Duty of Care	13
Accidents on the Slopes	14

CHAPTER 3: TEACHING THEORY

The Role of the Snowboard Instructor	16
Principles of Learning	17
The Practical Teaching Skills	18
Guest Service & Safety	18
Communication & Lesson Structure	20
Learning Styles	21
Using Questions	22
Setting Goals & Objectives	22
Methods of Presentation	24
The Training Cycle	27
The Lesson Format	28
Demonstrations	29
Analysis & Improvement	30
The "TT-PP-EE" Model	32
The PTT Format	32
Technical Content	35
People Skills And The Guest Experience	36

CHAPTER 4: THE SKILLS CONCEPT

The CASI Technical Model	41
Position & Balance	43
Pivot	47
Edging	49
Pressure	51
Timing & Coordination	55
The Core Competencies	57
The Advanced Competencies	58
Other Applications of the Skills Concept	59
Turn Types	60

CHAPTER 5: TEACHING BEGINNER SNOWBOARDERS

Choice of Terrain	64
The QuickRide System	65
The S.A.F.E. Concept.....	65
QuickRide System Overview.....	66
1: Basics	67
2: Sliding	73
3: Control	75
4: Turning.....	77
5: Flow.....	87
Customizing Quickride For Different Students.....	89

CHAPTER 6: SKILL DEVELOPMENT

Teaching Beyond Novice	91
The Skill Development Model.....	92
The 3 Teaching Realms: Piste, Off-Piste & Freestyle.....	94
Level 2 Instructor: Intermediate Skill Development	95
Developing Sliding Turns	95
Introducing Carving.....	97
Introduction to Terrain Adaptation.....	99
Introducing Switch Riding.....	101
Basic Flatland Tricks.....	103
Introducing Jumping.....	105
Level 3 Instructor: Advanced Skill Development.....	107
Refining Advanced Turns on Groomed Runs.....	107
Refining Terrain Adaptation Skills	109
Refining Freestyle Riding	111
Level 4: Expert Skill Development	119
Expert Carving	119
Expert Freeriding Skills	121
Creating Variation in Freestyle Riding.....	122

APPENDICES

Appendix 1: Teaching Children.....	123
Appendix 2: Instructor Training	135
Appendix 3: Physics & Biomechanics in Snowboarding	143
Appendix 4: Basic Anatomy & Movements For Snowboarding.....	151
Appendix 5: Terrain As A Teaching Tool.....	161
Appendix 6: Freestyle Terrain	165
Appendix 7: Tactics Glossary	173
Appendix 8: Equipment Set-Up.....	179
Appendix 9: Terminology.....	187
Appendix 10: CADS: Fun, Inclusion, Respect.....	190

INTRODUCTION

What is CASI?



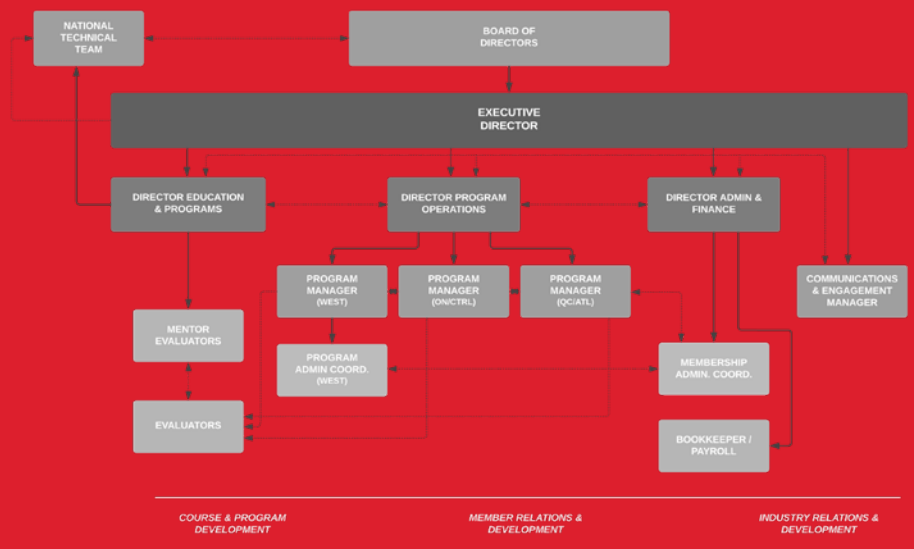
The Canadian Association of Snowboard Instructors (CASI) was formed in 1994 and incorporated in 1995.

CASI trains and certifies Canada's snowboard instructors. It ensures that a national standard of safe and efficient snowboard instruction is maintained to serve Canadian snowboarders and the snowboarding industry.

CASI has four regions across Canada:

- British Columbia West /NWT/ Yukon
- Alberta / British Columbia East
- Ontario / Manitoba / Saskatchewan
- Quebec / Atlantic

CASI'S ORGANIZATIONAL STRUCTURE



OUR MISSION:
To inspire the world's best
snowboard instruction.

CONSULTANT:
LEGAL

CONSULTANT:
HR

CONSULTANT:
STRAT PLANNING

CONSULTANT:
PRODUCTION

OUR VISION:
To be the global leaders in
interactive education, innovation
and professional development that
is synonymous with a winning,
diverse and accessible snow sports
industry.

WHO GOVERNS CASI?

CASI is one of the only professional snowboard instruction certification bodies in the world that is run entirely by snowboarders. It has a seven-member national Board of Directors; six elected by the membership, plus the Executive Director (who is a non-voting member). The Board conducts CASI's affairs and business, which are then administered by the Executive Director.

CODE OF ETHICS

Each Member shall be governed by this Code of Ethics and shall adhere to the following articles at all times, both on and off duty. The rigid observance of the Code will bring prestige and honor to the organization and help to build the profession into one that will stand high in the opinion of the general public and the snowsports industry.

ARTICLE 1: The public expects and deserves the safest, most effective lessons. Being a Member shall be synonymous with the finest aspects of the sport of snowboarding; namely integrity, honor and respect at all times to those who have placed their trust in you and your teaching ability. Further, as snowboarding is a sport enjoyed by many in their formative years, Members have a responsibility to the youth of this country by setting an example for them to follow.

ARTICLE 2: A Member must always strive to further develop their technical and teaching abilities to be the best instructor they can be. Continual self-progression is essential if a Member is to remain current, up-to-date, and relevant as a professional snowboard instructor.

ARTICLE 3: Members are continuously in the public eye as instructors and so must act responsibly, fairly, and professionally at all times. A Member has a responsibility to themselves, their colleagues, and the public to set the best example at all times within the snowsports community.

ARTICLE 4: No Member shall misrepresent him/herself as to their level of certification or membership status within the organization. Members must not teach outside of their certification level while working as a snowboard instructor. Each Member must respect the limits of their training, knowledge, and experience, as per their certification level.

ARTICLE 5: Upon being hired as a snowboard instructor, Members must interact with their employer in a professional, competent and timely manner at all times – representing the association to the best of their abilities, and must meet professional financial obligations promptly and conduct all their business dealings in a manner befitting the standards of the organization.

ARTICLE 6: Members may have the opportunity to represent products or brands in a sponsorship or pro-deal setting. Endorsing products purely for personal gain, without true knowledge and conviction of the products' benefits, is a misrepresentation of the ethos of the association, and misleading to colleagues and the general public.

ARTICLE 7: Members must not jeopardize or in any way abuse the promotional relationships between suppliers or other supporters and the association. These relationships are in place to support snowboard instructors working in the industry.

ARTICLE 8: At no point can a Member be involved with any illegal or criminal activities. The use of alcohol or any prohibited substances, under any circumstances, while working is not permitted.

ARTICLE 9: Members conducting training courses, lessons, or other programs or administering programs must ensure that they have the necessary approvals and land use agreements in place for the areas in which they operate, and have the proper insurance coverages in place for the activities being performed.

ARTICLE 10: The Board of Directors shall take appropriate disciplinary action should any breach of the Articles of the Code occur. Action can vary from a simple reprimand to lifetime suspension of membership.

RISK MANAGEMENT

We work in an often-unpredictable outdoor mountain environment.



Managing risk is our primary concern as snowboard instructors. Teaching snowboarding comes with a long list of potential risks. A good instructor should not only be aware of these risks, but also have the knowledge, training and experience to be able to manage them appropriately to maximize the student's safety, enjoyment and progression.

Instructor certification is one step towards being able to perform proper risk management. Staff training, emergency action plans, medical response protocols, first aid training, practice teaching, teaching experience, equipment assessment and terrain knowledge are just some other examples of the type of knowledge required for instructors to perform proper risk management.

SAFETY RULES

Keeping people safe not only involves informing them of common riding safety rules and mountain etiquette, but also ensuring these rules are adhered to throughout the lesson. Teaching students about the safety rules (including the Alpine Responsibility Code) through clear explanations, good examples and constant reminders, is an essential teaching skill.

THE ALPINE RESPONSIBILITY CODE

There are elements of risk that common sense and personal awareness can help reduce. Please adhere to the code listed below and share with others the responsibility for a safe outdoor experience.

1. ALWAYS STAY IN CONTROL. YOU MUST BE ABLE TO STOP, OR AVOID OTHER PEOPLE OR OBJECTS.
2. PEOPLE AHEAD OF YOU HAVE THE RIGHT OF WAY. IT IS YOUR RESPONSIBILITY TO AVOID THEM.
3. DO NOT STOP WHERE YOU OBSTRUCT A TRAIL, OR ARE NOT VISIBLE FROM ABOVE.
4. BEFORE STARTING DOWNHILL OR MERGING ONTO A TRAIL, LOOK UPHILL AND YIELD TO OTHERS.
5. IF YOU ARE INVOLVED IN OR WITNESS A COLLISION/ACCIDENT YOU MUST REMAIN AT THE SCENE AND IDENTIFY YOURSELF TO THE SKI PATROL.
6. ALWAYS USE PROPER DEVICES TO HELP PREVENT RUNAWAY EQUIPMENT.
7. OBSERVE AND OBEY ALL POSTED SIGNS AND WARNINGS.
8. KEEP OFF CLOSED TRAILS AND OBEY AREA CLOSURES.
9. YOU MUST NOT USE LIFTS OR TERRAIN IF YOUR ABILITY IS IMPAIRED THROUGH THE USE OF ALCOHOL OR DRUGS.
10. YOU MUST HAVE SUFFICIENT PHYSICAL DEXTERITY, ABILITY, AND KNOWLEDGE TO SAFELY LOAD, RIDE, AND UNLOAD LIFTS. IF IN DOUBT, ASK THE LIFT ATTENDANT.

KNOW THE CODE. BE SAFETY CONSCIOUS!



CLASS MANAGEMENT

Organizing a group of students is a key component to keeping them safe and helping the lesson run smoothly. Arrange the group in a way that helps set the class up for them to be able hear you explain and watch up demonstrate, while also keeping them safe from traffic and terrain risks. Be clear in your directions to the group:

- What are they expected to do as they ride down the run?
- Where will they meet?
- When and how should they proceed (following each other, one at a time, in pairs, etc.)?

Without this essential teaching skill, lessons can quickly become disorganized and unsafe.

Terrain Choice & Communication

Once you have assessed your student's skills, fitness, and lesson goals, choosing the appropriate terrain is the next step. Knowing the available options and being aware of how the conditions can change in different weather conditions are both very important. Great teaching skills mean little without ensuring the students are safe.

Outdoor Skills

Teaching snowboarding naturally involves being outside in an alpine environment. An instructor must therefore possess some basic, yet very important outdoor skills. Being prepared, checking the weather forecast and dressing appropriately are simple examples. Consult your resort's grooming report in the morning, so you can be sure of your terrain choices. Also, having well-maintained equipment, resort knowledge, first aid training and general outdoor experience all help you provide a safe riding experience to your guests.

SLOPE DESIGNATIONS

COLOUR	ABILITY LEVEL	SYMBOL
Green	Beginner	● Green Circle
Blue	Intermediate	■ Blue Square
Black	Advanced	◆ Black Diamond
Black	Expert	◆◆ Double Black Diamond
Orange	Freestyle Terrain	● Orange Oval



SMART STYLE

FREESTYLE TERRAIN DESIGNATION & RATING SYSTEM

Freestyle terrain may include halfpipes, as well as terrain parks and natural terrain features. They are provided for your enjoyment and offer adventure, challenge and fun. However, freestyle terrain use, like all riding, exposes you to the risk of serious injury. Prior to using freestyle terrain, it is your responsibility to familiarize yourself with all instructions and warnings and to follow “your responsibility code”.

1. FREESTYLE TERRAIN CONTAINS MAN-MADE AND NATURAL TERRAIN VARIATIONS.
2. FREESTYLE TERRAIN CHANGES CONSTANTLY DUE TO WEATHER AND USE.
3. INSPECT FREESTYLE TERRAIN BEFORE USING AND THROUGHOUT THE DAY.
4. IN JUMPING AND USING THIS TERRAIN, YOU ASSUME THE RISK OF SERIOUS INJURY.
5. BE COURTEOUS AND RESPECT OTHERS.
6. ONE USER ON A TERRAIN FEATURE AT A TIME.
7. NEVER JUMP BLINDLY - USE A SPOTTER WHEN NECESSARY. LOOK BEFORE YOU LEAP!
8. IT IS YOUR RESPONSIBILITY TO CONTROL YOUR BODY ON THE GROUND AND IN THE AIR.
9. ALWAYS CLEAR THE LANDING AREA QUICKLY.
10. ALWAYS RIDE IN CONTROL AND WITHIN YOUR ABILITY.



TEACHING IN FREESTYLE TERRAIN

When teaching in the terrain park, safety is paramount, and the various points of safety and etiquette should be discussed with riders prior to entering the park:

- Respect the Alpine Responsibility Code
- Use spotters on jumps and hand signals ("O" for jump open, "X" for jump not open).
- Take a warm-up / park familiarity run.
- Do not stop below the landings of jumps; using "stop zones" to stop safely out of the flow of traffic.
- Always call your drop-ins.

BLIND SPOT AWARENESS

When introducing a new manoeuvre, tactic, or terrain, students should be made aware of their reduced field of vision. Fear, uncertainty, environmental aspects, speed and the complexity of the manoeuvre can lead to "tunnel vision". Even for experienced riders, peripheral vision is narrowed down to the required task. Therefore, raising this point is fundamental to the safe execution of new tasks.



BLIND SPOTS

Toe and heel side turns have different fields of vision.

DUTY OF CARE

As a snowboard instructor, when you agree to undertake the instruction of a person (adult or child), you enter into a relationship with that individual out of which the courts will impose a duty of care for the safety of that student. This commences when you first meet your student at the beginning of the lesson, and ends when the lesson is completed.

In the eyes of the law, your role is not simply to teach your students the technical points of riding a snowboard, but to act as a knowledgeable, responsible and vigilant guide to your student while on the mountain. Instructors must teach with the Alpine Responsibility Code in mind, and ensure that students are riding under full compliance with the code. Students should also understand the reasons for doing so.

Instructors must exercise good judgment in selecting the terrain on which the lesson will take place, and ensure that it matches the student's ability level, minimizing risks arising from natural hazards.

When working with children, the courts will impose and expect a greater duty of care. This duty increases as the age of your student decreases. Courts in Canada hold that the duty of care owed by a person charged with the supervision of children is that of a "careful or prudent parent". Knowing this, it's important to remember that

the actual act of snowboarding may be only a small part of an instructor's responsibilities during a lesson. Instructors will not have this duty of care discharged until such time that the child has been safely released into the care of another responsible adult (depending on snow school policies).

A genuine concern for the well being of students, as well as a knowledge of resort / snow school policies will ensure that this responsibility is respected at all times.

The Instructor's Obligation

It is important for an instructor to find a location that offers the best possible terrain for the exercise or skill being attempted. The area chosen should:

- Be sufficiently wide to accommodate skier/snowboarder traffic and a snowboarding class.
- Be free of drop-offs or blind spots.
- Have easy access and low skier/rider traffic.
- Be free of intrusive equipment such as lift line towers and snowmaking guns.
- Be properly illuminated to minimize shadows



CLASS MANAGEMENT

Avoiding any incidents is the best strategy to keep everyone happy and safe.

- Know how many students you have in your class.
- Stop and count your students often.
- Ensure students are warm and comfortable. Learn to recognize signs of distress - shivering, lack of talking, etc. and ask students often if they are comfortable.
- Know where you are on the mountain at all times.
- Choose runs that are within your students' range of abilities.
- Carry some form of communication device (cell phone, radio) with you, so you can inform ski patrol of any incidents.
- Keep all students within eyesight at all times - especially with children!
- When stopping on the trail, ensure all group members are to the side of the run, away from any potential risk of collision.
- Know the *Alpine Responsibility Code*, and follow it!

ACCIDENTS ON THE SLOPES

If an incident occurs...

Even the most responsible instructor can have a mishap during his/ her lesson. Every instructor should be aware that, although injuries in snowboarding classes are extremely rare, they do occur, and there are some immediate actions the professional instructor should take.

Note: The policy of your ski / snowboarding school and ski area supersedes this guideline.

Report any and all injuries to yourself or members of your class immediately and in the prescribed manner.

a) Take care of the injured person. DO NOT MOVE an injured person, unless there is a high risk of further injury or death. In this case, the instructor must first protect himself/herself and then remove the patient from further danger, regardless of the injuries.

- If you choose to intervene on the scene of an incident, immediately establish a security perimeter to keep yourself safe. Placing someone or something uphill from the incident to clearly signal the situation to oncoming guests.
- Keep patient warm.
- Contact Ski Patrol immediately either via cell phone or radio, or if necessary by sending two of the stronger riders in your group to the bottom of the closest lift. Be sure they are capable and know how to get to that lift, and that they have an adequate description of the location of the accident.
- If it will take a long time for the Ski Patrol to arrive, the instructor should arrange to meet the remainder of the group at a specific time and place.

b) Make notes as to the situation at the time of the accident, including:

- Snow conditions.
- Instructor's location.
- Student's location.
- How the accident occurred.
- Name, address, local address and telephone number of any other person involved (e.g. a collision).
- A statement from anyone who can do so.
- Any necessary measurements (e.g.: if student has gone off a run, hit something, etc.). Use board length as a measuring device.
- Any relevant information in regard to your instructions to the class and the injured person's response to such instructions.
- The date and time the notes were taken (they may be needed in court).

c) If the injured person is taken by the Ski Patrol, check what the injury was and what steps the Ski Patrol has taken. Do not voice any speculation or judgment to anyone or make any statements in public.

TEACHING THEORY

This chapter outlines some basic teaching principles and illustrates how to apply them to teaching snowboarding. These are the keys to becoming an effective instructor. Your number one goal in teaching should be to create a positive, fun, and memorable experience!



THE ROLE OF THE SNOWBOARD INSTRUCTOR:

A snowboard instructor doesn't just teach the technical aspects of snowboarding. As an instructor, you are in a unique position, and often looked at as a peer, friend, or a guide. Instructors can be the deciding factor in whether or not a beginner chooses to become a snowboarder, and as such you have an impact on the future of snowboarding. You can create life-long snowboarders!

The following skills and attitudes will help make you more effective as an instructor:

1. **An understanding of the information you want to transfer.** Instructors must have credibility. You must be able to "do as you say." It is important to demonstrate adequate skill in your riding, and a thorough understanding of your sport. This includes a sound knowledge of snowboarding technique and equipment. These subjects all are covered in this Reference Guide. You are the primary source of information for your students, so know your subject!
2. **A positive attitude.** Instructors must build a positive attitude towards learning. A student trying to acquire new skills or to apply new techniques can become frustrated and anxious. You, as the instructor, must be patient and supportive. The Principles of Learning and techniques of training outlined in this section will help you to build and maintain a positive attitude in the teaching environment.
3. **Effective communication.** Approximately 60% of all communication is altered in some way as a result of interpretation, misconception, or some other factor. Your students can easily misinterpret what you say. To avoid confusion, make your message as clear and direct as possible.
4. **Ability to analyze performance.** You will be required to analyze each student's performance by pinpointing the cause of a problem (cause and effect relationship). Based on your analysis, you will set performance goals and make sure the students understand their performance objectives.
5. **Leadership in coaching and guiding your students.** An understanding of snowboarding theory and practice is fundamental to being a good instructor. The best instructors also develop good leadership skills so that they can communicate more effectively with their students, and pass on their information and skills. The instructor who can take the teaching material and tailor it to the needs of the individuals in the group will achieve better results.



PRINCIPLES OF LEARNING

The following principles will help you in creating a valuable lesson experience.

1. **Telling Doesn't Ensure Learning.** One of the most common errors made in teaching is to tell students something, and assume that they have learned it! They may not have understood the information in the first place. Telling is not teaching and it does not ensure learning. It is simply one-way communication. Have students put ideas into practice to demonstrate that they have learned. Help them to learn by having them use the information or skill that you have described.
2. **People Learn By Doing.** People only learn once they have processed information in some way. Practice makes perfect – doing makes sense. Encourage students to try the skills you are teaching, and accept failed attempts as part of the learning process.
3. **What People Do First, They Learn Best.** Teach a student one thing at a time, to ensure understanding and correct performance of a manoeuvre before going on to the next. If we learn the correct technique first, we will continue to use it throughout our riding. Unfortunately, people can learn incorrect methods just as easily as correct methods – explaining, no matter how accurate, is no substitute for seeing, doing, and feeling with the right guidance.
4. **Small Steps Are The Best Way To Learn.** Break your information down into small steps. This allows the student to absorb each new piece of information and to experience it correctly before he/she is presented with another piece to be learned. Organize these small steps, or “building blocks”, into a logical order that allows for cumulative, sequential learning. Through observation and questioning you can check the student's learning and understanding on the building blocks before proceeding to the next step.
5. **Immediate Feedback Improves Learning.** Give positive feedback to let students know what is being performed correctly, so that they have a basis for evaluating their own performance. Also provide them with tips and suggestions to improve the next attempt. The sooner students receive feedback about their performance, the more effective the learning will be. For example: after observing one or two turns made by the student, review the specific skill, provide positive reinforcement and tips for improvement, and give a demonstration of the skill. As you demonstrate, have the student pay particular attention to what it is he/she is being asked to do. Prior to the next run, quickly review that specific technique again, and have them try it.



THE PRACTICAL TEACHING SKILLS

The following teaching skills will assist you in structuring an effective lesson.

Practical Teaching Skill #1

GUEST SERVICE & SAFETY

1) Choose safe and suitable teaching terrain, with the following points in mind:

- The ability level of the student
 - ☐ Use questions to assess student ability, but don't rely on answers only! Follow up by checking your student's skills on easy terrain.
 - ☐ It's always a good idea to start on easier terrain for the level of the student and only increase the difficulty once you have assessed their riding.
 - ☐ Even with more advanced students it is important that the instructor act as a guide throughout the lesson. Choose terrain that is safe and point out any potential hazards along the way.
- The learning stage of the student in relation to the skill/manoeuvre (*see Skill Development Model*)
 - ☐ Instructors must understand that students continually move up and down through the various stages of the skill development model as we introduce new challenges to the lesson, and we must adjust the terrain accordingly. When introducing a new skill or movement it is important to adjust the terrain and/or speed accordingly to help ensure safety and success for your students.

2) Create a positive and student-centered learning environment.

- Our number one priority as instructors is to provide positive and memorable experiences for our students so that they will come back for more, and tell their friends! In order to do this we must adjust our approach for each lesson; some students will require a greater focus on safety while others will need a stronger focus on technical improvements, still others will prefer the priority to be placed on mileage and exploring new terrain. The combinations and ratios are almost endless and it is your job as an instructor to find the perfect mix for each student.
 - ☐ Ask questions to find out what they want from their lesson.
 - ☐ Find out what motivates them.
 - ☐ Try to identify their dominant learning style (thinker, watcher, or doer).
 - ☐ Ask them about their best previous snowboarding or lesson experience.
 - ☐ Check with them regularly throughout the lesson to see if you are on the right track.
 - ☐ Remember - it's about them, not you!
- Be encouraging! Regardless of what you are teaching or how quickly they are picking it up, you need to be encouraging your students at every step. What may seem routine for you can appear a huge challenge for your students, from straight running to their first 360. Your attitude will set the tone for the lesson. You need to be as enthusiastic about your 5th lesson of the day or your 100th lesson of the season as you are about your first.
- Set an appropriate pace. There is not one ideal pace of learning. It's different for everyone and can even differ for individuals with different tasks and different environments. A single student may progress quickly in a groomed environment but freeze up off piste or in the park. Your goal as an instructor is to adjust the pace of your lesson so that your students can feel comfortable and unintimidated, and can celebrate accomplishments while experiencing the right amount of challenge and improvement. This is not always easy and you will need to be keenly aware of your students' emotions to gauge where they fall on the scale between boredom and fear.

- ❑ Try to find that “sweet spot” between boredom and fear, where students will be motivated and challenged enough to improve their skills, but not so much that they are apprehensive or scared.



3) Ensure that you manage risk in your teaching at all times.

- Snowboarding has inherent safety risks. As the instructor you are responsible for the well-being of your students at all times during your lesson. Take steps ahead of time to manage this risk, creating a safer learning experience. Regardless of the age of your students you are bound by Duty of Care to keep them safe at all times. Safety must be at the forefront of every decision you make during your lessons.
- Structure your lesson in small, manageable steps. It is important that you do not progress the technical content of your lesson or the terrain you use too quickly for your students. Allow them to become comfortable with their current abilities before challenging them with anything new.
- Anticipate safety concerns ahead of time. Try to plan a few steps ahead in your lesson, so you are prepared for what you will do next.
 - ❑ Is the tactic or exercise you are teaching appropriate for the slope you are on and the traffic volume of the day?
 - ❑ Have you identified safe stopping locations at the side of the slope, well in view of downhill traffic?
 - ❑ Have you shared a common rendezvous spot with your students in the event that you get separated?
 - ❑ Have you reviewed lift use and safety with your students?
 - ❑ Do you know and have you taught your students the Alpine Responsibility Code? The Smart Style program in parks?
 - ❑ Are there weather considerations to be aware of? Icy snow, poor visibility, etc.

Practical Teaching Skill #2

COMMUNICATION & LESSON STRUCTURE**1) Effective communication is the key to ensuring understanding in your lessons.**

It's important to remember that not all communication comes from what you say. The way you interact with your students starts from the moment they meet you at the lesson meeting area.

Verbal Communication

Some tips for effective verbal communication:

- Say what you mean in a concise and simple manner.
- Use plain language that non-snowboarders can understand. Avoid the technical terms - find a way to relay these concepts in a simple way.
- Respect the diverse backgrounds and experiences of your group members.
- Ask the group if they understand.

Non-Verbal Communication

A large part of what we say can be misinterpreted, which is why non-verbal communication is so important.

- Maintain an "open" posture - make eye contact, keep arms uncrossed and not near the mouth or face, and smile.
- Minimize any negative facial expressions.
- Touch can be a useful tool in communication - through a handshake, a high-five, or a tap on the shoulder. Use touch sparingly and careful however, particularly if you have just met your student. If using hands-on assistance to help students, ask first if it's OK with them.
- Give adequate personal space.



LEARNING STYLES

Everyone has their own way of learning new skills. In general there are a few types of learners:

- **Cognitive Learners (“Thinkers”)**
- **Experiential or Kinaesthetic Learners (“Doers”)**
- **Visual or Observational Learners (“Watchers”)**

We are all a blend of each style, but in each of us one type tends to be dominant. Each style has advantages and disadvantages. Be aware of the differences – teach effectively by tailoring the lesson to the needs of each rider.

COGNITIVE LEARNERS (“THINKERS”)

Characteristics:

- Curious.
- Asks questions.
- Over-Analyzes things.
- Resists immediate action.
- Underplays emotion/enthusiasm.

Instructional approaches:

- Provide ample reading material and time for reading and reviewing.
- Need detailed descriptions of tasks.
- Provide time for adequate discussion and debate.
- Devise alternative plans and strategies.
- Ride the lift with them to “talk technique”.

EXPERIENTIAL OR KINAESTHETIC LEARNERS (“DOERS”)

Characteristics:

- Keen to try.
- Can be impatient.
- Learns from mistakes.
- Constantly refines performance.
- Explanations have little meaning.
- Attempts to do things without help.
- Usually first to ride behind instructor.

Instructional approaches:

- Provide opportunity for “safe” experiments.
- Encourage repetition of successful action.
- Give short, precise explanations.
- Reinforce positive results.
- Provide guided mileage.

VISUAL OR OBSERVATIONAL LEARNERS (“WATCHERS”)

Characteristics:

- Avoids making mistakes.
- May hang back, watching others first.
- Imitates success, adapts easily.
- Good listeners.
- Needs repeated demonstrations.

Instructional approaches:

- Explanations must create images.
- Demonstrations are important.
- Allow time for mental “rehearsal”.
- Discuss analytical and abstract material.
- Reward innovation.
- Encourage activity.
- Build on results.

Consider the learning style of each student, as well as the lesson content, in selecting a teaching approach. Whatever the method of teaching, adapt to the needs of your students and involve them in the planning process. Students who “buy into” the program will learn more effectively.

USING QUESTIONS - “FACILITATION”

All good instructors interact with their students. This interaction can be taken on in the form of questions, but really you’re facilitating learning.

Questions raise the level of attention of most students. It also gives you immediate feedback on how your information is being received. Try to not let the same person answer every time. Ask each person specific questions (e.g.: “John, what movement could we use on this kind of terrain to improve our absorption?” or “Jan, how did it feel when you made that turn?”) If there are good ideas, get the student to elaborate by demonstrating them or expanding on them. This is a good way to involve the students, in an informal way, in their own learning. It also can help you build a rapport with your students.

Asking questions takes into account the concept of “facilitation”. By incorporating effective questioning, you convey leadership, raise awareness, and ensure understanding. Tied to this concept of facilitation is the idea of “pacing”, and ensuring that your lesson isn’t moving ahead at an unreasonable speed. Use your Analysis & Improvement skills as well as your use of questioning to gauge this.

Types of Questions

- **Open Questions:** Invite a large range of answers including, unexpected or unwanted ones! Example: “What was different between this one and the last one?”
- **Closed Questions:** Simple yes/no type answers. Example: “Did that movement make a difference?”
- **Leading Questions:** Intended to facilitate or lead the group on a new tangent. Example: “Now that we are using our shoulders less, what body part we can use instead?”

2) Structure your lesson with the content in mind.

SETTING GOALS AND OBJECTIVES

This is a key to building a successful lesson - without goals, how will you know what to teach? Goal setting is a shared responsibility between you and your students.

Establishing performance goals and objectives is an important part of the teaching process, because it forces you to define the level of performance you want to achieve by the end of the lesson. Once the goals have been set, you can decide on a student-oriented lesson plan.

The entire lesson focuses on an objective (a level of performance, outcome, or manoeuvre). It’s not an arbitrary collection of skills and drills that have no relevance to the students’ needs. There should be focus!

Advantages:

- Good for applying a focus to your lesson.
- All lessons can benefit from a clear goal!
- Makes delivery of your lesson simpler to follow for students, and simpler for you to deliver.
- Provides clarity - ensure that each segment of the lesson relates back to your original focus.

Good goals should be “S.M.A.R.T.”:

SPECIFIC

Both you and your student should identify and specify the performance level expected by the end of the lesson.

MEASURABLE

Both the student and instructor should establish the yardstick for measuring the performance.

ACHIEVABLE

Both should make certain the performance requirements are achievable within that time frame, given the student’s current skills.

REALISTIC

Are the goals realistic based on the terrain available, snow conditions, student skill level, etc.?

TIME-BASED

Try to determine an acceptable time frame for your goals. Remember the need for mileage and practice!

When setting the objectives for the lesson, employ your communication skills:

- Inquire about previous snowboarding experiences and successes.
- Listen to your students.
- Choose objectives that you feel fit well with their current skills and abilities.
- Review the chosen goals with the student, to make sure they match up with what your student wants to learn.

Following your lesson, take some time to evaluate the effectiveness of your goals, and refine for the next time.

Student Goals vs. Instructor Goals

As an instructor, it's important to take your student's goal (e.g.: improving carving, or riding the trees), and translate that goal into the technical focus for your lesson. Some examples:

STUDENT'S DESIRED IMPROVEMENT	INSTRUCTOR FOCUS
Improve my carving	Develop edging skills
Riding the trees	Improving timing & coordination skills
Learning to do a 360	Develop rotation skills
Improving my toeside turns	Improving position and / or balance

METHODS OF PRESENTATION

Once the goal of the lesson is determined, we need a way to transmit our chosen information to our students. This is the second decision to make in planning your lesson – which of the following methods will your students respond to most successfully? The common thread between each of the following Methods of Presentation is the goal of the lesson. The following are methods of presenting your goal, in an instructional approach.

BUILDING BLOCK

The Building Block approach involves a series of small steps, each building on the previous. Once the student is capable of performing one step, they are ready for the next, and the instructor can move forward (or backward) in the progression, in response to student performance.

Advantages:

1. The step-by-step approach calms apprehensive students and students with confidence issues.
2. Good for introducing new material, or something the student hasn't tried before.
3. Helps to reduce the potential consequences of new manoeuvres or skills. Keeps students safe.

Example:

- Intro to edging exercise (Gas Pedal).
- Sideslip with one foot attached.
- Assisted sideslip with both feet attached.
- Unassisted sideslip.

Additional Considerations:

- Building Block progressions are not set in stone! Instructors must be aware of the progress of students when choosing what the next step will be. For example, are students struggling with the current step? Will they benefit from moving backwards in the progression in order to re-establish skills that aren't yet present? Or, perhaps students need to move ahead in the progression more quickly.
- Building Block lessons aren't just for beginners - any time a student is learning a new skill, or there is an element of danger or consequence involved, it's a good idea to break the skills down into smaller, more manageable chunks.
- Building block progressions may be based around one of the three components of Terrain, Manoeuvre or Development. For example, using progressing terrain to advance the skill level of the student.

WHOLE, PART, WHOLE

This method of presenting a lesson involves looking at the rider's overall skills (the "Whole"), and deciding which skill needs to be developed further (the "Part"). After some development of the "part", the exercises or tactics are then put back into their riding (the final "Whole"). During the "part", continuous analysis is required, as further development may be necessary.

Advantages:

- Good with private or semi-private lessons.
- Good for mobile students – students who have some experience and can get around the mountain already.
- No need for prior knowledge of the student and their riding level or style.
- Helps in both refining skills with mobile riders, and introducing a new aspect to their riding.

Example:

Have your student complete a warm-up run at their level of comfort and confidence, and on terrain that they would typically ride. After watching and analyzing their riding during this run, you decide they can benefit from working on improving edging performance for carved turns. Demonstrate and have students try a static edging exercise, highlighting the movements required to establish a “pure edge”. Following this, you may ask the student to try a series of traverses, just focusing on leaving a pencil line in the snow.

Once you are happy with their grasp of this new sensation of “pure edge”, re-visit terrain similar to the warm-up run. Conclude the lesson by having students use this concept in their own riding, using structured freeriding that allows them to feel this new aspect of the skill of edging in their riding, with the goal of leaving pencil lines in the snow.

Additional Considerations:

- The initial “Whole” phase of W.P.W. requires the instructor to analyze the student’s current level of ability, and establish a plan for the “Part”.
- Within a “Whole, Part, Whole” sequence, it may be possible to have smaller sub-sequences. For example, when choosing a number of tactics to have your students try during the “Part”, you may have to progress them in such a way that allows them to have the most success, similar to a Building Block progression. Alternatively, you may choose to present the tactics in a way that allows them to feel alternate feelings or analogies, similar to Guided Discovery.

GUIDED DISCOVERY

In this method, a couple of different approaches can be useful.

Approach #1: The instructor sets the riding goal in his/her head, depending upon the needs and objectives of the class. Although the goal for the lesson should be clear, students may not always know your chosen approach to achieving that goal. The instructor then “guides” them through the process of achieving that goal through a trial of various tactics, terrain situations, or manoeuvres.

Questioning the students after trials, and prior to the end of the lesson will ensure that learning happens.

Approach #2: The instructor may specify a goal or challenge for the riders, but not the method to get there. He/she then tasks the students to try to come up with a solution for that technical challenge, with input from the instructor. Questioning the students during the development of their riding, and prior to the end of the lesson will ensure that learning happens.

Advantages:

- Good with large groups, schools, etc. Also good for experiential learners (“doers”), children, and high-energy students.
- Provides lots of mileage and movement.

Example of approach #1:

The instructor decides that absorption skills are lacking in the students. He has the students ride over bumpy terrain with stiff legs, and then asks whether they felt any positive or negative effect of riding this way. He may then ask students to ride similar terrain with “soft” legs. Again, he will ask students to highlight the different sensations.

Asking leading questions helps to ensure students recognize the skills that they learned. (e.g.: “Did you find you were smoother with your legs flexible?” and “Which allowed you to stay in control?”)

Additional Considerations:

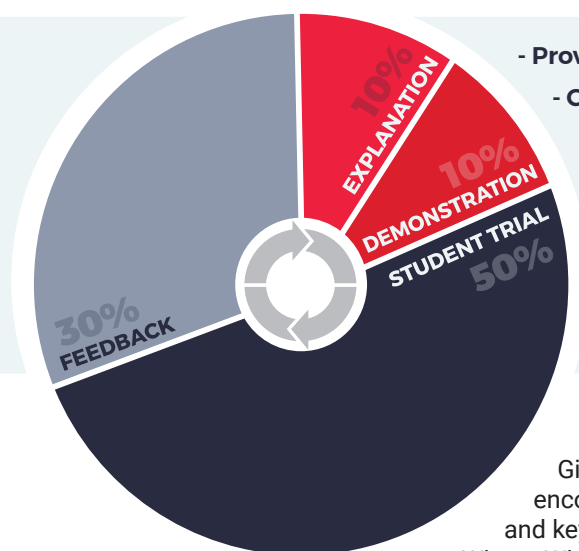
- The use of questions is crucial to a successful Guided Discovery lesson. How can questions ensure learning? Consider the difference between types of questions. (See “Questions” above).

- Try to use the varied conditions available to you on a particular day to help give your Guided Discovery lesson some real-world credibility. For example, pressure distribution on a powder day, or angulation in icy conditions. Keep the pace fast, and allow students time to really try new feelings. At the end of the lesson they should feel that they've learned, but without being taught.



THE TRAINING CYCLE

The Training Cycle will help to ensure that your lessons follow a clear format. The Training Cycle is a systematic approach which:



- Provides for immediate two-way communication and feedback.
- Gives you a formula to ensure your teaching is effective.
- Gives the student a positive framework for learning.
- Ensures learning without unnecessary training.
- Assists in diagnosing the learning progress, and offering feedback on performance.
- Facilitates re-teaching of missed or misunderstood information.

1. EXPLANATION 10%

Give the students a clear verbal picture of the skill to be learned and encourage a questioning attitude. Use plain, uncomplicated language, and keywords to help keep ideas simple. Try using the “What, Why, How, Where, When” approach to keep explanations simple:

- What is it that you want to get across? What’s the goal?
- Why will this benefit the student’s riding?
- How is it accomplished? What are the movements, feelings and body parts involved?
- Where is it used?
- Where will this be practiced (class management)?
- When should students begin (class management)?

2. DEMONSTRATION 10%

Demonstrate the skill to the students. Follow the pattern of the explanation closely and, if the opportunity presents itself, explain again. If explaining while demonstrating, ensure the class can hear you - or use only key words. Through both seeing and hearing simultaneously, the student receives a lasting impression. Ask appropriate questions about the methods used to check the students’ understanding immediately following the demonstration.

- Is your demonstration performed at the skill level of the student? Can they copy it?
- Can the class see your demonstration?
- Does your demonstration reflect your explanation?

3. STUDENT TRIAL 50%

Have the students try the skill, tactic or manoeuvre you have demonstrated. Don’t keep them waiting! Remember, they learn far more from actually doing than they do from watching. Try to maximize the student’s trial time by doing the following:

- Use all available terrain – be aware of opportunities that the terrain provides to teach or reinforce a point. For example, a dip or bump in terrain can be perfect to illustrate the need for flexion.
- Offer repeated or familiar feedback in short bursts, or single words, which have meaning for the student without forcing them to stop to listen to you.
- Keep explanations brief, simple, and to the point.

4. FEEDBACK (ANALYSIS & IMPROVEMENT) 30%

Analyze and provide critique of the student's performance. First, point out the specific things that have been done well and then give them something to think of or work on for the next attempt. There is no need for negative comments, or comments which focus on the previous attempt. Keep your comments "future-focused". This way the students accept and continue to use the good skills and work to improve their weaknesses without negative feelings. Finish with positive reinforcement. Critiquing the students must immediately follow their practice to be of maximum value. (See "Improvement" below).

Using the Training Cycle allows you to move from one step to another, or go back to previous steps, depending upon the circumstances or the progress of your student. Make certain that the student is doing most of the riding, not you!

THE LESSON FORMAT

The following lesson plan may provide a sample of how the training cycle and other teaching tactics apply to a group lesson scenario, with students who are already mobile on a snowboard.

1. Introduction: Smile and greet your guests. If you are teaching children, greet the child first (at their eye level) and then the parents. Introduce yourself and get to know your students. Learn their names; and find out interests and other sporting activities, etc. Plan the lesson by getting a feel for the students' expectations. What do they want to learn? Share your plan with them. Check their equipment. Are they dressed appropriately? If not, recommend that they make a change to their equipment for the day.

2. Warm-Up Run & Assessment: If your students are beginners, you'll start in on the beginner progression. If they are more experienced, take them to easy terrain for their ability. Determine their riding level and decide what the technical scope of the lesson should be. Based on your assessment of the group's ability and the objectives set out by the class during the introductions, determine the terrain and tactics you will use to ensure the objectives are met. Review your strategy with the class and get their approval for your plan. A good warm-up is crucial to a successful and safe lesson - take the time to ensure that your students are physically and mentally activated (by slowly progressing the pace and intensity of riding, as well as starting on easy terrain and progressing to more difficult). Avoid static stretching in the warm up, and instead focus on dynamic movements that help to get blood flowing to the main muscle groups.

3. Riding Improvement Segment (Training Cycle): Work on the skills that will allow the students to reach their lesson objectives. Do personal as well as group analysis and improvements. Use aids and/or exercises where needed, but try to avoid teaching tactics only. There should always be a reason to use a tactic. Encourage lots of class participation. Work on their strengths to improve their weaknesses.

4. Mileage: Allow the students time to investigate their own "feelings" of the skills by using the tactics and terrain both on their own, and in the group. Provide time for "guided freeriding" to maximize the practice time. This is a good opportunity for individual tips and feedback.

5. Lesson Summary: Summarize what was accomplished during the lesson as it pertained to their originally stated goals. When teaching children, ensure that they know what was accomplished, and if possible, communicate this to the parent's as well. Review the positive things to work on for improvement as they relate to each student. Review what they will be working on next (when they come out for another lesson). Thank your class for coming out. Invite them to sign up for another lesson and suggest a good time when you would be available

*Practical Teaching Skill #3***DEMONSTRATIONS**

When demonstrating, be aware of the following guidelines listed below and make full use of your demos. Remember - “a picture is worth a thousand words”. Your knowledge, experience and planning ensure that your demos are a successful means of teaching new riding techniques. Be confident, but remember that the objective of your demo is to teach, but not to impress.

Here are some guidelines for giving a demonstration:

- Make good use of terrain.
- Keep it simple.
- Appropriate riding level
- Emphasize the part of the skill where improvement is needed.
- Relates to explanation (do what you said you would do).
- Ensure everyone in the group can see you! If not, move the group as needed. Position yourself to ensure that the group can see you from a safe vantage point.
- Offer various viewpoints for your demo.
- Have the students try the movements while standing still, to feel new feelings and visualize them in their own riding.
- Take into account the students’ equipment, the snow conditions/environment, and other factors. (See “Analysis” below)
- Repeat your demo as needed...remember, the “watchers” (visual learners) in your group will need multiple demonstrations.

Talking While Demonstrating

“Don’t talk when you slide, don’t slide when you talk... mostly” — talking through demos, particularly for new snowboarders, can detract from their focus on the visual. Often, snow and weather conditions make the instructor difficult to hear, or the instructor is facing or riding away from the student(s).

Finish your explanation, stop talking, and let the picture your demo creates do the talking. “Actions speak louder than words”.

A keyword repeated can help to highlight a demo, if volume, conditions and student type are taken into account - this can be very effective.

Exaggeration in demos: Good for beginners; less so for experienced riders.

Exaggerated movements or highlighting movements by moving the arms can be useful for beginner snowboarders to help them make sense of a picture that’s new to them, and great for kids.

As rider skill improves, demos should show a clear, precise picture without the need for exaggeration or movement of the arms to mimic the lower body. A clear un-exaggerated demo will give better snowboarders information on what & how to move, but also the magnitude of the movement needed to be effective.

**“ACTIONS SPEAK LOUDER
THAN WORDS”**

Practical Teaching Skill #4

ANALYSIS & IMPROVEMENT**ANALYZING PERFORMANCE**

Analysis & Improvement (“A & I”) is a key part of any lesson, as it provides many benefits for the student:

- Personal, individualized feedback. Students generally crave this personalized improvement – we all want to know exactly what we need to do to improve.
- Real tactics for improvement. An instructor who can effectively analyze and improve will get much better results in the form of improvement from students.
- An overall quality lesson experience. If students feel that their lesson was high quality, they are more likely to return again. It’s important to remember that the act of developing A & I skills is something that trainers will work on with instructors only.

Where To Stand?

Your choice of vantage point for watching your students can make analysing their riding much easier. When choosing where to watch from, keep in mind the goal of the run. Is the student working on fore/aft pressure distribution? If so, you may want to stand at a spot where they will ride past you, so that you can see the relationship between their front and back foot. If you are looking for symmetry in turning, you may stand near the bottom of the run, from a further distance away, so that you can see the relationship between turns. In general, we can see larger, gross movements from further away, and small, refined movements as students get closer to us.

The A & I Sequence of Events

We can think of analysis as the part that happens internally – in your head as you are watching your student ride or attempt a skill or manoeuvre. When performing analysis of a student’s riding, there are numerous methods we can use.

1. Establish the ideal performance.

We can begin by developing a picture of the “ideal performance”. What will the skill look like when performed correctly? This step gives us a model to compare to. When determining the ideal, it may be helpful to refer to the Core and Advanced Riding Competencies, depending on the ability level of your student.

2. Compare the performance to the ideal.

Once the ideal picture is developed, we can then begin to watch our students ride. Now we can compare their trial to the picture in our minds. When watching students ride, it may help to begin by watching the snowboard. Is it doing what you want? Is the goal of the tactic or manoeuvre being attained in the form of board performance? If not, we can begin to progress up the body and relate what we’re seeing to each of the skills. For example: the ankles and knees for Edging and Steering performance; hips and arms for Position & Balance or Pivot; lower joints (hips, knees, ankles) for pressure management. You may also look for other cues, such as snow spray coming from the board, or the track left in the snow by the snowboard.

**ESTABLISH THE IDEAL
PERFORMANCE.**

**COMPARE THE
PERFORMANCE TO IDEAL.**

**DECIDE ON CAUSE /
EFFECT & TOLERANCE.**

DELIVER IMPROVEMENT.

Using the Riding Competencies as your “filter” when analysing students will help to provide a systematic format for analysis:

<p>Core Competency:</p> <p>CENTRED & MOBILE POSITION</p>	<ul style="list-style-type: none"> • Does the rider maintain rotational alignment between shoulders, hips and knees? • Does the rider maintain equal weight over both feet? • Are joints generally flexed evenly between left and right sides? • Does the rider maintain a loose, relaxed position on the board which promotes a state of readiness / constant adjustment.
<p>Core Competency:</p> <p>TURNING THE BOARD WITH THE LOWER BODY</p>	<ul style="list-style-type: none"> • Does the rider direct the snowboard with hips and knees, and with the feet at the higher skill levels? • Are rotational and lateral movements used to direct the board (instead of counter rotational movements)? • Are turns round in shape and generally symmetrical, through predictable timing of movements and coordination of multiple movements into a singular effort?
<p>Core Competency:</p> <p>BALANCE OVER THE WORKING EDGE</p>	<ul style="list-style-type: none"> • Does the rider use a blend of inclination at the start of the turn followed by angulation to maintain edge hold and control pressures associated with speed and terrain? • Does the rider direct and maintains his/her centre of mass to the inside of the turn in a balanced relationship to speed and snow conditions? • Is edge grip apparent in turn shape and track left in the snow?

Your answers to the above questions will help determine your plan of action going forward.

3. Decide on cause / effect & tolerance

When watching our students ride, we generally see outcomes - the snowboard carving, or chattering, or the student crashing. In analyzing performance, it's important to separate the effect (the outcome) from the cause. This is the challenge in analysis - separating what we see from what is causing the outcome.

The other factor at play here is tolerance. Tolerance simply refers to whether your student is performing the skill well enough, or not, given the other factors. There may be times where you would like to see a skill performed better, but something such as snow conditions indicate to you that it simply won't happen during the allotted lesson time. In this case, it may not be perfect, but it's good enough given the other factors. Other times, your tolerance may be small, in which case you will proceed to step four - delivering improvement.

Note: You may see many things happening that need to be addressed. Choose the one that you think will have the biggest impact on their riding and progress from there.

THE “TT-PP-EE” MODEL

When we watch our students ride, we may tend to focus simply on the technical portion of their performance - how well they are performing the skill we are asking them to attempt. But, there are many other factors that will affect this performance.

- **Equipment:** In order to perform at our best, our equipment needs to be optimized to give us the best performance. Are your student’s boots too big? Are their edges sharp or dull?
- **Environment:** Refers to the external influences such as weather, snow conditions, visibility and temperature. Is the snow icy? Is the run too steep?
- **Tactical:** The physical way you are asking students to move down the mountain. Does the student need to ride faster or slower? Make rounder or more open turns? Turn less or more?
- **Technical:** The techniques and movements that you are asking the student to perform, in relation to their actual skill level and abilities. Do they actually have the skill to perform the task you are assigning them?
- **Psychological:** The student’s present mental state. Are they happy, confident, scared, intimidated, or nervous?
- **Physical:** The student’s physical capabilities. This could include fitness level, flexibility, strength, weight, height, etc.

Each of the above factors will influence our student’s performance. It’s easy to just focus on the technical, but we must address to the others as well. In the model above, these factors have been arranged starting with the ones that are the easiest to alter in the shortest amount of time, giving the most bang for your buck when it comes to Analysis & Improvement! For example, students will often have great success in simply changing equipment (or adjusting their set-up to fit better) before trying to make complex technique changes. On the other end of the spectrum, changing a student’s physical characteristics is generally beyond the scope of a typical snowboard lesson.

**THESE FACTORS
HAVE BEEN
ARRANGED
STARTING WITH
THE ONES THAT
ARE THE EASIEST
TO ALTER IN THE
SHORTEST AMOUNT
OF TIME, GIVING THE
MOST BANG FOR
YOUR BUCK WHEN IT
COMES TO ANALYSIS
& IMPROVEMENT!**

DELIVERING IMPROVEMENT

Different students require feedback to be delivered in different ways. Using your communication and interpersonal skills, you can make sure that the feedback that you deliver “works” for your students.

THE P.T.T. FORMAT

P.T.T. refers to “Positive - To - Try”. It is simply a method of phrasing our feedback to ensure that our improvements are given in a way that is:

- Positive and specific.
- Encouraging
- Future focused (as opposed to focused on previous “mistakes”)
- Consequence free

When we deliver feedback using this method, we simply start with a positive element that was observed, followed by an aspect to be improved: “to accomplish X, try Y”. This format allows us to avoid mentioning or dwelling on mistakes, and instead focus on the next trial or attempt. Also, it helps to create a level playing field between student and instructor. Here’s an example of PTT feedback:

“Great riding! Your balance during that run was excellent! To improve your riding in that steep section, let’s try riding the next part of the run with softer legs - using them as shock absorbers to keep our board in contact with the snow, so that we can control our speed.”

Notice how in the feedback above, the instructor starts with a positive, and relevant, aspect of the performance (“nice jacket” doesn’t cut it!). Letting students know what they did well is just as important as highlighting the elements to improve. Following this, the instructor moves on to the next run or attempt, and outlines a tactic, feeling or movement that the student can focus on to get better in the future.

The P.T.T. format of feedback works well for the following:

- New or less-experienced instructors. The P.T.T. format provides a kind of “script” for delivering feedback. As you become more experienced, it becomes easier to deliver feedback in this way.
- New snowboarders and students who may be less confident.
- Students who prefer to hear what they are doing well, as opposed to what they need to improve on.

POSITIVE...	TO...	TRY...
<ul style="list-style-type: none"> • What should they continue doing? • Be encouraging, relevant and specific. 	<ul style="list-style-type: none"> • What will help them to improve? • Build on the positive. 	<ul style="list-style-type: none"> • How will they make the change? • Be specific. Use “by” and “so that” phrases. • Movement focused, with a clear task to try.

WORDS & PHRASES TO AVOID

The following words and phrases can take positive, encouraging feedback, and make it negative and discouraging:

- “But”: As in, “that was really good, BUT...”
- “You should”: It’s not about what the student should, or must, do.
- “I want you to”: Again, it’s not about what you want, but should be about what the student wants.

Instead, try:

- “Let’s try”: This helps to keep the consequences low. Trying implies that there is not penalty of it doesn’t work out the first time.
- “We”: Instead of “you”, “we” helps to keep a level playing field between instructor and student.

Other Types of Improvement

Keep in mind - different students will react differently to feedback. Recognize that some students want to hear what they are doing wrong, while other students need feedback catered in a more positive/nurturing way. Try to read your students, or better yet, ask them! That way you can make their experience more valuable.

Depending on your student's personality, motivations and attitude, you may wish to use the following types of feedback as an alternative to the P.T.T. method:

EVALUATIVE

The instructor assesses the quality of the performance; he or she makes some kind of assessment or judgment.

- "That's fine!"
- "Good job!"
- "No, not like that!"
- "Not good enough!"

PRESCRIPTIVE

The instructor tells the student how to execute the skill next time.

- "Jump higher!" (general)
- "Bend your knees more!" (specific)

DESCRIPTIVE

The instructor describes to the student what he or she has just done.

- "The build-up was too slow" (general)
- "Your legs were really extended" (specific)

THE FINAL STEP: EVALUATE

Once you've given your feedback, take the time to stop and reflect on the effectiveness. Ask yourself the following questions:

- Specific, not general? For example: "You did ____ perfectly!" instead of "That's fine!"
- Positive and constructive, not negative and humiliating?
- Directly linked to the skill to be improved?
- Informative and relevant to the most important skills or movements?
- Balanced? Did it contain information on what the student did well and on what still needs improvement? For example: "Your _____ (movement) is much better than last time. The next thing to do would be to _____ (add another level of complexity to the movement, or a particular piece to refine)".
- Clear, precise, and easy to understand? Did I use simple words?

General Comments About Analysis and Improvement

- Timing is everything when giving feedback; the student needs to be open to hearing it and near enough to hear you.
- Draw the student's attention to some element external to his or her body or to the anticipated effect of the movement, rather than to the way the movement is being done.
- Whenever possible, let students practice without always interrupting them. The more you talk, the less they can practice!
- Avoid repeating the same general comments (e.g. "That's great!", "Keep going!")
- Effective feedback is more than general encouragement.
- To promote acquisition and development of skills, you must provide specific information (e.g.: "You did ____ perfectly" instead of "That's great!").
- To be useful, feedback must also be accurate. To be accurate, you must: (1) really know the skills the student is working on; (2) have a clear reference point as far as correct execution is concerned; and (3) be in the right place to observe the student's performance.
- In the case of motor skills, a demonstration (i.e.: non-verbal feedback or the execution of a very precise movement) is often useful feedback to give to the student.
- Feedback given to the whole group is often effective.
- Although feedback is important and contributes to learning, avoid giving feedback too often or giving too much at once.
- Remember that it is always the quality and not the quantity of feedback that determines its effectiveness.

*Practical Teaching Skill #5***TECHNICAL CONTENT**

Effective instructors present technical concepts in their lessons in a clear, coherent, and technically correct fashion. The use of the Skills Concept and Riding Competencies will help in this area.

It is important to remember that students don't want to learn all of the technical knowledge that we as instructors have. Students are motivated by real world outcomes, not by learning about all of the skills and competencies.

For example:

- "I want to have more control on the steeps"
- "I want to stomp backside 360s"
- "I want to learn to turn"

When we teach we must use our technical knowledge to help our students achieve their desired outcomes without baffling with our technical knowledge. Once you have determined what the student wants to achieve during the lesson, watch them ride and decide on an overall technical theme that will help them achieve their desired outcome. Use your knowledge of the competencies and skills to provide focus, but don't overload the lesson with technical info! For example:

Student Goal: Better speed control on steeper pitches.

Instructor Analysis: A lack of a centered and mobile position is not allowing them to edge the snowboard effectively on steep terrain, resulting in a loss of control.

Lesson Content: Focus on correcting and/or refining their ability to maintain a stable, balanced position over the snowboard, using a variety of exercises or tactics. Test the improvement on steep terrain after some time for practice / mileage.

The technical content of your lesson should contribute to the overall improvement of your students, but don't neglect the other non-technical aspects of the lesson!

**EFFECTIVE INSTRUCTORS
PRESENT CONCEPTS
IN A CLEAR, COHERENT,
AND TECHNICALLY
CORRECT FASHION.**

PEOPLE SKILLS AND THE GUEST EXPERIENCE

Creating a fun and rewarding experience for your students will help to create the same experience for yourself.

A. DURING THE LESSON

The “S.P.I.T.” acronym can help you plan your interactions with new students throughout the lesson.

S.P.I.T.:

SMILE: When students approach you at the meeting area, take a second to smile, and read them. You can easily identify some key emotions simply by looking at them. What is their state of mind? Are they happy, scared or apprehensive?

- Greet your guests with openness and positivity. Smile!
- Make eye contact, observe body language, gear check, and look on their face.
- Learn your students’ names, and use them!
- Be friendly and agreeable in your overall approach.

PLAN: Welcome them and plan the lesson with your students. Remember, learning to snowboard can be intimidating, and many students can feel intimidated by a lesson environment. Do what you can to reduce the stress of the situation.

- Engage them immediately. (Fun games, dynamic warm ups, conversation)
- Think carefully about your first question...try something not snowboard related that may help relieve any anxiety they may have.
- Ask your class about their backgrounds, interests, and expectations for the day.
- Establish a personal connection to build on during the lesson.
- Share your thoughts for the lesson with your student, or class and get their input.

INQUIRE: Talk to your students with interest and sincerity!

- To maintain a high level of engagement, try using questions, individual feedback, and generally developing a personal connection.
- Terrain can be a useful tool to engage students in the lesson – use terrain as a teaching tool when possible.
- Keep the action coming! Be positive and upbeat - engagement depends on continuous stimulation (every 2-3 minutes if possible).
- Teach for student-centered success. Students should leave the lesson knowing that you were there for them, and truly wanted to see them progress.

TALK: How is the lesson going? Are the students progressing and enjoying themselves?

- Maintain an open dialogue throughout.
- Ask questions.
- Re-visit the previous three steps to ensure progress.

B. ATTITUDE

While you, as the instructor, may be the “alpha dog” in terms of your group of new snowboarders, it is important to realize that your students excel in other fields of their lives...be it as a surgeon, academic, comic book collector - whatever!

No matter what your students may do in their lives, one has to realize that snowboarding is just one area of life. Keep it in perspective. Be confident, but not arrogant. Be enthusiastic, and be interested in what your guests have to say. The goal is take them on a good experience around the mountain.

Ensure Mutual Respect Between You and Your Clients

Mutual respect comes from the development of a relationship that is lasting and sound...understanding that a "lesson" is just a code word for long term development of a productive teacher/student relationship. It is geared toward continual growth and development of both the student and the teacher.

C. KNOW YOUR STUFF!

The small talk...it's an art. Some tips for constant and consistent interest in conversation:

Know the basics:

- The name of the runs you will be using, what level of difficulty to prepare them for, how many runs are there?
- What's the altitude at the top?
- Is this run a black diamond?
- Good spots for lunch/coffee?
- Is there anything going on after the lifts close?
- Good bar around? (if appropriate!)
- Where are the biggest jumps?

Teaching isn't just about the tech-talk. Chairlift time and rest stops are a good time to become a great guide for your class.

Keep them entertained! It's not just about the on-snow portion...use chairlifts, lunch, coffee time, etc. to show them a good time.

- Where are you from?
- What do you do?
- What's your favorite animal?
- What grade are you in?
- Do you do any other sports?
- Isn't Optimus Prime the coolest, or what?

Weather

Know it - for you and for your clients. You can then recommend clothing adjustments or sun-screen before the start of the lesson. Is it going to snow this week? Are we going to get some spring skiing?

Snow Conditions

You have to be aware of this one to plan a good lesson and you might have to change your plan. Was this run groomed last night? How was the snow yesterday? Was it warm last night and cold this morning?

Adaptability

With kids or with adults, everyone in the group is different; they all have their own personality. It is your task to adapt, and relate to all of them individually in one way or another. That's when the small talk comes in. Use it to figure out what you have to work with for all the guests - some will be easier than others!

D. THE LESSON WRAP UP

The goal of the end of the lesson (which should not really be called the end, but rather the start of the next step) should be in getting the student to come back!

Remember to “S.P.I.N.” at the end of the lesson:

S.P.I.N.:

SKILLS: What they have accomplished (technical skill, terrain, safety, finding their way around)?

PERSONAL: Show your student that you know them, and have an interest in tailoring any future lessons to them.

IMPROVEMENTS: Highlight and review any technical points to continue working on after the lesson. Give some suggestions on safe terrain and movements or feelings that they should practice while out freeriding on their own.

NEXT: What will the next lesson hold in store? Tell them what level they should sign up for next (be honest and realistic) or recommend terrain choice. Make sure you let them know that you’re available and would love to teach them again. And don’t forget to thank them for riding with you!

E. MARKETING & RETENTION

Know the Product

Knowing the offering from your ski and snowboard school and general resort offerings are vital to your employer. Ski and snowboard school instructors are the front line of the resort; we are visible, approachable, and we should be knowledgeable about our business. The idea is not to turn you into a used car salesman, but to just be friendly and informed about what is on offer for your clients.

Selling the Product

Suggesting or selling the right product to the right people - that’s what your snow school wants. For example, trying to sell a full-day private at \$500 to the folks in your discover group that just paid \$39 might be a far fetch. Simply try to keep them around. Suggest the next upgrade in price and ability - upgrade to a 3-day package or maybe a multi-week program. If you have a high-priced, private lesson, then you know they are able to afford the top of the line product. This is a good chance to re-book them for another lesson and earn yourself a request rate of pay that most schools have in place.

Tips:

- Carry business cards, and use them! Hand them out at the end of the lesson. The idea is to make it easy for your clients to book again.
- Reserve time at the end of the lesson to give an overview of the lesson, and suggest another lesson as a great way to build on what was learned.
- In the case of kids lessons, ensure that you meet with the parents at the end of the lesson - they are ones paying for the lessons, and most likely to decide to take another one!

Building A Clientele

It’s important to focus on the process as a whole - the lesson is simply a part of this ongoing relationship that we’re trying to develop. So, excluding the actual lesson, what are some ways to go about building return clients?

Before the lesson, (particularly if it’s a private lesson) we may have the opportunity to know the clients’ names. With this info, and if you have time, go to the rental shop and see if there is any way you can help your clients get prepared...help during a busy and stressful time at a resort is always appreciated! A full-day private at many resorts now is in the \$500 range, so what do people

**AS LOCALS, WE HAVE
KNOWLEDGE OF THE
RESORT AND THE
SURROUNDING AREA
THAT HAS AN IMMENSE
VALUE TO A PERSON OR
FAMILY ON VACATION.**

expect for this? Obviously they expect a professional appearance, demeanour and capability as instructors, but there truly is nobody at a resort who spends as much time with a guest as their instructor.

As locals, we have knowledge of the resort and the surrounding area that has an immense value to a person or family on vacation - this can range from where is a great place to take the kids in town, to who has the best happy hour at the bars. An instructor should be expected to share their locals knowledge of the area. Every client should leave a lesson feeling that they got the “special treatment”.

There are lots of little things that an instructor can and should do. Carry a client’s gear if needed; offer them assistance wherever necessary (perhaps loading a lift, carry a bag, open doors, etc.). Invite them out for a beer or hot chocolate (if appropriate!) at the end of the day to go over some of the things they learned. Time invested will nearly always be rewarded in some way.

When we get return clients, what are the advantages? Why do we want to see the same faces again and again? The answers are fairly obvious:

- We’ll teach higher end lessons.
- We’ll see the real development of people’s snowboarding.
- We’ll develop not just relationships, but friendships.

The benefits are endless, and include increased earnings!

Private lessons/return clients are the meat and potatoes of a clientele, which is a prerequisite for making a living in this business. Clients will return to the same resorts year after year, simply because “their” instructor is there. They will return to see you if they know that they are guaranteed a great time, progress, a comfortable fit with a pro that knows their riding and personalities, and all the little secrets that they may not get with a new pro.

One final note. Be sure that your guests have a way to keep in touch with you, and you with them. Be sure to have contact information on hand or social media details, so that you can keep in touch with clients in the off-season. Hand out a business card at the end of each lesson (ask your director for resort-sponsored cards, or print your own from the CASI web site). Send an email/update once in a while letting them know where you are and that you’re looking forward to working with them again. People will truly appreciate this kind of personal service, and they will return week after week, and year after year.

NOTES:

[illegible]

THE SKILLS CONCEPT

The CASI Technical Model

Analysis of snowboard technique has led to the isolation of the Skills Concept in snowboarding. This chapter outlines the skills individually, as well as in combination with each other. The Skills Concept attempts to create a snowboarding technical framework that is:

- **OUTCOME BASED:** Riders should display the ability to use the various skills and movements appropriately to achieve the desired results in their riding (e.g.: increased fluidity, refined absorption skills, etc.).
- **PERFORMANCE DRIVEN:** The driving force behind many of the concepts is the development of board performance; the element that lends a dynamic and often powerful element to snowboarding.
- **EFFICIENT:** "Maximum performance with minimum effort". Riders should have the ability to select and match their movements to the effort that the situation requires.
- **ADAPTABLE TO VARIED TERRAIN AND CONDITIONS:** Riders employing this technical model should be able to adapt techniques to the ever-changing canvas that snowboarding takes place on, whether it be powder, ice, steeps, trees, freestyle or groomed terrain.



The Skills Concept is made up of five elements – each can be considered to be movement-based skills:

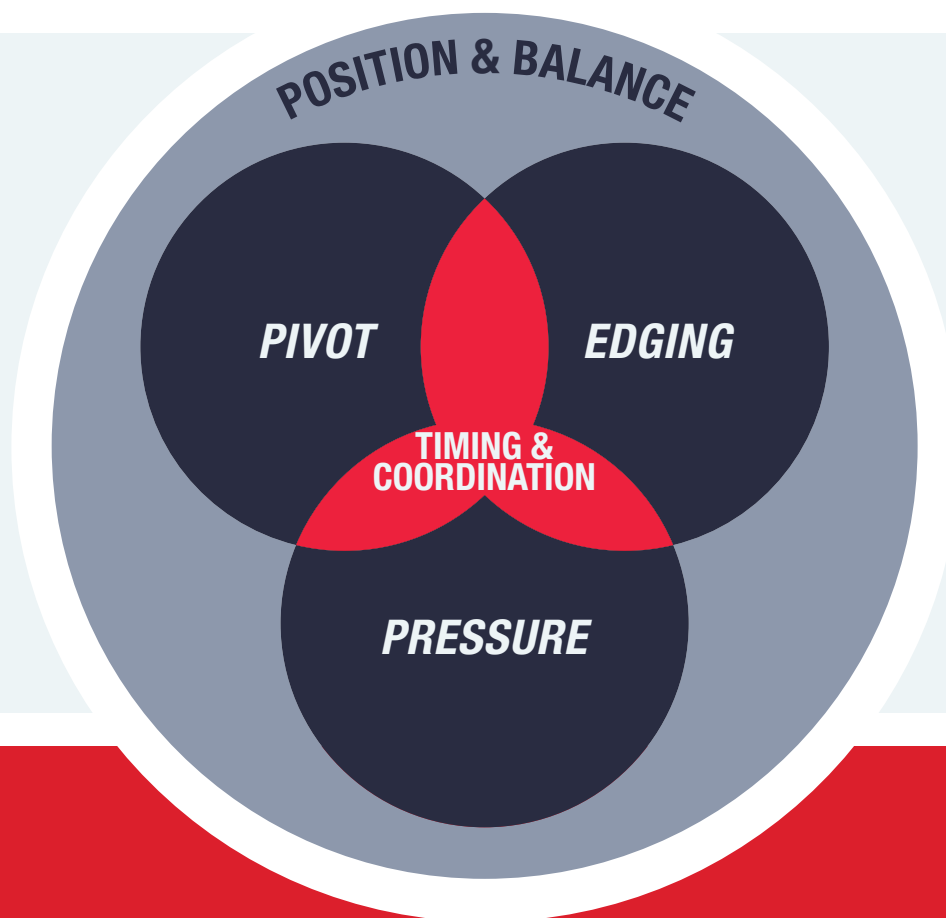
POSITION & BALANCE

PIVOT

EDGING

PRESSURE

TIMING & COORDINATION



POSITION & BALANCE

The ability to maintain balance in a variety of situations while sliding down a hill remains one of the most obvious objectives in snowboarding. Balancing is a dynamic process requiring continuous muscular activity involving the centre of mass (COM). Balancing ensures that the resultant force acting on the body's COM goes through the base of support (BOS) - the board, in turn making the rider more stable on top of the snowboard.

Position & Balance is the fundamental skill in snowboarding. For a rider to be stable and balanced on the board, a comfortable, athletic riding position is essential. Teaching snowboarding often begins with getting your students to find a stable position on the board. A stable position will make it easier for them to balance and stay in control. Encouraging your students to be relaxed is also important so they can move, react, and adjust accordingly.

THE NEUTRAL POSITION

A good position helps improve a rider's stability and balance and includes the following:

- ☐ A ready position with the ankles, knees, and hip joints equally flexed. This position optimizes the length and strength of key muscles so a rider can be both stable and maximize mobility, as needed.
- ☐ Shoulders and hips positioned square to the front foot angle.
- ☐ Arms relaxed, and in a natural position alongside the body.
- ☐ Directing the head and eyes to face the direction of travel.
- ☐ Distributing the body weight evenly between both feet.



In snowboarding, we are rarely totally stable or completely balanced.

Therefore, the act of balancing requires constant movement, or adjustment, of our body position. By maintaining a dynamic state of constant movement (balancing), a rider is able to maintain the appropriate amount of stability, at any given moment, for controlled, efficient snowboarding.



Position & Balance and the Planes of Movement

When improving the balance skills of our students, we can isolate them into following planes:

1. **Fore & Aft Balance:** Movement on the Frontal Plane, or “Nose-Tail Plane”.
2. **Lateral Balance:** Movement forward and backward on the Sagittal Plane, or “Toe- Heel Plane”.
3. **Vertical Balance:** Movement up and down along the Sagittal Plane.
4. **Rotational Balance:** Movement (or resistance to movement) on the Transverse Plane, or “Twisting Plane”.



Components of Position & Balance:

1. Position

The ability to resist external forces through a “strong” riding position. A good position makes the rider more stable.

Key points:

- The more stable the rider, the “stronger” they are; the harder it is for them to be knocked over or lose balance.
- Body position impacts stability – riders who can maintain a position with the C.O.M. directly over the B.O.S. will be more stable.
- Lowering the C.O.M. closer to the base of support can increase stability.
- Stability is achieved when we can assume a position in which the forces acting upon us are equal.
- A stable position also provides good range of movement, in all planes. It is a “neutral” position from which a ride can move, react and balance, in any direction.

2. Balance (“balancing”)

The ability to maintain stability or manage instability, through range of movement.

Key points:

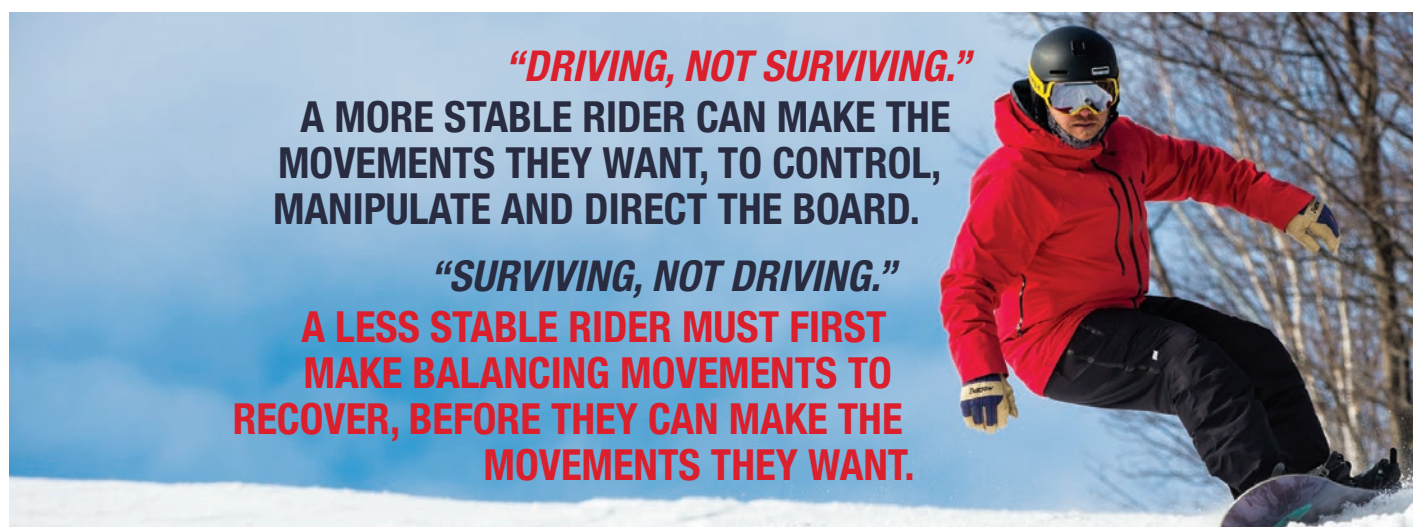
- Balancing involves constant movement to help you:
 - ☐ Maintain a stable or balanced position
 - ☐ Recover from an unstable or unbalanced position
 - ☐ Keep riding in an unstable or unbalanced position
- The forces acting on a rider are constantly changing. Therefore in order to maintain stability a rider needs to constantly move, adapt and react.
- These movements can be small, large, fast or slow, and in any direction. The movements are called balance or “balancing”.

Balancing can be enhanced by:

1. Adopting a neutral riding position in which a rider can move freely in all four planes.
2. Being relaxed, loose and mobile - ready to adapt as needed, can also enhance balance. A good position means little if the rider is stiff and unable to adjust and react.
3. The larger the access to range of movement and the more “free” this range of movement is, the better a rider can manage instability. Expert riders have a much larger ROM and therefore require less stability to ride efficiently.

Stability & Balance Together:

The more stable a rider, the less balancing (movement) is required to not fall over or regain stability (the more stable the easier it is to be balanced). The less stable a rider, the more balancing is required to not fall over or regain stability (the less stable the harder it is to be balanced). Standing on two legs (feet apart) you are balanced and stable. You are not falling over (balanced) and it is harder to push you over (stable).



Stance & Binding Set Up

The set up of equipment can play a role in a student’s stability and ability to balance effectively. The following elements should be explored:

- **Binding Width:** How far apart the bindings (and feet) are placed on the snowboard. A wider stance increases stability by widening the base of support, however it can limit mobility (balancing movements). A narrow stance promotes mobility but may lack stability by creating an insufficient base of support.
- **Binding Angle:** A set up with the bindings angled towards the nose of the snowboard promotes a forward orientation of the body (E.g.: alpine or snowboard cross racing). This may allow riders to maintain their centre of mass closer the base of support during vertical movements (flexion of the hips). Bindings placed at lower angles across the board, or angles equal on front and back foot (E.g.: 15/-15 degrees) promote efficiency riding in both directions (forward and switch) and a very neutral alignment of the shoulders, hips and knees, however may hinder the rider’s ability to move efficiently in the vertical direction turn to turn while riding in the forward direction.

Riders may need to experiment with equipment set-ups, and take into account their riding style, goals, and terrain being ridden.



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.



PIVOT



Rotational movements allow a rider to develop an effective steering angle, by using rotating movements towards the toeside or heelside edges, placing the board across the line of momentum (direction of travel). It will cause the rider's course to be deflected in a new direction.

Steering angle is present in sliding, or skidded turns, but not in purely carved turns. In a carved turn, the board's tail follows the path of the nose exactly. Also, a greater steering angle is achieved when the board's edge angle is low.

Components of Pivot:

Steering angle can be created through the following movements:

1. **Rotation** (Upper Body, Lower Body, or Full Body Rotation)
2. **Counter Rotation**



Upper Body Rotational Movements

The upper body, including the head and shoulders, are rotated against the grip of the edge in the snow in the desired direction of the turn. The energy created through rotation is transmitted through the body, and affects the path of the snowboard.

The further rotation is initiated far away from the snowboard, the longer time it will take to impact the path of travel. Upper body rotation may result in slower reaction from the snowboard, but can generate significant power.

Key points:

- Upper-body rotation can generate more rotational force, but is generally an inefficient movement in turning because the effects of rotation take a long time to affect the snowboard. Also, excessive upper body rotational movements can compromise Position & Balance.

Lower Body Rotational Movements

The joints of the lower body (hip, knees & ankles) are used together in a rotational path to guide the snowboard in the desired direction. The use of lower body joints is an efficient movement, because of the close proximity to the snowboard.

The use of the lower joints can result in a precise and efficient movement to turn the snowboard.

Key points:

- Lower body rotational movements will have a quicker effect on the path of the snowboard, but will result in less rotational force.
- Riders must be aware that lower body rotational movements can unintentionally compromise the position and alignment of the upper body, for example if turns are initiated with the lower body, and the upper body does not maintain alignment between shoulders, hips, knees, and feet.



Full Body Rotational Movements

The use of both upper and lower body rotation together can be an effective way to generate steering angle and a powerful change in direction. However, full body rotation is only effective once the snowboard's edge is engaged in the snow and moving.

Key Points:

The most powerful way to create direction change or spinning force.

Relies on the snowboard being edged to provide a platform to spin or rotate against.

Counter Rotational Movements

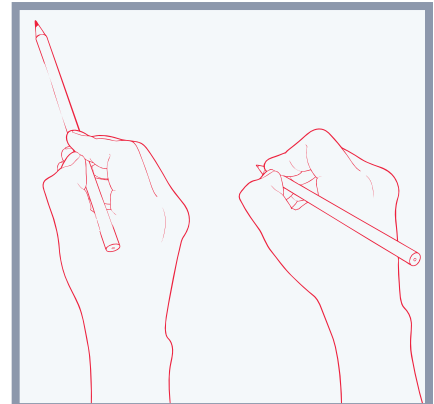
During counter rotation, the upper and lower body move in opposition to each other. The upper body mass, through its own muscular effort, turns simultaneously in the opposite direction to the lower body.

Counter rotation is a quick way to pivot the board, for a limited distance (up to a maximum of 180 degrees), because action and reaction occur at the same time. There is no preparation (wind-up) needed as there is in rotation, and counter rotation can happen nearly instantaneously. A 'speed check' or emergency stop is a good example of counter rotation, as well as some boardslides.

Counter rotation is not recommended for novice snowboarders, because of its effect on balance and stability. When the upper and lower body move in opposite directions, it can compromise the position required to be stable, and will require excessive correction to return to the neutral position.

Key Points:

- Quickest way to change the direction of the snowboard.
- Only effective up to 180 degrees.
- Can compromise the balance and stability of the rider.



THE PEN ANALOGY

When we hold a pen near the top, our level of precision is low compared to holding the pen at the bottom (close to the writing tip). The same concept applies when we compare upper vs. lower body rotational movements.



EDGING



Edging is involved any time there is a change of direction.

For effective edging, use of the ankle, knee, and/or hip joints is required to increase the edge angle (the angle between the base of the board and the snow). Edge control is a direct response to the rider's ability to manipulate the board's edge angle. This angle varies depending on:

- The steepness of the slope
- The radius of the turn
- The speed of the turn
- Snow and terrain conditions, and terrain features

During the edging phase of a turn, external forces affect the rider. Through a mostly isometric effort, the rider uses these forces to create a turn. This idea of an "isometric effort" simply describes the relatively tense body position needed in the edging phase of a turn, resisting these forces. However the rider does not hold a static position. There is continuous reflex movement to maintain balance and to respond to varying terrain and snow conditions.

**FOR EVERY CHANGE
OF DIRECTION,
RIDERS NEED TO
LEAN, OR TILT THEIR
MASS TO THE INSIDE
OF THE TURN TO
REMAIN BALANCED
AGAINST THE
TURNING FORCES.**

Components Of Edging:

1. **Inclination**
2. **Angulation**

Inclination

For every change of direction, riders need to lean, or tilt their mass to the inside of the turn to remain balanced against the turning forces - just as we would do on a bicycle to both initiate a change in direction and resist the forces associated with angular motion. This movement to the inside is called "inclination". The use of inclination at the beginning of the turn is important to get the body moving in the desired direction of the new turn (generally downhill), and effectively leading the snowboard.

IT IS IMPORTANT TO UNDERSTAND THE RELATIONSHIP BETWEEN INCLINATION (LEANING) AND ANGULATION (BENDING).

With inclination only, the edge angle is equal to the amount of inclining (leaning). This technique allows a very limited variety of turns to be performed in ideal snow conditions.

Key points:

- Riders must incline inside the turning arc to counteract the turning forces.
 - Edging purely through inclination is only achievable with a limited number of factors (snow conditions, speed, slope).
 - As speed and performance increases, the amount of inclination increases as well.

Angulation

Edging with angulation uses the ankle, knee and hip joints to increase the edge angle while maintaining balance over a relatively small base of support (the edged board). The COM stays closer to the centre line of the board (the BOS), thus increasing stability.

Using inclination and angulation together, the rider is able to increase the edge angle beyond that obtained by inclination only. With this stance, it is possible to adjust pressure along the length of the board. For effective angulation, the shoulders

should be as close to parallel to the snow as possible, depending on speed and slope. Generally, as the slope increases, more angulation is needed in order to maintain edge grip. As well, at higher speeds on flatter slopes, more inclination can be used, as the forces of speed will help to hold the rider up.

Effective use of inclination and angulation requires a constant adjustment, taking into account the “cues” from the terrain - steepness, snow conditions, speed travelled, intended outcome, etc.

Edging may be applied progressively through the turn, using refined movements with the feet, ankles and knees to allow the forward section of edge to “hook-up” in the snow (by flexing the snowboard torsionally), while the trailing section of the board is completing the previous turn.

Key points:

- Angulation allows for the increase in edge angle while maintaining the rider's COM closer to the BOS (for stability).
- Angulation combined with inclination will provide the best results when it comes to reliable edge grip.

GENERALLY, AS THE SLOPE INCREASES, MORE ANGULATION IS NEEDED IN ORDER TO MAINTAIN EDGE GRIP. AS WELL, AT HIGHER SPEEDS ON FLATTER SLOPES, MORE INCLINATION CAN BE USED, AS THE FORCES OF SPEED WILL HELP TO HOLD THE RIDER UP.



PRESSURE

Pressure is a sensory skill in which the rider moderates the forces acting on the board using movements in the lower joints to manage the changes under the snowboard due to terrain, speed and deformation of the snowboard.

The rider can moderate the pressures by adjusting fore/aft (left-right) body positions, bending or extending the legs (or one leg at a time), changing the amount of edge angle, changing the amount of steering, or by any combination of these things. Because pressure is difficult to master, it is the skill that defines the expert rider, and truly adds performance to our riding.

Some forms of pressure management are more obvious and easier to understand than others.

UP UN-WEIGHTING



Whenever the mass is moved on a vertical trajectory (through extension of the lower joints), resulting in a temporary release of pressure at the top of the extension that coincides with the edge change, we call this “up un-weighting”. Think of performing a small hop from a standing position.

During extension, the body initially accelerates upward, causing a temporary increase in the pressure (“weighting”) on the board between the base of the board and the snow. The amount of increase in the pressure on the board depends on how quickly the extension is executed. If this motion is executed quickly enough, the body will experience total un-weighting briefly at the top of the extension. When the extension stops, the upward inertia causes a temporary decrease in the pressure (lightening) on the board.

Pressure can be increased at the beginning or end of a turn by extending the lower joints (“pushing” the board into the snow), thus establishing a reliable path of travel and edge grip early in the turn.

Release of the edge and pressure happens when the extension movements reach their maximum, and “max out” (think of hopping again) – ideally at the edge change.

DOWN UN-WEIGHTING



Down un-weighting can allow the rider to stay in control of the pressures being exerted on the board at higher speeds during early stages of the turn, and maintain consistent pressure throughout the complete turning arc. In bumpy terrain, down un-weighting can be an efficient way to absorb pressures from terrain and deal with obstacles while maintaining contact between the board and the snow.

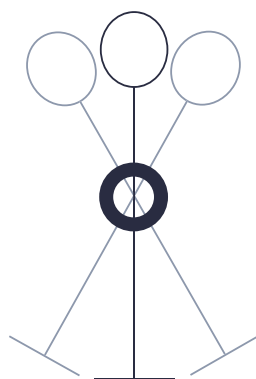
During flexion, the body accelerates downward, and the feet and board are retracted vertically off the snow. This temporarily decreases the pressure on the board (lightening) – the opposite movements of up un-weighting. The amount of pressure decrease depends on how quickly the flexion is executed. The movement can be done fast enough to eliminate all pressure on the board, resulting in complete loss of contact between the base of the board and the snow. When flexion is stopped, the body decelerates, causing a temporary increase of the pressure on the board.

Extending the lower joints during the turning phase allows the rider to create pressure between the base / edge of the board throughout the turn, enhancing edge grip.

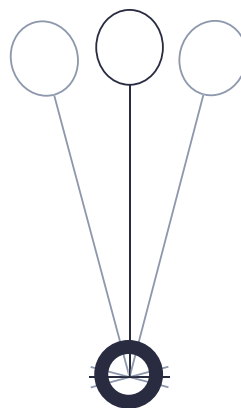
COMBINING UP & DOWN UN-WEIGHTING (“MID-WEIGHTING”)

Efficient and skilled riders will have the ability to employ aspects of both up and down un-weighting at the edge change phase of the turn, depending on the intended outcome of the turn or situation. This is sometimes referred to as a “mid-weighting” movement.

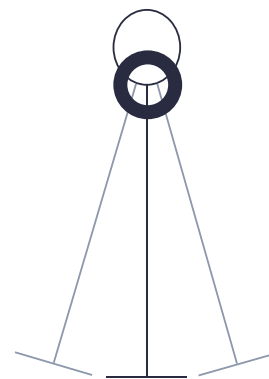
This combination of movements involves a coordinated effort of moving the COM “up and over” at the edge change, establishing pressure early in the new turn, while simultaneously retracting the lower body joints to quickly lighten and re-direct the snowboard at the edge change.



MID-WEIGHTING



UP UN-WEIGHTING



DOWN UN-WEIGHTING

This movement relies on the rider to use a relatively relaxed and tall position inside the turning arc, and loads the snowboard using the forces of turning and edging. Riders should avoid using excessive flexion or extension to attempt to generate pressure, and should instead focus on using these movements to moderate the loading of the board as it exits the turn.

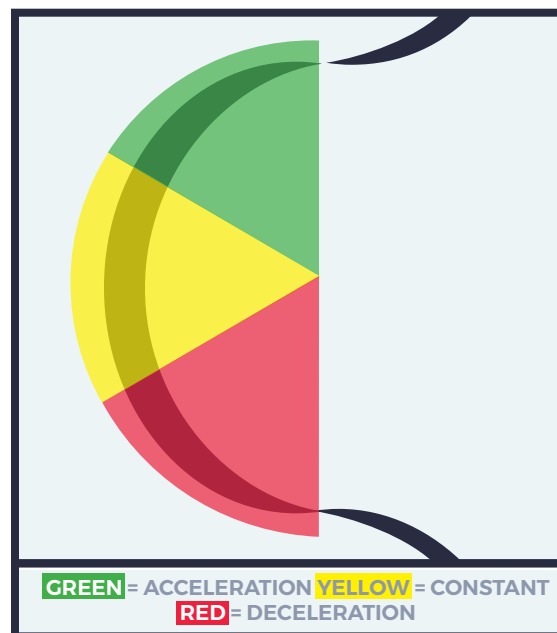
PRESSURE CONTROL FOR SPEED MANAGEMENT

In general, more skilled riders will have the ability to create pressure earlier in the turning arc. This pressure phase corresponds with the change of the edge as the rider progresses from beginner through to more advanced turns (i.e.: Later during beginner turns, and earlier in advanced turns).

The application of pressure during the turn can affect the downward momentum (speed) of the rider.

In the diagram, notice how pressures applied higher in the turn will “project” the rider downhill, causing an increase in speed. Applying pressure later in the turn (after the fall line) will resist this downward momentum, thus slowing the rider’s speed. During the intermediate phase of a rider’s skill, instructors will often promote maximum pressure at the apex of the turning arc, and therefore a consistent speed from turn to turn.

Fore and aft pressures can also be used to manage speed in various terrain and snow conditions. For example, in soft or powder snow, a rider may pressure the back foot to temporarily slow the speed of the snowboard, similar to a surfer on a wave.



TERRAIN

THE TERRAIN ITSELF CAN CAUSE AN INCREASE OR DECREASE IN PRESSURE. IN THIS EXAMPLE, THE RIDER ADJUSTS TO TERRAIN CHANGES WITH FLEXION AND EXTENSION OF THE LEGS TO MAINTAIN CONSTANT PRESSURE ON THE BOARD.

IF THE RIDER STAYED IN A FIXED POSITION, THE PRESSURE WOULD VARY NOTICEABLY ON UNEVEN TERRAIN, CAUSING DIFFICULTY IN MAINTAINING CONTROL.



RESULTANT FORCES

Accompanying the edging phase is a compression force – the creation of pressure. The magnitude of this force is a direct result of the radius of the turn, the steepness of the slope and the speed at which the rider is travelling. Controlling these forces relies on the rider’s ability to change the position of the lower joints as required.

With increased pressure along the length of the board, the more the board will deform, and bend against its

natural flex. This pressure may release unexpectedly during the final stages of a turn, commonly referred to as “rebound”. Skilled riders can use this “rebound” result to aid in performance, and project the board directly into the next turn – demonstrating a mastery of the “create, control & release” concept.

Components Of Pressure:

The following components of this skill will assist in planning lessons geared towards Pressure. Each of the following components has a direct impact on both the pressures felt from terrain, and resultant pressures built up in the snowboard.

1. **Reactive (“Control”)**
2. **Proactive (“Create & Release”)**

Reactive Pressure Management (“Control”)

Reactive pressure management involves the rider reacting to the pressures felt in the board due to terrain, slope, snow texture, or speed.

Key points:

- Riders will feel the need to control pressures due to slope, speed and/or terrain.
- Reactive pressure control involves mostly vertical adjustments in the lower joints in relation to the forces that are felt by the rider.
- Controlling pressures will enhance the rider’s ability to keep the snowboard in contact with the snow.

Proactive Pressure Management (“Create & Release”)

Proactive pressure management involves the rider planning ahead to proactively create pressure changes as a means of either control, creating or releasing the pressure in the snowboard.

Key points:

- Once riders are comfortable controlling pressures, they will begin to move more dynamically with the goal of creating pressure for board performance.
- Up, down, and mid-weighting movements can be employed to create pressure at various points in the turn or manoeuvre.
- Allowing for a total pressure release will put the rider into the air, as a means of avoiding terrain obstacles or simply as a way to jump/generate lift.

COMMENT: *Flexion and extension are mostly pressure adjustments but they must consider the unique situation of each turn and are therefore hard to define. In general the extension is in a lateral direction and flexion is only to control pressure, not eliminate it. Minimizing excessive flexion will add pressure to the board and liveliness to your riding.*



TIMING & COORDINATION

Timing & Coordination refers to the skill of harmonizing skills and movements so that they are performed at the appropriate time and for the appropriate duration (Timing) and that multiple movements are combined into a common effort (Coordination). In a sport such as snowboarding, where the very essence of the sport is balancing while moving over ever-changing terrain, this skill is crucial to progress beyond the beginner stage.

Initially, the student learns to do such things as edge the board at the right time, extend or flex at the right time, and later, to do several of these actions at the same time (coordinate the movements). In expert riding, Timing & Coordination is that magical element that makes riding appear effortless and fluid.

Components of Timing & Coordination:

1. **Timing**
2. **Coordination**

Timing

Timing refers to the process of selecting a movement and/or action at the appropriate time, for an appropriate duration and amount within a manoeuvre. The snow, slope, pitch, the speed at which the rider is travelling, and the intended outcome affect both the timing and the duration of the movement/action.

Key points:

- Successful timing relies on using the appropriate movement for the appropriate duration, given the intended outcome.
- Starting and stopping a selected movement at the appropriate point in the turn or manoeuvre is also an important element of timing.

Coordination

Coordination refers to the blending and synchronization of multiple movements in the correct order to be effective and efficient. Essentially, this is the skill of making many actions appear to be one fluid effort.

Key points:

- Advanced coordination skills will make many complex movements appear as one single effort.
- Riders can develop coordination skills by challenging themselves with the speed and combination / sequence of movements.

SEQUENCING MOVEMENTS

Riders should be aware of the consequences of varied approaches to coordinated movements. See the following example of an optimum “order of operations” for an advanced level turn:



What may change if these movements were performed in a different order? For example, if the rider was to pivot the snowboard prior to setting the edge, the outcome may be a skidded turn, rather than a carved turn.

APPLYING THE SKILLS CONCEPT

The Skills Concept provides instructors with a common language to describe the various movements that make up snowboarding. The application of these skills can create various outcomes.

PHASES OF THE TURN

When applying the five skills to teaching, we can divide the turns into three phases:

- **Phase 1: Initiation**
- **Phase 2: Execution**
- **Phase 3: Completion**

In turning, the phases look like this:



Phase 1: The snowboard flattens and loses its edge angle gradually, which makes it easier to re-direct in the new desired direction. The body moves across the snowboard, as the centre of mass moves toward the next turn or arc.



Phase 2: The body mass moves inside and toward the direction of the new turn. Establishing edge grip creates a platform. Pressuring of the board begins depending on the goal of the turn - to increase speed, decrease speed, or control speed. The rider finds balance inside the turning arc, and prepares for the forces that will be generated in Phase 3.



Phase 3: Through movement in the lower joints, the board is either loaded or unloaded, depending on whether the lower joints are flexed or extended. Steering movements (blending edging, pressure, and rotational movements in the lower body) help to set the desired shape of the turn. As the snowboard bends, energy is stored, which can be used to transfer into the next turn.

NOTE: During isolated turns or the beginning of linked turns, or during basic movements, the phases of the turn are easy to see, and a fourth phase may be apparent - the preparation for the turn or manoeuvre. When the turns are linked or manoeuvres become more complex, the completion of one turn or manoeuvre prepares the rider for the next so it may be difficult to see this phase. In some instances, phases maybe skipped or eliminated entirely (for example, during extremely short radius turns).

PHASES OF MANOEUVRES / TRICKS

When applying the five skills to teaching manoeuvres or tricks, we can use 4 phases:

- **Phase 1: Preparation**
- **Phase 2: Initiation**
- **Phase 3: Execution**
- **Phase 4: Completion**

If we take the example of a rider performing a 360 off of a jump, we can examine the following phases:

PHASE 1: The rider approaches the jump focusing on establishing the correct body position for a balanced take-off, as well as the optimum speed based on the size of the jump.

PHASE 2: The rider initiates the spin by creating an edged platform to spin against, and through a wind-up of the upper body in the opposite direction of the intended spin.

PHASE 3: As the rider leaves the take-off of the jump, the energy stored in the wind-up is released in the opposite direction, creating the execution of the spin. The head/eyes are used to control the amount of spin, and look for the landing.

T At the completion, or landing, or the jump, the rider extends the legs in preparation for landing and absorbs the forces that occur when he makes contact with the snow.

THE RIDING COMPETENCIES

We can use the Skills Concept to highlight and identify common movements that create desired outcomes in our students' riding. These outcomes are useful as an analysis tool to determine deficiencies that may require improvement – a kind of “check list” to use in prioritizing areas for skill development.

Novice & Intermediate Riders:

THE CORE COMPETENCIES

The five riding skills blend to create snowboarding. When we apply the five riding skills to our novice and intermediate student's riding, we can focus on three fundamental riding outcomes.

The three Core Competencies:



CENTRED & MOBILE POSITION

The rider maintains a relaxed, adaptable position with weight generally centred over both feet.

How?

- The rider maintains rotational alignment between shoulders, hips and knees.
- The rider maintains equal weight over both feet.
- Joints are generally flexed evenly between left and right sides.
- The rider maintains a loose, relaxed position on the board which promotes a state of readiness / constant adjustment.



TURNING THE BOARD WITH THE LOWER BODY

When we turn the snowboard, efficiency requires that we use the hips, knees, and feet (or a combination of these).

How?

- The rider directs the snowboard with hips and knees, and with the feet at the higher skill levels.
- Rotational and lateral movements are used to direct the board (instead of counter rotational movements).
- Turns are round in shape and generally symmetrical through predictable timing of movements and coordination of multiple movements into a singular effort.



BALANCE ALONG THE WORKING EDGE

Using a combination of inclination (leaning) and angulation (bending) movements will help the rider to achieve edge grip and round turn shape.

How?

- Riders should use a blend of inclination at the start of the turn followed by angulation to maintain edge hold and control pressures associated with speed and terrain.
- The rider directs and maintains his/her centre of mass to the inside of the turn in a balanced relationship to speed and snow conditions.
- Edge grip is apparent in turn shape and track left in the snow.

These three Core Competencies assist us in looking for outcomes in our students' riding. When we determine if there are deficiencies in the riding (areas for improvement), we can isolate one of the five riding skills to develop. For example, students who are using excessive movements in the arms and shoulders to turn the snowboard may require improvement in their balancing skills, prior to working on the skill of pivoting with the lower body.

Advanced & Expert Riders:

THE ADVANCED COMPETENCIES

Advanced and expert riders show skilled refinement of the Core Competencies in all terrain and conditions, and can work to apply the following four Advanced Competencies to their riding:

**STRENGTH & FLOW**

Adopting a position of strength while maintaining agility (constant movement) is crucial to directing the body through the turn in a fluid manner.

How?

- The rider uses a strong body position that allows mobility.
- The rider is in a position to resist the forces associated with advanced and expert speeds.
- The five skills are blended effectively to display fluidity and power.
- The rider looks ahead to upcoming terrain features and plans his/her line with fluidity in mind.

**LOADING AND DEFLECTION**

Establishing edge grip and resisting the forces in the turn creates bend in the snowboard and builds pressure, which can then be used to deflect the rider across the slope, increasing speed.

How?

- The rider displays rhythm and rebound by allowing the snowboard to release pressure, and directing that release of pressure into the next turn or manoeuvre.
- The rider directs the resultant forces that are built up in the snowboard in a deliberate manner, aiding board performance.
- The rider allows the snowboard to load and in turn release, accelerating the rider across the slope at the exit of the turn.

**ARC TO ARC**

Using the snowboard's geometry creates forces in the turn. Round turns help direct those forces into the next turn, creating efficiency and performance.

How?

- Edge grip is established above the fall line using inclination combined with refined ankle / foot movements, resulting in round turn shape / loading above the fall line.
- The rider links turns in a way that aids performance by moving the centre of mass through the neutral position at edge change.
- The rider uses the snowboard's sidecut to achieve arcs in the path of travel, which increases board performance.

**STEERING VERSATILITY**

Advanced riders are able to blend movements to allow the snowboard to slide or carve, or a range in between. Efficient steering movements create varied turn shapes and sizes, based on the rider's specific goals.

How?

- The rider selects the appropriate amount of edge, pivot and pressure to create a variety of turn shapes and sizes.
- The rider can increase or decrease edge angle to change the turn size and/or shape in the midst of a single turn.
- The rider effectively uses pivot, edge and pressure to control, maintain, or increase speed.

OTHER APPLICATIONS OF THE SKILLS CONCEPT

STEERING



where they are most beneficial (e.g.: steering with the front foot at the beginning of the turn, and completing the turn by steering more with the rear foot).

Steering refers to a combination of movements used to “guide” the snowboard in the intended direction within a turn, and is an outcome of a combination of these movements. In general, steering movements are a combination of:

- Pivoting movements
- Edging movements
- Pressuring movements

The use of these movements allows for more efficient direction change, loading/unloading (bending) of the snowboard within the turning arc, and more board performance and variety of turn shape in general. Students with good steering skills will show round turn shapes, and varied radius turns, while maintaining speed or accelerating.

Intermediate students will begin to incorporate steering efforts with the lower joints (e.g.: rotating the legs/knees against the edge grip in the turn), while more advanced students can begin to experiment with separation in the lower joints to apply steering movements

SEPARATION



Separation refers to the ability to coordinate different movements in the upper body from the lower body. As skills progress, riders will become more comfortable with this concept.

Once riders have grasped the concepts of position and alignment (for balance and stability) as well as the various aspects of rotation, we can begin to experiment with separation. This rotational separation creates tension in the torso when the upper body is oriented towards the nose of the board while in the midst of the turn. This tension stores energy, which can then be released into the new turn, to add power and loading at the completion of the turn.

PEDALLING



Pedalling refers to the use of the torsional flex in the snowboard to generate a desired outcome. While standing on the snowboard, the left or right ankle can be flexed or extended in opposition to the other foot. This will create a “twisting” effect in the snowboard, which can be useful in engaging the edge at the front or back of the board, and building torsional energy in the snowboard.

BOARD PERFORMANCE



Board performance is one of those concepts in snowboarding that is largely an abstract idea - difficult to pinpoint the exact movements that increase or decrease it. In general, board performance can be used to describe the bending/loading of the snowboard that happens as a result of turning the board. This can be accomplished due to:

- Efficient steering movements.
- Well-timed fore/aft pressure control adjustments.
- Independence in the lower body movements (pedalling).

When the rider is showing effective board performance, it will be evident in the following ways:

- The shape of turn - round arcs, with grip above the fall line.
- Snow spray - above the fall line.
- Torsional flex (twisting of the snowboard).
- Pressure release or rebound from the snowboard.

TURN TYPES

SLIDING TURNS

Any turn which has any degree of skidding, can be described as a sliding turn. Sliding is evident when the tail of the snowboard takes a wider arc than the nose (see “Steering Angle”, above).

CARVED TURNS

A turn that leaves a “pencil line” in the snow can be described as a Carved Turn. Carved Turns have no steering angle, as the tail follows the exact path of the nose.

As students progress, students will become more proficient at both types of turns, and eventually blend skills to be able to use either turn where necessary (E.g.: In all-mountain free riding, we wouldn’t typically complete an entire run of only carved turns.)

Different levels of student ability will produce different visual cues in turning. Each of the following categories of turns should be thought of as “snap shots” of the rider’s skill level at a certain point in time. Avoid thinking of the following turns as stand-alone manoeuvres. There are no clear lines that distinguish where one turn-type begins and another ends. Rather, the skills of the student simply progress over time, many times at different rates, leading up to the next “snap shot”.



BEGINNER TURNS



At the beginner level, the emphasis is on balance and body position, as well as rotational movements to produce a change in direction. Other than direction and edge change, very little performance is achieved. Beginner turns could be described as little more than linked sideslipping*.

Rotation of the body around the COM (using hips, knees, and ankles) is used to initiate the turn, as well as slight edging movements with the leading knee and ankle joints, to allow the snowboard to enter and exit the fall line. Edge change occurs at or below the fall line, through a concerted effort to follow three distinct phases of the edge change: 1) starting edge, 2) flat base, and 3) finishing/new edge.

**Terrain will have a large effect on the shape and appearance of a beginner’s sliding turns. For example, a wide, shallow slope will allow beginners to make turns with a round shape, and traverse between edge changes. On a steeper, or narrower beginner run, the turns will take on the appearance of linked sideslips, with little traverse between turns.*

NOVICE TURNS



In the novice phase, students are introduced to the concept of flexion to aid stability after the fall line, when speed may become a concern. By controlling the amount of flexion applied during the later part of the turn, the student is now capable of both maintaining balance and stability, and increasing the edge angle to control speed.

Increased edging also creates a change in turn shape. Following the flexion phase, the rider should return to a Balanced Body Position prior to starting the next turn. The turns are still initiated with the core of the body, and basic edging movements. Edge change occurs at or below the fall line.

INTERMEDIATE TURNS



In the intermediate phase, the students' edging skills are developed by moving the ankles, knees and hips to the inside of the turn more aggressively together with inclination of the body. They refine pressure control skills through the use of flexion and extension movements. Students learn to use a forward movement of the body in the direction of the new turn (anticipation) to link the turns, as well as steering movements. This gives them better speed and directional control, and enables them to handle steeper intermediate slopes with confidence. Edge change becomes more efficient, moving further up in the arc (slightly above the fall line), and the compression or flexion phase of the turn happens earlier, as well. This creates the beginnings of board loading (bending / flexion), which will lead to increased performance later on.

Intermediate students may also be introduced to carving. The goal of carving is to link a series of "pencil line" arcs (no skidding). At this stage, a series of gentle open arcs is the easiest to perform. As in all carved turns, pivoting of the board is eliminated. The radius and the precision of the turn will depend on:

- Edge angle.
- The sidecut of the board.
- The amount and duration of pressure that is applied throughout the turn (bending the board).

ADVANCED TURNS

During the advanced stages, the student will concentrate more on the Timing & Coordination of all the movements, so that they can perform various sizes and shapes of turns, negotiate a wide range of terrain and snow conditions, and handle various speeds. Edging skills at this level are even more refined, allowing the new edge to be engaged somewhere near the top of the arc so that the rider can balance on an edge at the top of the turn. Also, compression, or flexion, begins early in the turn, roughly corresponding with the edge change, and steering skills are refined, creating a deformation of the snowboard, both longitudinally and torsionally, and translates into increased board performance. Riders at this level may use up un-weighting, down un-weighting, or a combination of both to achieve the desired outcome.

When carved turns are the focus for the advanced student, they may work on adding more pressure (through increased lateral movement) and steering to their carved turns. This requires more concentration on the timing and coordination of all the skills. This will also allow them to negotiate a wide range of terrain and snow conditions, and vary the radius of turns. They learn symmetry and speed control through the use of dynamic flexion and a strong edge angle.

EXPERT TURNS

Expert riders have the skills necessary to manage a variety of terrain and snow conditions, and will comfortably switch from sliding to carved turns as needed, with a maximum of speed. The focus of teaching for this level will be on adding variation to their movements and creating situations that require them to adjust their application of the skills to their riding.



[illegible]

TEACHING BEGINNER SNOWBOARDERS

The QuickRide System™



www.quickride.ca

CHOICE OF TERRAIN

The choice of appropriate terrain for teaching beginners is crucial. For safety, choose a gentle slope, wide enough to accommodate both your group and the other people on the hill. It should be free from distractions, dangerous intersections and blind spots, and should be well groomed without ice or bumps.

Choose terrain that has the right degree of slope for the group's ability level - terrain that is steep enough to allow for sideslipping, but not so steep that there is any risk of the students gaining excessive speed. If the slope is right, the students will experience success and will gain confidence. Look for a slope with a single fall line.

The terrain you choose must be accessible to the group. Constant evaluation of your terrain is necessary. Is it safe? Does it allow students to progress and learn? If not, move to a better area on the mountain.

USE OF MECHANICAL LIFTS

It's crucial to teach students how to use lifts safely before they ride on one. Give explanations, point out some of the features, and ask them to observe others who are already on the lift as you explain.

Be sure the students understand how to load the chair at the bottom, and how to unload from the lift once they arrive at the top. In general, before progressing to riding lifts, students should have mastered the basic mobility skills of skating, straight running and climbing / descending. This is to ensure that they are capable of loading and unloading the lifts.

Use of Carpet/Conveyor Lifts

Carpet lifts are ideal for beginners, as they are simple to load, unload, and ride. With only the front foot attached:

LOOK: Look at the loading area and at the moving carpet.

WAIT: Wait until the loading area is clear to move into.

LOAD: Skate forward and allow the lift to move you forward onto the carpet.

STAND: Stand on the carpet, with a minimum of 5 metres between each person.

UNLOAD: Allow the carpet to send you off of the lift, and slide into the unload area.

LEAVE: Clear the unload area as soon as possible.

Use of T-BAR Lifts

With only the front foot attached:

LOOK: Look for the approaching t-bar.

LOAD: Skate forward into the loading area, and place the T either behind your hip, or between the legs against the lead thigh.

STAND: Stand and allow the T to pull you up the hill. Keep the free foot on the snowboard, against the back binding.

RIDE: Ride the lift to the top.

UNLOAD: When the lift reaches the top, remove it and unload the lift.

LEAVE: Clear the unload area as soon as possible. Skate away to a safe area.

Use of Chair Lifts

With the front foot attached:

LOOK: Look for the preceding chair.

LOAD: Skate forward into the loading area turn and look for the approaching chair, and sit when it arrives. Keep your board flat and pointed in the line of travel.

LOWER: Lower the safety bar.

RIDE: Ride the lift to the top.

LIFT: When the lift is near the top, lift the safety bar.

STAND: Point the board straight uphill, and stand when it touches the unload ramp.

LEAVE: Clear the unload area as soon as possible. Keep in mind that riding lifts with children requires more caution, and resorts may have specific policies regarding taking children on lifts.

EQUIPMENT CONSIDERATIONS FOR BEGINNERS

Students who start out on equipment that promotes learning will meet with more success. In general, beginner students will benefit from equipment that features the following:

- Snowboards with softer flex patterns.
- Snowboard that is approximately as tall as the student's chin, or slightly below, when standing.
- Top-sheet traction, either in the form a stomp pad between the bindings, or traction that is embedded into the top of the snowboard, to reduce slipping.
- Stance angles initially set at equal angles (e.g.: +9/-9 degrees) will facilitate movement in both directions. Once students are confident in their chosen direction (regular or goofy footed), they may experiment with different angles.
- Bevelled base profile, to help reduce edges catching in the snow, and promote the snowboard pivoting during turns.

The right equipment can make or break the first time experience of your students. At the beginning of the lesson, be sure to inspect your student's equipment - check for loose connections, working straps and buckles, and proper fit.

THE QUICKRIDE SYSTEM

Teaching beginners is a continuous decision-making process. Your actions will be determined by what you see in your students' progress. Don't be afraid to change your approach if things aren't working! Remember, your goal is to introduce your students to snowboarding in a positive and fun way, and have your students return to snowboard with you again.

The goal of the QuickRide System is to create mobility, control, and enjoyment on the snowboard as quickly as possible. Your student and situation will ultimately determine your approach, however, the progression is laid out in a series of five goals, or milestones.

The recommended steps to achieve each goal are supplemented with additional tactics, to assist in reaching each goal. As you gain teaching experience, you will begin to customize the progression to fit the students that you are working with (see "Customizing QuickRide" later in this chapter). The five phases of the QuickRide System, and their corresponding goals are:

STEPS	STUDENT'S GOAL
1. BASICS	To learn to use the equipment, and gain comfort moving around on the snowboard with one foot attached.
2. SLIDING	To become comfortable standing on the snowboard while it is sliding.
3. CONTROL	To learn to control both speed and direction with both feet attached to the snowboard.
4. TURNING	To learn to turn (changing edges in the fall line).
5. FLOW	To learn to explore the mountain safely.

THE S.A.F.E. CONCEPT

When presenting new manoeuvres or movements, the S.A.F.E. approach will provide a progression for effective presentation. The S.A.F.E. acronym stands for:

STATIC (*Skill Development Model: Initiation*)

When introducing a new movement, have students visualize/feel the sequence of movements on flat ground.

Active (*Skill Development Model: Acquisition & Consolidation*)

Students learn by doing – give a tactic or manoeuvre to try. During the initial trials, pay close attention to the terrain and situation to help ensure success.

Free (*Skill Development Model: Refinement*)

Focused mileage and practice. During this stage, mileage is the key. Allow students to practice, and allow them to make mistakes – just ensure that positive feedback / correction is given when mistakes are made.

Experimentation (*Skill Development Model: Creative Variation*)

Change the situation to encourage adaptation – vary the terrain, speed or movements.

Remember, beginner snowboarders are acquiring the necessary movement patterns and working up to linking turns. Don't expect perfection, but rather focus on mileage and practice. People learn by doing!

USING HANDS-ON ASSISTANCE

We must remember that we want our students to be self-sufficient on their snowboards. However, being ready to offer your help is an important part of avoiding crashes and potential injuries. Not all students welcome, or need, hands-on assistance. Remember the following:

- **ASK** before providing hands-on help.
- Be mindful of **HOW** you are providing assistance.

Hands-on assistance can be a valuable tool in your toolbox, particularly if you are working with a single student. However, remember that in a group lesson setting, while you are helping one student, the rest of the class is likely sitting and waiting for your help. Focus on providing alternate methods of balance and mobility (e.g.: one foot unattached, giving alternate ways to stand up) to allow the whole class to practice without your continual assistance.

Flatter terrain, balance aids, and benches to assist in strapping in are all potential tools to help the student become self-sufficient. When teaching children, a hula-hoop can act as a balance tool for the child to hold on to, if needed.

THE QUICKRIDE SYSTEM OVERVIEW

GOALS	KEY CONCEPTS	AVAILABLE TACTICS*
BASICS: To learn to use the equipment, and gain comfort moving around on the snowboard with one foot attached.	EQUIPMENT MOBILITY	<input type="checkbox"/> Introductions <input type="checkbox"/> Equipment: Parts Of The Board <input type="checkbox"/> Attaching The Front Foot <input type="checkbox"/> Equipment Familiarity & Mobility <input type="checkbox"/> "The Neutral Position" <input type="checkbox"/> Skating <input type="checkbox"/> Climbing & Descending
SLIDING: To become comfortable standing on the snowboard while it is sliding.	STRAIGHT RUNNING	<input type="checkbox"/> "Push-Push-Glide" <input type="checkbox"/> Straight Running <input type="checkbox"/> Experiment With Varied Body Positions <input type="checkbox"/> Toe/Heel Drag <input type="checkbox"/> J-Turns
CONTROL: To learn to control both speed and direction with both feet attached to the snowboard.	SIDESLIPPING PENDULUM	<input type="checkbox"/> Intro To Edging (Gas Pedal Exercise) <input type="checkbox"/> One-Foot Attached Sideslipping & Drift Left / Right <input type="checkbox"/> One-Foot Attached Traverse <input type="checkbox"/> Attaching The Board On A Slope <input type="checkbox"/> Sideslipping (two feet attached) <input type="checkbox"/> Pendulum (two feet attached) <input type="checkbox"/> Power Pendulum
TURNING: To learn to turn (changing edges in the fall line).	BEGINNER TURNS	<input type="checkbox"/> Static Rotation Exercise (board off) <input type="checkbox"/> Garland Exercise <input type="checkbox"/> J-Turns (revisit from Sliding) <input type="checkbox"/> Walking Through Turns <input type="checkbox"/> Beginner Turns
FLOW: To learn to explore the mountain safely.	NOVICE TURNS	<input type="checkbox"/> Add Traverse Between Turns ("release" the COM from one turn to the next) <input type="checkbox"/> Traverse with Flexion/Extension <input type="checkbox"/> Novice Turns (flex after fall line) <input type="checkbox"/> Speed Control: 4 S's (Speed = Shape, Size, Slope) <input type="checkbox"/> Sliding 360's

NOTE:

Available tactics are meant to support the development of the goal of each stage of the QuickRide System. Keep in mind, the tactics as presented create a clear building block progression to learning, however, many students will not require all of the tactics in their lessons. A good instructor will know how and when to speed up or slow down the progression to match the student's abilities. (See "Customizing QuickRide").

1. BASICS

To learn to use the equipment, and gain comfort moving around on the snowboard with one foot attached.

The first step in the progression is to develop familiarity with equipment and mobility with one foot strapped to the snowboard.

INTRODUCTIONS

Armed with the right attitude, you are ready to meet your class!

a) Instructor Introduction

Your introduction should be brief. It should not take more than a minute. Its purpose is to inform, reassure, and to set the mood. Include:

- Your name
- A welcome message to the group
- Your professional background
- Snowboarding and teaching experience
- Any other pertinent information

b) Student Names

Learn your student's names. These introductions will initiate participation and facilitate communication. Ask for their names, snowboarding or related sports experience, and their motivation for taking the lesson.

c) Lesson Goals

If your students do not know what they are expected to learn, both students and instructor will fall short of their objectives. For an introductory lesson, the goals should be:

- To have fun
- To develop an appreciation for snowboarding
- To learn how to stop on both sides (toe edge and heel edge)
- To learn how to become mobile on the snowboard - controlling speed and direction
- To learn how to use mechanical lifts
- To develop safety awareness
- Again, to have fun! And to leave with plans to return and snowboard again

d) Duration

This will depend on a variety of factors including local arrangements with your snow school. Ideally, introductory lessons should be at least two hours.

e) Equipment / Safety Check

The equipment your students use will be a significant factor in their ability to learn. Equipment factors to consider are:

- Boots should provide good ankle support and offer some forward flexibility. They should be comfortable, and should be tightened enough to avoid excessive foot movement. Check that your student's boots fit properly and are done up.
- The snowboard should be suited to the size, weight and boot size of the student and should be appropriately tuned for slow, sliding turns. Boards with top sheet traction, as well as a bevelled base profile are ideal. Also, bindings set to +9/-9 degrees work well for beginners. Check that your student's board is set up correctly, with bindings centred between the toe and heel edges, and all hardware is tight.
- The students should be dressed appropriately for the day's conditions. Helmets are definitely recommended.

EQUIPMENT

To enhance efficient communication, the following terms should be introduced and used throughout the lesson:

- **The Toeside:** The side of the board where the toes are positioned.
- **The Heelside:** The side of the board where the heels are positioned.
- **Nose of the board (or “Tip”):** This is the end of the board that closest to the front foot.
- **Tail of the board (or simply “Tail”):** The end of the board that is closest to the back foot.
- **Base:** The bottom of the board – the part that slides on the snow.
- **Bindings:** High-backs, base plates, heel cup, ankle strap and toe strap.
- **Goofy Foot*:** When you prefer to have your right foot as the leading foot, you’re a goofy-footed snowboarder.
- **Regular Foot*:** When you prefer your left foot as the leading foot, you’re a regular-footed snowboarder.



GOOFY OR REGULAR?

When determining whether a student should stand goofy (right foot forward) or regular footed (left foot forward), there are a few options to try to test this:

- Have them envision sliding on a patch of ice. Many students will lead with their natural lead foot.
- Ask them which foot they would likely kick a soccer ball with. Most students will place their stronger foot (their kicking foot) at the back of the snowboard.
- With students standing facing away from you and feet together, give them a light push, forcing them to take a step. Many times, the foot that steps out first to stop the fall will be the front foot.

Keep in mind that often these tests will not yield a clear front and back foot, and experimentation might be needed during the first lesson. When in doubt, you'll need to make an educated guess, and adjust from there as the student becomes more comfortable.

ATTACHING THE FRONT FOOT

The first step is to try to determine the forward foot. Any previous experience surfing, skateboarding, water-skiing or similar activity will help the student to decide which foot should go forward. Let the students determine which stance feels more comfortable.

Be creative, but be efficient also. Many students won't know whether they are goofy or regular footed until they have tried both. Have students strap in their chosen front foot, and offer assistance when necessary - they may decide later that they have the wrong foot forward.

When attaching the board, the following sequence should be respected:

- If equipped with one, fasten the safety leash first to avoid a run-away board while you are attempting to attach the front foot.
- Remove the snow from the bottom of the front boot and from the front binding, and place the front foot in the front binding.
- Attach the ankle strap of the forward binding snugly so that the heel of the boot rests firmly against the back of the binding, in the heel cup.
- Attach the toe buckle snugly.



EQUIPMENT FAMILIARITY & MOBILITY

With the front foot attached to the board, have students experiment with various challenges:

- Sliding the board back and forth.
- Balancing on one foot (both the attached and free foot).
- Turning in circles – “pushing” the board, and “pulling” the board, clockwise and counter-clockwise directions.
- Stepping the rear/free foot from the toeside to the heelside – try with eyes closed and open.
- Lift the board up with the front leg in front of the body; lift the board behind the body.
- Small hops with the back foot placed against the back binding.

Each of these tasks will help students to become familiar with the snowboard, and get to know their equipment.

THE NEUTRAL POSITION

The neutral position is an athletic stance common to most sports. This position is stable and allows for quick reaction.

Explanation

On a snowboard, this is a neutral position:

- A ready position with the ankles, knees, and hip joints equally flexed. This position optimizes the length and strength of key muscles so a rider can be both stable and maximize mobility, as needed.
- Shoulders and hips positioned square to the front foot angle.
- Arms relaxed, and in a natural position alongside the body.
- Directing the head and eyes to face the direction of travel.
- Distributing the body weight evenly between both feet.

Demonstration

On flat terrain, with the front foot attached, assume the neutral position. Place emphasis on this position as a “ready” position. The rear foot should not be strapped in, but placed on the board against the back binding.

Student Trial

On flat terrain, have the students place their boards in a circle and stand in the neutral position to visualize and feel this athletic position.

KEY WORDS: NEUTRAL POSITION

- Joints slightly flexed
- Equal weight
- Head up
- “Ready” position



Note:

It's important to note the role of equipment set-up, and its influence on the neutral position. Binding width and stance angles will affect the student's ability to maintain a natural position on the snowboard. For beginners, CASI recommends starting with a stance width slightly wider than shoulder-width, and bindings set at angles of approximately +9 degrees on the front foot, and -9 degrees on the back foot. Once students are linking turns, this stance may be altered to be more “directional” - oriented towards the nose of the board (e.g.: +18 / -6).

**THE NEUTRAL POSITION
IS AN ATHLETIC STANCE
COMMON TO MOST
SPORTS. THIS POSITION
IS STABLE AND ALLOWS
FOR QUICK REACTION.**



SKATING

Movement of the snowboard on flat terrain requires skating strides.



Explanation

What: Moving around on flat ground, with one foot attached to the snowboard.

Why: To get from point 'A' to point 'B', and to be mobile with the board attached.

How: Starting from a neutral position, orient the head and eyes in the direction of travel, toward the nose of the board. Place the back foot on the snow either on the toeside or the heelside of the snowboard, with the front leg slightly bent. Take a small pushing step with the rear foot, and allow the snowboard to slide on the base. Repeat these small steps.

KEY WORDS: SKATING

- Upper body aligned with front foot angle
- Eyes looking forward
- Balanced over front foot
- Small steps between bindings

Demonstration

On flat terrain do a series of small steps. Do a simple turn by lifting the board and pivoting around on your free foot. Repeat the steps back toward the students.

Student Trial

Spread the students out and have everyone skate back and forth either in a line parallel to each other or in a line following the leader, or in a circle - be creative! Ensure students try skating with the rear foot on both the toeside and heelside of the snowboard.

Feedback

Key points to look for:

- Neutral position – eyes up, arms relaxed, joints flexed.
- Weight distribution – changes from front foot to pushing foot, and back.
- Edging – used as needed, according to terrain / slope / snow.

Other suggested tactics:

- Skate with the rear foot on both the toeside and heelside of the snowboard. Start with the free foot behind or in front of the front binding. Advance the snowboard until the free foot is in line with the back binding, and replace the foot near the front binding. This will help avoid steps that are too large.
- Obstacle course – follow the leader.
- Skate to a target object and back.
- “Push-Push-Glide” – as balance progresses, have students try to take larger pushes with the free foot, and allow the board to glide on the base for longer periods.

CLIMBING / DESCENDING

In addition to moving on flat terrain, students will sometimes have to climb up or down small inclinations.

Explanation

What: Moving up and down a slope, with the snowboard across the fall line.

Why: To assist in negotiating varying sloped terrain with one foot attached to the board.

How: Climbing

- Start in a basic standing position with the front foot attached, facing up the slope, and the free foot uphill above the toeside of the board.
- Extend the front ankle and knee to engage the toe edge of the board.
- Take a medium sized step with the free foot, up the hill.
- Follow by taking a small step with the attached foot, lifting the snowboard. Engage the edge into the snow to prevent slipping backwards.

How: Descending

- Start in a standing position, facing down the slope, with the free foot uphill on the snow.
- Flex the front knee and ankle to engage the heel edge into the snow.
- Take a step with the snowboard, downhill, and follow with the free foot, lifting the board.

Demonstration

On a gentle slope, do a series of uphill steps. Turn around and descend the hill by stepping downwards.

Student Trial

Direct the student(s) to practice stepping up (and down) the hill. Choose a formation that will not interfere with skier/rider traffic.

Feedback

Points to look for:

- Board perpendicular to the fall line.
- Neutral position, looking in the direction of travel.
- Adequate edging to prevent slipping.



KEY WORDS: CLIMBING / DESCENDING

- Face uphill/downhill
- Board across fall line
- Edge snowboard to grip snow
- Big step with the free foot, small step with the board

2.SLIDING

To become comfortable standing on the snowboard while it is sliding.

The second step in the progression is to help the student gain comfort on the snowboard while it is sliding on a flat base.

STRAIGHT RUNNING

This exercise introduces the student to using the Neutral Position while sliding, as well as the sensation of moving down a slope. It helps to build confidence through repetition on a slight grade or incline.

Remember to use the S.A.F.E. approach, to ensure students accomplish their goal safely and successfully.

Explanation

What: Sliding down a slope with one foot attached to the snowboard.

Why: To gain comfort and balance on the snowboard.

How:

- After climbing a slight incline, turn so that the nose of the board is pointing down the slope, with the base flat on the snow, in the fall line.
- Place the free foot in the snow, to stop you from sliding.
- Look down the slope and when ready, place the back foot on the snowboard (against the back binding) to begin sliding.
- Maintain the neutral position while sliding, with knees slightly flexed, eyes looking forward, and arms comfortably to the sides.
- As the terrain flattens, and the speed reduces to a stop, step off of the board and skate to a safe area.

Demonstration

Perform each of the above steps as explained on terrain that allow you to come to a stop naturally. Remember, you are trying to build their confidence and they do not know how to stop yet!

Note: Terrain choice is key - if your first demonstration goes any further than 4-5 metres, or if you are forced to use your foot to stop yourself, the incline is too steep. Look for terrain that has a slight slope with a single fall line, followed by a flat area or even a slight up-slope incline to help stop. Be aware of snow conditions, speed may vary.

Student Trial

Have the students follow after each demonstration.

Feedback

Points to look for:

- Board sliding flat on the base (have students feel their foot flat in the boot).
- Neutral position, looking in the direction of travel, with the shoulders in line with the snowboard – not rotated toward the nose.
- Weight distribution even over both feet – a common occurrence is leaning back, on the rear foot.

KEY WORDS: STRAIGHT RUNNING

- Place board in fall line and flat based
- Place back foot against back binding
- Look ahead
- Maintain neutral position

Other suggested tactics:

- **“Push-Push-Glide”:** Start with a small skate, or push, to increase the sliding speed as students become more comfortable. Add a second push to build some speed, and then place the free foot against the back binding and enjoy the glide!
- **Experiment with various body positions:**
 - ☐ Fore and aft balance (front foot – back foot movement)
 - ☐ Lateral balance (towards the toe and heel edges)
 - ☐ Rotational balance (upper body rotation)
 - ☐ Vertical (tall and small positions)
- **Toe/Heel Drag:** While sliding, have the student move the free foot slightly off of the snowboard, on either toe or heelside, and gradually drag it in the snow. This will help with stopping, and cause a slight change in direction.
- **J-Turn:** As the student is sliding, have them slightly head as well as hips towards the heel edge as they drag their heel in the snow. Their path of travel should follow a broad heelside arc as they do this, introducing them to the concept of rotation, and eventually turning. Ask them to try to turn until they stop on the heel edge. Try the same on the toe edge.



STRAIGHT RUNNING WITH HEEL DRAG



3. CONTROL

To learn to control both speed and direction with both feet attached to the snowboard.

The third goal of the QuickRide System is to give students control over their snowboard with it positioned across the fall line. By the end of this phase, they should be able to control their speed and their direction and use momentum to assist in this.

It may be helpful to separate this stage into two stages:

1. Introduction of speed and direction control with one foot attached, using the Gas Pedal, Sideslipping and Pendulum exercises.
2. Refinement of speed and direction control with both feet attached, using the Sideslipping, Pendulum and Power Pendulum exercises.

INTRODUCTION TO EDGING (THE “GAS PEDAL” EXERCISE)

With the “Gas Pedal” exercise, students are introduced to edge angle’s effect on speed. Increased edge angle decreases speed, and decreased edge angle increases speed. This is done in a controlled environment, on a relatively flat slope, where the apprehension of falling is minimized.



The Gas Pedal Exercise can be introduced on flat terrain, and simply illustrates how an edged board will slow and stop, while a flat board slides.

Explanation

What: Introduction to edging and speed control.

Why: To gain control over the snowboard and our speed.

How: On flat terrain, lean slightly toward the heel edge. While leaning, flex the ankle and knee of the attached (front) leg, while flexing the muscle that runs up the shin, to increase the edge angle on the heel edge. Relax the joints to flatten the edge angle. With the board flat, use the rear (unattached) foot to push the board and body forward. Edge the board to resist the push. Try this on both the heel and toe-side edges.

KEY WORDS: GAS PEDAL/INTRO TO EDGING

- Front foot attached
- Lean body inside board slightly
- Flex hip, knee, ankle to increase or decrease edge angle and feel snowboard slide / stop

Student Trial

Have students experiment with this exercise on flat terrain.

PROGRESSING FROM THE GAS PEDAL EXERCISE TO ONE-FOOTED SIDESLIPPING

With students comfortable with Straight Running, the Toe/Heel Drag, and now the Gas Pedal Exercise, we can use these skills to gradually introduce Sideslipping. On mellow terrain (similar to Straight Running terrain) students may start by orienting the board across the fall line, on the heel edge. Facing down hill, with their rear (unattached) foot in the snow on the heel edge of the board for control, students can begin to push the board downhill to slide on the heel edge. As they become more comfortable, they will allow the snowboard to slide, rather than pushing it. Ask them to feel equal weight on both the front and rear foot as they slide.

To control speed or stop, flex the ankle, knee and hip of the front leg (as in the Gas Pedal Exercise). Allow students the time and repetition to practice this on both the heel and toe edges. When sliding on the toe edge, students will be facing uphill, and the rear foot will be positioned over the toe edge, with the toes dragging in the snow. Once successful, students should be able to achieve a smooth slide with the back foot resting against the back binding.



ONE-FOOT ATTACHED SIDESLIPPING & “DRIFT” LEFT/RIGHT

As students become with the Gas Pedal exercise, they will naturally become more comfortable allowing the board to slide. Encourage them to experiment with sideslipping with the free foot placed against the back binding, and the heel (or toe) slightly off the board to assist with speed control.

Once they are sliding smoothly, have them start to move diagonally across the slope by shifting weight over the foot in the direction they would like to travel, as well as allow that end of the board to move downhill slightly.

Having the back foot unattached gives students the option to step out away from the board, catching themselves if they happen to fall or catch an edge.

ATTACHING THE BOARD ON A SLOPE

Before continuing with Sideslipping and learning to control direction, students will need to have both feet attached to the snowboard. To accomplish this safely, keep in mind the following points:

- Arrange students in an area free of excessive traffic, standing with the front foot attached, facing down the hill.
- Ensure students have enough room between each other to move around.
- Using the heel edge of the snowboard, students can “dig” a platform in the snow, which will allow them to stand without sliding.
- Clear any snow from the rear binding, and place the foot in the binding.
- Attach the ankle strap, and then the toe strap.
- Be ready to help students – they may require assistance strapping in for the first couple times!

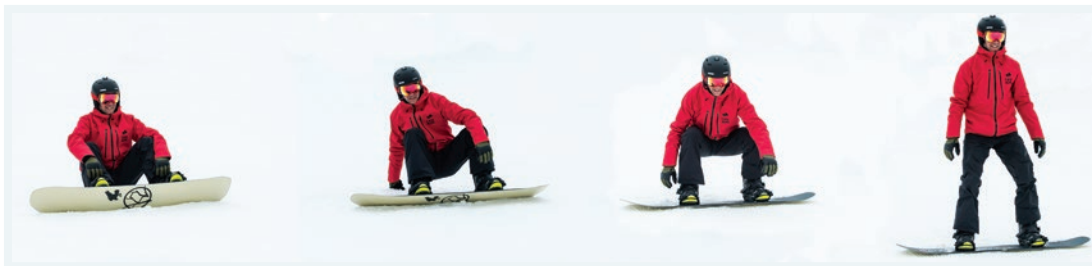
Alternative Methods:

1. Facing uphill, use the attached foot to dig in the heel edge (downhill edge). Use this platform to strap in the rear foot. This method may be easier for students in harder snow.
2. Sitting on the snow. If the situation (terrain, snow conditions) don't allow students to strap in while standing, ask them to sit on the snow facing downhill, to strap in the rear foot.

HOW TO STAND UP

Standing up on the heel edge (facing downhill) can be difficult for some students. There are a couple of options that may help:

Standing Up - Option 1:



- Facing downhill, slide the hips close to the snowboard.
- Place the back hand on the snow next to the hips and reach forward/up with the other arm.
- In one quick motion, rock forward and stand quickly.
- It may be helpful to reach forward and grab onto the toe edge in this method.

Standing Up - Option 2:

- From the seated position, students can roll onto their knees. Turning the snowboard at a 45 degree angle to the slope may help them roll.
- Once they are on their knees and facing uphill, it will be easier for them to stand and begin sliding on the toe edge.
- If students can preform a small turn, they can stand up to the toeseide, and immediately pivot the snowboard to the heel edge.

SIDESLIPPING (TWO FEET ATTACHED)

With their experience sideslipping with the rear foot out of the binding, students should now be able to easily transition into sideslipping with both feet attached.

Explanation: Heelside Sideslipping

What: Sliding on the heelside edge, with both feet strapped to the board. The board is kept across the fall line as it slides down the hill.

Why: To begin to use our edges to control speed, and gain comfort sliding with both feet attached to the snowboard.

How: Begin facing down the slope, with both feet strapped to the snowboard. With weight evenly distributed over both heels, relax the ankles to reduce edge angle and begin sliding down the hill. Maintain a neutral position, arms out and within eyesight. To slow and stop, flex the hips and knees slightly (as if sitting down on a tall stool), and flex the ankles to engage the edge and slow the snowboard.

Explanation: Toeside Sideslipping

What: Sliding down the hill on the toeside edge, with both feet strapped to the board. The board is kept across the fall line.

Why: To begin to use our edges to control speed, and gain comfort sliding with both feet attached to the snowboard.

How: Begin facing up the slope, with both feet strapped to the snowboard. With weight evenly distributed over both feet and the eyes looking uphill, relax the ankles to allow the edge angle to reduce, and begin sliding down the hill. Maintain a neutral position, arms out and within eyesight. To slow and stop, push the knees forward slightly and extend ankles into the slope to engage the edge and slow the snowboard.

Demonstration

Assemble the students so that they are able to see your demonstration. Sideslip down the hill in front of the students. Incorporated gentle stops every 1 to 2 metres.

Student Trial

Have the students try this exercise one by one. Remind them to check for oncoming traffic before heading out. Allow sufficient space between students to avoid collisions. Repeat the exercise until the students are relatively comfortable with it before moving on.

**KEY WORDS: SIDESLIPPING**

- Board across fall line
- Neutral position with head up, eyes looking forward
- Arms relaxed in front of body
- Relax ankles to slide
- Flex hips, knees, ankles to slow down

Feedback

Look for and correct:

- Neutral position – eyes looking up or downhill, back tall, position relaxed, and arms controlled.
- Weight distributed evenly to keep the board perpendicular to the fall line.
- Sufficient edge angle to control speed.
- Sufficient speed and momentum to aid balance.
- Arms controlled and in front of body within periferal vision.



Other suggested tactics:

- **“Stop & Go”, “Red Light / Green Light”** exercises encourage comfort stopping and starting.
- **“Ballerina / Cowboy” Analogy:** On the toeside edge, have students experiment with “standing like a ballerina” (with the ankles extended and on the toes). This position is unstable, and causes difficulty in moderating the amount of edge used. Encourage them to “stand like a cowboy”, with the ankle relaxed, and the weight centred over the balls of the feet. This “cowboy” position is helpful on the heelside edge, encouraging a wide base of support with the knees, and weight distributed evenly over the snowboard.

THE PENDULUM



The purpose of this exercise is to experiment with pressure distribution and fall-line, and their influence on direction and speed control.

Explanation

What: Moving side-to-side in a diagonal direction on the snowboard.

Why: To learn to control and use our pressure distribution, and to control the side-to-side direction of travel.

How:

- Begin on either the heel or toeside edge, in a sideslip.
- Initiate the diagonal movement by shifting slight pressure to the foot in the direction you want to move, and slightly extending the ankle on that lead foot, causing the board's edge angle to reduce slightly. On the heelside edge, it may be helpful to relate to the Gas Pedal exercise – “push on the left foot gas pedal to go to the left, push on the right gas pedal to go to the right”.
- Allow the snowboard to slide in a diagonal sideslip, maintaining pressure on the lead foot (approximately 60/40 split between lead and rear foot).
- To stop, shift pressure back to even distribution over both feet, and resume sideslipping. Repeat in the opposite direction.

Demonstration

Demonstrations should be performed as close as possible to the students without jeopardizing their safety. The demonstration should consist of the following:

- Sideslip for approximately 1-2 metres.
- Increase pressure on one foot and relax the edge angle of that foot, causing the board to slide gently across the hill.
- Gently shift pressure to the other foot, causing the board to slow, and sideslip.
- Repeat the movement going the other way performing three to four pendulum movements.

Student Trial

Toeside & Heelside Pendulum: Since this particular exercise allows students to be more mobile, they must know exactly where to start and finish the exercise.

Have students choose either their toe or heel edge to begin. Once comfortable with one edge, have them try the other, as they ultimately will need to learn both.

Feedback

Look for and encourage:

- Gradual transfer of pressure to help control direction.
- Use of ankle/knee to release the board towards the fall line.
- Adjusting pressure and edge angle to avoid stopping during direction changes.
- Proper use of edge angle to assist with speed control.
- Controlled body position (eyes looking forward, arms quiet, knees flexed).
- Neutral position with eyes looking forward and arms controlled and within eyesight.
- Tall, relaxed position.
- Weight distributed evenly to keep the board perpendicular to the fall line.



KEY WORDS: HEELSIDE PENDULUM

- Start in a sideslip
- Shift weight to left or right foot
- Extend ankle and push same knee downhill slightly to initiate traverse
- Look ahead
- Equalize weight and increase edge to slow/stop

KEY WORDS: TOESIDE PENDULUM

- Start in a sideslip
- Shift weight to left or right foot
- Slightly lower same heel to initiate traverse
- Look ahead
- Equalize weight and increase edge to slow/stop

THE POWER PENDULUM

The Power Pendulum is simply an extension of the Pendulum exercise. The Power Pendulum will appear slightly different from the Pendulum, in that students should now be comfortable guiding the snowboard through an arced path, as opposed to the diagonal sideslip of the Pendulum.

Explanation

What: The Power Pendulum is a means of moving side to side at higher speeds, and with more board control. It is also a key manoeuvre in learning to turn, as we are allowing the board to pivot now.

Why: To learn to use rotation to assist with directional control.

How:

- Begin on either the heel or toeside edge, in a sideslip.
- Allow the nose of the snowboard to move down the hill by shifting pressure to the lead foot, and relaxing the ankle (as in the Pendulum). Also, incorporate a slight rotation of the hips and knees down the hill, which will allow the snowboard to travel more down the hill than across.
- As speed increases, flex the lead ankle and knee, and rotate hips back up the slope and feel the feet turning slightly in the boots to aid in steering. This will cause the snowboard to move more across the hill.
- Continue these movements to guide the snowboard uphill, and slow down.
- Repeat in the opposite direction.

Demonstration

As this exercise is simply a variation of the Pendulum, the demonstration should highlight the new aspects – the rotation of the core (incorporating the hips, knees, and feet), as well as the altered path of travel of the snowboard. The path of travel will resemble a “falling leaf”, instead of a diagonal path across the hill.

Sideslip for approximately one metre Increase pressure on one foot, and slightly turn the core to guide the leading end of the snowboard down the hill. (E.g.: Regular footed rider travelling to the left would move the left shoulder downhill to initiate rotation of the core). Allow the edge angle to flatten slightly by relaxing the lead ankle. This will facilitate downhill movement of the board. As speed increases, maintain front foot pressure, and rotate the body (and feet slightly) back up the hill, through the fall line. Repeat the movements going the other direction.

Student Trial

Have students experiment with the Power Pendulum, using varying amounts of pressure and momentum.

KEY WORDS: POWER PENDULUM

- Start in a sideslip
- Shift weight to left or right foot and rotate hips downhill while reducing edge angle on that foot
- Increase speed by riding downhill
- Rotate hips uphill and look uphill to slow down
- Turn head and look back downhill, repeat in new direction.

Feedback

Have students focus on using the eyes to guide them in the direction they wish to travel. Encourage them to “connect” the eyes, hips, and knees when rotating through the fall line. When rotating the body, ensure students are rotating with the core, and feel the feet turning slightly in the boots to aid in steering - guiding the snowboard back up the hill.

Pressure shifting in this exercise is a more dynamic and continuous process, and therefore requires students to be more comfortable balancing on the edge. Encourage students to use increased momentum (speed) to carry them across the fall line and back uphill.

POWER PENDULUM: PATH OF TRAVEL

As students become more comfortable with the ability to move side to side, they may begin to experiment with momentum, and specifically allowing the snowboard to approach the fall line (increasing speed), and turn back uphill to control speed.

The Power Pendulum is a great milestone in learning to snowboard – students can now control speed and direction, and will be mobile on most beginner / novice terrain. The Power Pendulum



4. TURNING

To learn to turn (changing edges in the fall line).

Turning represents the next major milestone in learning to snowboard, and everything that the student has learned up until this point will be used in turning. With the skills to complete a Power Pendulum, and some simple guidance, the transition to turning is a simple process.

Turning should be introduced with safety and clarity in mind. Use simple explanations, with visual cues, to explain the heel and toeside turns:

- **Heelside Turn:** Begins on the toeside edge, crosses through the fall line on a flat base, and finishes on the heelside edge.
- **Toeside Turn:** Begins on the heelside edge, crosses through the fall line on a flat base, and finishes on the toeside edge.

The S.A.F.E. concept is a recommended approach to introducing turning, and students may require some assistance to start, as well as lot's of time to practice and experiment. Choose the supporting tactics / exercises carefully and with your student's success in mind...some students will pick up turning immediately, while others will take more time and assistance.

THE BEGINNER TURN

The Beginner Turn introduces the concept of changing edges to the student. Using all the skills previously learned, students will now attempt their first edge changes in the fall line (with the board pointing downhill).

Explanation

What: Turning the snowboard.

Why: To move down the mountain using both edges, giving us complete control over our direction.

How: Heelside Turn

- On the toeside edge (facing uphill), start to traverse across the slope, with slight pressure centred over the lead foot and the eyes looking forward in the direction of travel.
- Initiate the turn by rotating the head over the lead shoulder, and rotating the core toward the nose of the board.
- Begin the edge change by moving the lead hip and knee in the direction of the turn (across the board), and allowing the board to flatten with slight flexion of the ankle. Feel the calf muscle press into the high back of the binding.
- Allow the snowboard to approach the fall line and slide on a flat base briefly.



- Continue to direct the board through the turn by rotating the knees, and using the lead knee and ankle flexion to change from the flat base to the heel edge.
- The hips must continue to rotation through the turn in order to maintain an aligned and balanced position over the snowboard.
- Once on the heel edge, flex the lower joints (knee, ankle) to engage the edge in the snow. Complete the turn by looking ahead and equalizing the weight distributed over the feet. Sideslip as necessary to slow down.

How: Toeside Turn



- On the heelside edge (facing downhill), start to traverse across the slope, with slight pressure centred over the lead foot and the eyes looking forward in the direction of travel.
- Initiate the turn by moving the lead hip and knee down the hill. Slightly extend the lead ankle to relax the edge angle, allowing the snowboard to move toward the fall line.
- Rotate the hips to maintain upper body alignment (shoulders in line with the length of the snowboard) as the board moves through the turn.
- Allow the snowboard to approach the fall line, and slide on a flat base briefly.
- Continue to direct the board through the turn by rotating the hips through the turn, and flexing the lead knee and ankle to engage the toe edge.
- Once on the toe edge, push the lead knee forward toward the snow to complete the turn.
- Control the finish by equalizing the weight distributed over the feet.
- Sideslip as necessary to slow down.

Student Trial

Encourage students to start with the heelside turn. Once one turn is completed, ensure students have control of their speed prior to starting the next turn. Encourage repetition and mileage once students are completing both the heel and toeside turns. For the students' first turns, a hands-on approach may be necessary (see the "Dance Exercise", below).

Feedback

Look for and correct:

- Insufficient rotation of the core, or rotation of head/arms only. Focus on rotation of the core.
- Correct edge change sequence. Sequence should be starting edge – flat base – finishing edge.
- Weight centred over lead foot (approximately 60%). Shifting of pressure to the back foot in the fall line. Encourage continued front-foot pressure to turn completion.

Beginner Turn Shape

It is important to remember that the slope of the hill will have a direct impact on the shape of the beginner's initial turns, and on your demonstrations. For example, if the slope is very flat, the turn may become very long and utilize less sideslipping. On a steeper, narrower slope more sideslipping will be required between turns.

KEY WORDS: BEGINNER TURNS (HEELSIDE)

- Sideslip on toe edge
- Shift hips to front foot and slightly inside turn (downhill)
- Rotate lead hip and knee toward nose of snowboard
- Look through turn with eyes
- Allow board to flatten
- Flex ankle (toes up) to change edge
- Equal weight and increase edge to slow/stop

- 1: Starting Edge**
- 2: Flat Base**
- 3: Finishing Edge**

KEY WORDS: BEGINNER TURNS (TOESIDE)

- Begin with sideslip on heel edge
- Shift hips towards front foot and slightly inside turn (downhill)
- Move front knee over toes of front foot (downhill)
- Allow board to flatten
- Push hips and knees inside turn slightly to change edge
- Equal weight and increase edge to slow/stop

INTRODUCING TURNING: OTHER SUGGESTED TACTICS

Students may need some extra help grasping their first turns. The following drills or exercises may help...

1. THE STATIC ROTATION EXERCISE

To introduce students to the movements required for turning in an environment free of consequence, have them remove their snowboard, and stand on flat terrain. Arrange the students to that the imaginary nose of their boards are pointed in the same direction. As you explain the sequence of movements required for turning, have them try to feel the movements at the same time. Focus on the movements of rotation with the core to initiate, as well as the edging movements with the knees and ankles that will be key in performing their first turns. This exercise can be completed prior to walking through the turns, or as a form of correction.

2. GARLAND EXERCISE

To introduce students to the initiation and completion of turns, have them begin in a traverse on either the toe or heel edge. Initiate rotation by moving the hips downhill slightly, and rotate the body as if starting a turn. As the snowboard approaches the fall line, reverse these movements and focus on rotation away from the fall line, and an increased edge angle to slow the snowboard.

3. J-TURNS

Revisit the J-Turn from Phase 2: Sliding of the QuickRide System. Sometimes having students move back in their progression is a great way to kick-start forward progress!

4. WALKING THROUGH THE TURNS

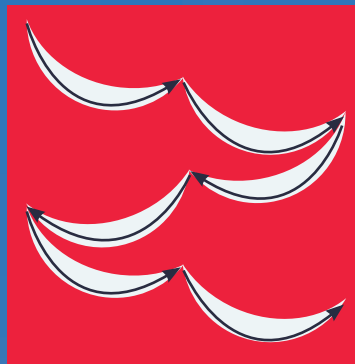
In order to relate the sequence of movements required for turning, students may find it beneficial to walk through a series of toe and heelside turns, with the board off. This will allow them to visualize and prepare for the next step.

5. THE DANCE EXERCISE

The Dance Exercise can be completed on nearly flat terrain. To assist with the student's first heelside turn, with your snowboard removed, stand behind the student (facing uphill and the student's back). Provide assistance by holding the rider's lead arm and trailing shoulder. Direct the student to begin the traverse and walk alongside them, verbally directing them through the movement of the turn. For the toeside turn, stand below the student, facing them, and walk them through the turn holding their hands/ arms for balance.

6. THE "MOUSTACHE" (FALL LINE EDGE CHANGE)

The "Moustache" is an exercise used to help students learn to change edges, without the fear of accelerating in the fall line. It is also useful in getting students to experiment with riding forward, and "switch" (with the opposite foot leading).



- Initiate movement in the same fashion as the Power Pendulum, allowing the snowboard to move into the fall line (downhill) slightly.
- Once sufficient speed and momentum has been achieved, have students rotate their core (as well as hips, knees, and feet) toward the uphill direction.
- Direct the eyes upwards, over the lead shoulder. As the snowboard turns uphill, speed will decrease.
- Have students feel the base flat on the snow momentarily. As the snowboard begins to slide back downhill, have students apply pressure to the opposite edge, and continue rotation to guide the snowboard across the slope.
- Hands-on assistance may be required to allow students to successfully accomplish their first attempts. Position yourself uphill from students at the point of their first intended edge change. As they approach you, hold their uphill (lead) hand to stabilize them as they feel the board flat on the snow. As they slide back downhill away from you, direct them to shift pressure to the new edge, and continue to look in the new direction.



5.FLOW

To learn to explore the mountain safely.

ADDING A TRAVERSE BETWEEN TURNS

Before beginning the Novice Turns, have students practice exiting the turns by traversing across the slope, instead of in a sideslip down the hill. As students finish the turn, have them focus on choosing a target at the side of the run, and maintaining sufficient edge angle to keep the board moving across the slope. This will help to create a rounder turn shape.

Once your students are able to complete both toeside and heelside turns, it's time to add some fluidity to their riding. Also, the addition of vertical movement will enhance stability at higher speeds. Finally, speed control through varying the shape and size of turns will allow students to explore more of the mountain!

NOVICE TURNS

During the Novice Turn, the students will be introduced to flexion of the knees and ankles to assist in maintaining balance and enhancing stability while turning. Also, the sensation of “releasing” the centre of mass from one turn to the next will help to link turns together smoothly.

Explanation

A Novice Turn is similar to a Beginner Turn, except it is done with flexion of the lower joints after the fall line, to help with stability at higher speeds, and to assist riders to link turns together fluidly.

What: A simple turn with flexion (bending) of the lower joints added.

Why: To help maintain balance and enhance stability in the later parts of the turn.

How:

- Perform a heel or toeside Beginner Turn, focusing on rotation of the core, and the initiation of edging movements with the knees and ankles.
- As the new edge is engaged (at or below the fall line), begin to flex the hips, knees and ankles to lower the C.O.M. closer to the snow. Control the speed and direction of travel, through flexion.
- Continue to traverse across the slope by maintaining edge “grip”, instead of sideslipping down the fall line, as in the Beginner Turn.
- Once under control, stand up to a normal body position and initiate the next turn.

Demonstration

By now, it will probably be difficult to restrain the students since they will be excited about applying their new skills and getting mileage and practice! Link three medium sized turns followed by a stop. Exaggerate the movements of flexion after the fall line.

KEY WORDS: NOVICE TURNS

- Begin in a traverse
- Shift hips towards front foot and slightly inside turn (downhill) to initiate beginner turn
- At fall line, flex hips, knees, and ankles to lower body position
- Traverse out of turn, return to neutral vertical position

Student Trial

Have the students follow your path and stop where you do. As soon as one student is a safe distance away (I.E.: one turn ahead), ask another student to go. Make sure that they check for uphill traffic prior to starting. A “follow-the-leader” approach may be appropriate to continue this exercise afterwards and encourage mileage.

Feedback

Provide plenty of positive reinforcement.

Look for and correct if necessary:

- Proper sequence of edging – all three phases.
- Neutral position. Smooth flexion as the board exits the fall line.
- Excessive speed caused by not edging across the fall line at the end of each turn, and not enough flexion.
- Encourage students to flex as a result of feeling increased speed and pressures after the fall line, as opposed to simply going through the movements of flexion.

OTHER SUGGESTED TACTICS

1. **Traverse With Flexion / Extension:** Prior to asking students to add vertical movement to their turns, have them practice a simple traverse across the slope experimenting with up and down motion. Once this is developed, they will be able to add the movements of extension to initiate the turn, and flexion after the fall line to enhance stability and control speed.
2. **Sliding 360's:** To further refine edge control and balance skills, you may have students attempt their first 360's (sliding on snow!). Ask students to initiate a heel or toeside turn as they would normally, except at the completion of the turn, rather than traversing across the run, they will continue to rotate and allow the board to complete the second half of the rotation. Lowering the centre of mass will ensure stability in this exercise. Also, choose terrain carefully – flat enough to keep speed under control.
3. **Follow The Leader:** Encourage students to attempt to follow your path, giving them opportunity to experiment with their turning.

SPEED CONTROL

Increasing the amount of edge angle we use can reduce speed, but speed can also be controlled through turn shape and size.



This refers to the idea that a rounder, smaller turn will help to reduce speed on steep slopes. To increase speed, for example on flat terrain, a large, open turn is desirable.

Have students experiment by trying to maintain the same speed over varying slopes. Ask them to identify what they had to change in order to make rounder or more open-shaped turns. What about small or large turns? A follow-the-leader approach can work well here.

KEY WORDS: SPEED CONTROL

- To reduce speed on steeper slopes, make rounder “closed” turns.
- To increase or maintain speed on flatter terrain, create larger, more “open” turns.

CUSTOMIZING QUICKRIDE FOR DIFFERENT STUDENTS

The QuickRide System is meant to provide you with a flexible progression – not all students need the same steps or tactics to learn to turn!

Remember, our goal should never be to simply “get through” the progression...our goal is to teach mobility and independence. In the first lesson (approximately 1.5 to 2.5 hours), the focus should be heel/toe edge control only. A good goal for the initial lesson is to have student reach the “Power Pendulum” stage on either the heel or toe edge.

Second lessons should focus on “free and experimental” toe/heel edge control (particularly with experimenting or “reading” terrain), and introducing turning. Turning should only be encouraged/taught if terrain is ideal and student is willing/capable. Emphasis should always be on mobility and independence first, and manoeuvres (like turning) second.

CUSTOMIZING THE PROGRESSION: TWO EXAMPLES

EXAMPLE 1	EXAMPLE 2
Student characteristics: <ul style="list-style-type: none"> • Not athletic • No exposure to snow sports • Limited exposure to other complimentary sports. • Nervous / apprehensive • Has had three lessons and has progressed to the Power Pendulum stage. 	Student characteristics: <ul style="list-style-type: none"> • Athletic background • Avid skier • Has spent plenty of time in a snow/resort environment • Confident • Has had one lesson and progressed to the Power Pendulum stage.
TEACHING PROGRESSION: STAGE 4 (“TURNING”):	TEACHING PROGRESSION: STAGE 4 (“TURNING”):
1. Walking through the turns (board off) 2. Static rotation exercise (board off) 3. Static rotation exercise (board on) 4. Garland exercise 5. Revisit J-Turns 6. Beginner Turns with assistance (“Dance Exercise”) 7. Beginner Turns (linked)	1. Garland exercise 2. 1-2 beginner turns with assistance 3. Beginner Turns (linked)
Duration: 1.5 hours	Duration: 30 minutes

As you can see from the above comparison, depending on the student characteristics, instructors may need to alter their approach to their lessons. Other factors that will influence your approach may be:

- Student’s equipment
- Snow conditions & weather (icy, powder, windy, foggy)
- Physical capabilities / fitness level
- Emotional state (nervous, confident, tired, hungry)

In the early stages of teaching, the QuickRide System presents a proven method for teaching first-time snowboarders. Simply follow the steps, and you will help students learn to turn. As you gain teaching experience, your ability to adjust your approach will be refined and you may even find yourself using / creating new, novel tactics to help your students.

NOTES:

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal blue lines across its entire width. The paper is otherwise completely empty, with no margins, text, or other markings.

SKILL DEVELOPMENT

Teaching beyond novice.



THE SKILL DEVELOPMENT MODEL (I.A.C.R.C.V.)

The Coaching Association of Canada has presented a clear model for defining the learning process of our students.

	DEVELOPMENT LEVEL	DESCRIPTION	TEACHING IMPLICATIONS	FEEDBACK
BEGINNER	INITIATION	<ul style="list-style-type: none"> • First contact with the skill. • May have no idea of what to do. 	<ul style="list-style-type: none"> • Create a clear image (be aware of learning style) • Make learning environment safe and easy • Ensure lots of repetition. 	<ul style="list-style-type: none"> • Instructional (what, where, when, how, etc.)
NOVICE	ACQUISITION	<ul style="list-style-type: none"> • Rider can coordinate and execute movements in the correct order. • Execution is inconsistent and lacks precision. • Rider needs to think about what to do (not automatic). • Is a "rough form" – lacks flow, fluidity, and synchronization. 	<ul style="list-style-type: none"> • Lots of repetition – not looking for perfection. • Allow rider to try (trial and error). • Ask questions to start to develop understanding and awareness. • Emphasize right and left symmetry. 	<ul style="list-style-type: none"> • Clear demos • Not looking for perfect, but lots of practice. • Positive feedback.
INTERMEDIATE	CONSOLIDATION	<ul style="list-style-type: none"> • Coordination of movements is there. • In stable / easy conditions, the skill is performed with control and rhythm. • Some elements of the execution remain when the rider is under pressure, conditions change or demands increase, but performance is still inconsistent. 	<ul style="list-style-type: none"> • Expose rider to a variety of situations. • Perform repetitions in varied conditions. • Challenge with more complex tasks. • Give less feedback, and encourage more trial and error. 	<ul style="list-style-type: none"> • Feedback may come more from student internally (feelings, sensations, etc.) • More explanation with the goal of increasing knowledge and understanding.
ADVANCED	REFINEMENT	<ul style="list-style-type: none"> • Performance of skill is very consistent. • Precision stays high even in demanding conditions. • Movements are automatic. • Minor fine-tuning may be necessary. • Critical reflection is now possible by rider. 	<ul style="list-style-type: none"> • Expose riders to complex and demanding situations that require a high, precise level of execution. • Train them to develop solutions to challenges on their own. 	<ul style="list-style-type: none"> • Use higher volume of repetition (with lower volume of feedback). • Use questions in feedback to increase awareness.
EXPERT	CREATIVE VARIATION	<ul style="list-style-type: none"> • Movements are perfect in complex situations. • Rider has a personal style that is effective. • Movements can be performed according to the ideal model. • Rider can come up with new sequences of movements spontaneously to cope with unexpected situations. • Unfamiliar situations reveal personalized movements that are efficient. 	<ul style="list-style-type: none"> • Set up situations to allow riders to develop their own solutions. • Ask for perfect execution in demanding situations. 	<ul style="list-style-type: none"> • Situational: based on the environment. • Decisions become joint decisions between rider and instructor. • Feedback may focus on external cues or internal cues.

In general, progress follows a clear predictable path. Keep in mind that skill development will vary from student to student, and there are many factors that can help a student progress, including:

- Physical condition and fitness (strength and endurance)
- Psychological factors
- Equipment set-up and choice
- Environmental conditions (snow conditions and terrain)
- Technical and tactical skill (experience and mileage)

For the purposes of this guide, skill development has been broken down into the corresponding phases below:

- **Initiation & Acquisition:** Beginner & Novice Students (See “Teaching Beginner Snowboarders”)
- **Consolidation Phase:** Intermediate Students
- **Refinement Phase:** Advanced Students
- **Creative Variation Phase:** Expert Students

With each phase of development or skill level, students will undergo a progression through the skill development model in its entirety. However, when that student attempts a new skill, such as jumping for the first time, he/she will undergo a progression from initiation through to refinement and variation, in respect to the specific skills or movement being attempted. For example, an advanced rider who may be in the Refinement phase of his/her riding overall may be working within the Initiation or Acquisition phase when it comes to mastering a new skill or movement. Likewise, a beginner student may be working within the Creative Variation phase of a basic skill such as sideslipping, while still acquiring the skills to master turning.

PROGRESS FOLLOWS A CLEAR PREDICTABLE PATH. KEEP IN MIND THAT SKILL DEVELOPMENT WILL VARY FROM STUDENT TO STUDENT, AND THERE ARE MANY FACTORS THAT CAN HELP A STUDENT PROGRESS.





THE 3 TEACHING REALMS: PISTE, OFF-PISTE & FREESTYLE

When our student progress through the novice skills, we begin to open up more variety in terrain and learning situations. In general, as instructors we can begin to look at skill development in three environments:

1. **Piste:** Groomed slopes, developing turning skills (including sliding and carved turns).
2. **Off-Piste:** All-mountain terrain, un-groomed slopes (including bumps, steeps, trees, powder, steeps).
3. **Freestyle:** Terrain Park & freestyle environments, where we can develop freeride & freestyle skills.

The decision of which realm to work within is entirely up to the student and instructor, and may depend on a number of factors:

- Student preferences
- Terrain available
- Snow conditions
- Goals or objectives for the lesson

Note: Experienced instructors will develop the skill necessary to allow these environments to cross over, using one to develop overall skill in the other(s). For example, skill development for freestyle / terrain park riding can be accomplished in piste or off-piste terrain.

A TACTICAL APPROACH

Many of the tactics (or exercises) presented at the intermediate, advanced and expert stages are interchangeable from skill to skill. For example, Switch Riding is a useful tool for developing Balance, Pressure Control, and perhaps many other skills. It is important that instructors are aware of the Skills Concept, and can employ their Analysis & Improvement skills to watch a student and then formulate a plan to develop the skill that is lacking in their riding. This will mean drawing on experiences and previously used tactics to accomplish the task at hand.

INTERMEDIATE SKILL DEVELOPMENT

At this stage, students should be comfortable with the following skills:

- Linking sliding turns on green, groomed runs.
- Controlling speed using turn shape and size.

Consolidation of the various riding skills will help to progress these students on to more challenging intermediate terrain and manoeuvres.

PISTE:

DEVELOPING SLIDING TURNS



The Student

These snowboarders have the ability to perform novice turns on green runs. At times they find themselves getting a little out of control, especially on steeper intermediate slopes.

Terrain

Green and blue runs, groomed conditions.

Goals

- To continue to develop the basic riding competencies:
- Centred, mobile stance
- Turning with the lower body
- Balance over the edge
- To control speed using turn shape.
- To ride steeper slopes.
- To improve coordination skills and consistency of turn shape.
- To link symmetrical sliding turns on blue slopes.

Skill Development Approaches & Example Tactics

POSITION & BALANCE:

Development of a centred, relaxed, mobile position.

- Motorboat Turns
- Sliding 360's (on-snow)

PIVOT:

Development of efficient lower-body rotational movements (hips, knees, feet).

- Fall-Line Pivot Exercise
- Static Steering Exercise
- Headlights On Knees

EDGING:

Develop increased edge angle, and earlier in the arc (at the fall-line), using a combination of inclination and angulation movements.

- Static Edging Exercise
- Spray The Trees
- Clock Face Analogy

PRESSURE:

Exposure to passive pressure management, through up and down movements in the lower joints as terrain and speed dictate.

- Riding Varied Terrain
- Hop Turns (Sliding)
- Flexion / Extension Exercises (in traverse or between turns)

TIMING & COORDINATION:

Development of smooth, fluid movements, and begin to explore variation in movements to make different sized turns.

- Tornado Turns
- Follow The Leader

ANALYSIS & IMPROVEMENT GUIDE: SLIDING TURNS (INTERMEDIATE)

OBSERVATION	ANALYSIS	IMPROVEMENTS
Snow being sprayed down the slope instead of to the sides.	Too much pivot, weak edging skills.	Edging Start applying more edge earlier in the turn through inclination, and engage lower body (knees) to steer board. Pivot Over-use of upper body rotation movements. Focus on hips and knees creating turn.
Dead spot between turns.	Unable to link turns.	Timing & Coordination Use a Fall-Line Pivot Exercise which stresses turn initiation and completion. Encourage students to look ahead and plan their path of travel.
Board chattering on heelside turns.	Static (straight or locked) knees.	Pressure Have student perform isolated heelside & toeside turns, concentrating on slight adjustments in flex of the hips knees and ankles, to maintain constant pressure on the edge.



PISTE:

INTRODUCING CARVING

The carved turn utilizes the board's sidecut and maximum edge angle, leaving only a "pencil line" track in the snow. At this stage, the student's first goal will be to become comfortable with riding on this pure edge. These students will need to be familiar with the effect of sidecut on the shape of the carved turn. The snowboard's sidecut acts on an arc to help assist the snowboard in turning - the smaller the sidecut radius, the tighter the carved turn. The challenge in introducing carving is in eliminating pivoting movements, which disrupt the pure carved track in the snow.

The Student

These riders are able to perform sliding turns on blue slopes. They have good understanding of all skills as applied in sliding turns.

Terrain

Green Runs: Beginning with flatter green runs and progressing to slightly steeper groomed conditions (still on green terrain), which allows for adequate speed control.

Goals

- To develop edge angle until carving occurs, utilizing the lower joints (angulation).
- To maintain a centred position over both feet, with weight distributed evenly and prevents pivoting.
- To develop a better sense of balance on a pure carved edge.
- To link symmetrical carved turns on green slopes.



Skill Development Approaches & Example Tactics

POSITION & BALANCE:

Equal weight over both feet with a relaxed position that allows for adjustment in balance.

- Carved Traverses
- "Stop n' Hops"
- Hop Between Turns

PIVOT:

Minimize pivoting movements to reduce sliding of the tail of the board.

- Alignment exercises (Motor Boat, Elbows Pointing to Nose/Tail)
- Arms restricted - behind back, at sides, etc. (to minimize large rotational movements)

EDGING:

Develop balance over a "pure" carved edge and smooth application of edge.

- Static Edging Exercise
- Carved Traverses
- Drinks on Shoulders
- Pour Water from the Boots

PRESSURE:

Passive control of pressures due to speed or terrain changes.

- Cowboy Knees
- Relaxed Knees & Ankles

TIMING & COORDINATION:

Smooth, fluid movements for turn symmetry and increased stability.

- Counting
- Tornado Turns to Decreased Radius
- Pour Water From Boots

ANALYSIS & IMPROVEMENT GUIDE: INTRO TO CARVED TURNS

OBSERVATION	ANALYSIS	IMPROVEMENTS
Board sliding out (not leaving a pencil line track).	Insufficient edging. Too much pivot (weight too far forward over front foot).	Position & Balance / Edging Have student perform isolated traverses or arcs concentrating on equal pressure over both feet or slightly back on the board, and adjusting edge angle to stop skidding.
Board chattering on heelside turns.	Static (straight or locked) knees.	Pressure Have student perform isolated heelside & toeside carved turns, concentrating on slight adjustments in flex of the knees, to maintain constant pressure on the edge.
Student breaks at the waist to touch snow in middle of arc.	Inclining and/or breaking the neutral position.	Position & Balance / Edging Introduce the analogy of balancing “drinks on the shoulders” (and angulation) to encourage a more stable body position while on edge, and the use of lower body joints to create angulation.



OFF-PISTE:

INTRODUCTION TO TERRAIN ADAPTATION

During this phase, students can be introduced to riding more variable, un-groomed terrain. Basic skills can be evolved into the fundamental skills required for negotiating and adapting to freeride terrain. The goal here is to refine balance and mobility skills for controlled riding on variable runs. This could include any natural and intentionally built terrain features like: small rollers, small bumps, berms, banks, snowboard cross tracks, small halfpipes and terrain park features, etc.



The Student

Competent intermediate on groomed snow, perhaps intimidated by some of the variable terrain features found on most trails, or unable to maintain control over undulating and rough or un-groomed slopes.

Terrain

- Un-groomed trails.
- Blue runs with small rollers, small bumps, berms and banks.
- BX tracks, half-pipes, terrain parks (easier sections).

Goals

- To maintain confidence, control, fluidity, and balance required for safely negotiating rougher, undulating terrain and terrain features found on un-groomed trails.

Skill Development Approaches & Example Tactics

POSITION & BALANCE:

Relaxed, athletic position, with COM slightly lower than normal, for stability and mobility.

- Cowboy Knees
- Any balance-specific exercises, in undulating terrain.

PIVOT:

Turning the snowboard using knees, and ankles and feet, allowing the upper-body to maintain stability.

- Banking turns through a half-pipe.
- Turning in the troughs of bumps.
- Fish Turns
- “Twist The Disks” Analogy

EDGING:

Balanced over the edge using a combination of inclination and angulation movements.

- Stop-And-Hops
- Any edging-specific exercises, in undulating terrain.

PRESSURE:

Allowing the lower body to move freely, absorbing pressure from terrain.

- Traverse through bumps with passive absorption.
- Shock Absorbers – legs extending and retracting in relation to terrain
- “Pumping” rollers
- Riding varied terrain (keeping the board in contact with the terrain)

TIMING & COORDINATION:

Looking ahead, appropriate pace of movements, coordination skills.

- Riding through BX course, “whoops”, banked turns and berms.
- Dropping-in to a small halfpipe or gully.
- Linking turns in varied terrain.
- Experimenting with rapid vs. slow movements.

ANALYSIS & IMPROVEMENT GUIDE: BASIC TERRAIN ADAPTATION

OBSERVATION	ANALYSIS	IMPROVEMENTS
Getting bounced around in choppy snow.	Lower joints too stiff or locked.	Position & Balance Try to lower C.O.M. and relax joints. Ensure upper and lower body are aligned.
Front of board lifts in air while riding over rolls, speed increasing.	Lack of mobility in lower joints.	Pressure Try to use legs like independent shock absorbers, pushing and retracting, as terrain requires.
Getting air over rollers.	Weight too far over back foot.	Position & Balance Traverse over bumps, emphasizing keeping the hips low and between the feet, and using the lower joints to push/retract.
Unable to pivot the board in bumpy terrain.	Stiff lower joints. Body position too tall. Using the upper-body to create turns.	Pressure Control / Position & Balance Try traversing or straight running over gently rolling terrain, emphasizing flexion at the top of the roll, and extension as the board moves through the “troughs”. Mobility in stance will improve balance in rollers. Pivot / Position & Balance Focus on allowing the upper body to stay “quiet” while the lower body pivots the snow-board, using the knees and feet.

FREESTYLE

INTRODUCING SWITCH RIDING

POSITION & BALANCE: THE FREESTYLE TRIANGLE

Similar to the Neutral Position, the purpose of the Freestyle Triangle in riding is to create a comfortable and stable position to begin various manoeuvres. The Freestyle Triangle consists of all of the joints of the body slightly flexed, with the arms slightly and comfortably outstretched towards the nose and tail of the snowboard. The term 'triangle' comes from the shape created if you were to draw a line from the tail of the snowboard, up to the top of the head, and down to the nose of the board. A key part of this stance is the position of the hips. Hips should be neutral, allowing the riding to begin rotation in either direction. It is important to remember that in freestyle snowboarding, and freeriding in general, this triangle may not always be achievable. In fact, many times during various tricks and manoeuvres, the aspect of going 'out of balance' momentarily may be the desired effect.

Please refer to the chapters titled Safety & Risk Management and Terrain Park Teaching before taking students in freestyle terrain.



In the intermediate phase, students can be introduced to riding opposite to their normal stance, or "switch" (also sometimes called "fakie"). This riding skill is significant in all-terrain snowboarding. Ultimately, any type of turn or manoeuvre is possible while riding switch.

Basic switch riding skills can make stopping and evasive manoeuvres safer and easier over a wider variety of conditions. At this stage, emphasis is on Position & Balance and Pivot skills required to make controlled switch stops and sliding turns on groomed green and blue runs. Re-introduction and/or emphasis of these key concepts of normal forward riding skills can be easily adapted to learning basic switch riding (Beginner, Novice, Intermediate Turns).

The Student

This student can comfortably perform sliding turns on green runs. He/she desires to expand their "bag of tricks" - their all around manoeuvrability and safety, to progress to all-terrain riding.

Terrain

- Groomed green terrain.

Goals

- To smoothly change from forward to switch while riding (sliding 180's).
- Controlled switch riding (stopping, straight-running, linked sliding turns).

Skill Development Objectives**POSITION & BALANCE:**

Centred, mobile body position.

PIVOT:

Full-body rotation to start the turns, progressing to lower body rotation as skills increase.

TIMING & COORDINATION:

Coordinating movements to successfully ride in the reverse direction.

When introducing switch riding for the first time, a building block approach is suggested, using some or all of the following tactics:

- 1. Switch straight run (beginner bowl-type terrain)
- 2. Pendulum
- 3. Switch traverse
- 4. "The Moustache" or "Fall Line Edge Change" exercise
- 5. Sliding on-snow 360's, 180's
- 6. Switch Fall-Line Pivot exercise
- 7. Isolated switch turns
- 8. Linked switch turns (with flexion for stability and mobility after the fall line)

ANALYSIS & IMPROVEMENT GUIDE:
BASIC SWITCH RIDING

OBSERVATION	ANALYSIS	IMPROVEMENTS
Over turning / trouble stopping the board from turning.	Too much weight over the front foot.	Position & Balance Try to perform small hops between turns, to encourage 50/50 weight distribution.
Unable to start (initiate) turns.	Too much upper-body rotation.	Pivot Encourage the use of lower-body rotational movements (hips and knees) to initiate turns, rather than shoulders/arms.
Falls often at edge change.	Too much weight on the back foot. Catching edges.	Position & Balance "Nose over toes" analogy - have students focus on aligning their nose (on their face) over top of the toes of their front boot to start the turns. This will encourage a slight pressure shift to the front foot. Edging / Timing & Coordination Try performing sliding 180's and 360's to increase coordination and edge change skills.



FREESTYLE

BASIC FLATLAND TRICKS

At this stage, students may be getting curious about expanding their repertoire of tricks. Flatland manoeuvres are a great way to improve overall skills, as well as develop balance and movement on the snowboard.

The Student

This student can comfortably perform sliding turns on green and blue runs. He/she desires to expand their “bag of tricks” to progress to more advance freestyle riding.

Terrain

- Groomed green terrain.

Goals

- To learn some basic flatland tricks.

Skill Development Objectives

**POSITION & BALANCE:**

Mobile body position.

PIVOT:

Minimal rotation or pivoting movements at this stage, to avoid catching edges.

EDGING:

Minimal edging movements will reduce the risk of falls.

PRESSURE:

Relaxed lower joints, with some “push/pull” movements from lower body.

TIMING & COORDINATION:

Coordinating movements.

When introducing flatland tricks for the first time, a progression-based approach is suggested to ensure that students learn safely. Try to break the manoeuvres down into basic movements, and use the S.A.F.E. model when introducing new tricks:

Nose/Tail Presses and Rolls: A nose or tail press requires the rider to move to the front or rear of the board while straight running, and then flex the board so that the opposite end is off the snow.

- **STATIC:** Have students practice presses on flat terrain (not sliding) first. Practice moving the COM (hips) towards the nose or tail. Highlight the difference between lifting the nose or tail, and pressuring or pushing on the nose or tail to get the opposite end to lift.
- **ACTIVE:** Practice this while sliding. Start slow on flat/controlled terrain!
- **FREE:** Allow plenty of time for practice and controlled experimentation. Give feedback when necessary.
- **EXPERIMENTATION:** Progress to a nose or tail press within a turn, or on an edge. Or, try hopping from nose to tail (or vice versa). Introduce rotational movements into presses to develop “butters” or nose / tail rolls (e.g.: tail press in the middle of a turn).

ANALYSIS & IMPROVEMENT GUIDE:
BASIC FLATLAND TRICKS (NOSE/TAIL PRESSES)

OBSERVATION	ANALYSIS	IMPROVEMENTS
Frequent Falling	Too tall, unstable position.	Position & Balance Encourage students to move their COM closer to the snowboard, to increase stability.
Catching edges.	Edge control needs improvement.	Edging Practice straight running on a flat base (on flat terrain). Practice basic sliding 180's and 360's at low speeds, and increase challenge slowly.
Can't get board to bend during nose/tail rolls.	Insufficient weight shift.	Pressure Have student try a traverse with a nose or tail press, to encourage a larger movement to the nose or tail. Have students think about moving with the hips (COM) and slightly with the lead knee.



FREESTYLE

INTRODUCING JUMPING

At this stage, students may want to get air! Remember, safety is paramount when introducing jumping.

The Student

This student can comfortably perform sliding turns on green and blue runs and should be comfortable absorbing rolling or bumpy terrain.

Terrain

Look for small natural jump features on the mountain* before heading to small (S) park jumps.

**Be aware of safety if using jumps on the mountain - ensure that the landings are visible, and that jumps do not send riders into the flow of traffic. Always use a spotter when working on jumping skills.*

Goals

- To learn to get air.

Skill Development Objectives**POSITION & BALANCE:**

Centred, mobile position. The “Freestyle Triangle”.

PIVOT:

Minimal rotation or pivoting movements at this stage, to avoid catching edges on take off or landing.

EDGING:

Minimal edging movements will reduce the risk of falls.

PRESSURE:

Extension of lower joints on take-off, relaxed lower joints to absorb landings.

TIMING & COORDINATION:

Coordinating movements to achieve desired outcome.

When introducing jumping for the first time, we can focus on two methods of generating lift: pop and ollie. Remember the S.A.F.E. model when introducing these movements!

1. Pop: When a snowboarder pushes against the snow with both feet to achieve lift, they are popping. Popping can be used either without a bump or jump in the snow, or with.

- **STATIC:** When having students attempt popping, remember to have them begin with the Freestyle Triangle, and flex hips knees and ankles to start off. Extend the joints quickly, pull the board closer to the body by flexing the hips and knees, and then extend the legs again in preparation for landing.
- **ACTIVE:** Practice this movement in a shallow straight run, off of a flat base to start. Progress to trying to pop off of an edge (toe or heelside).
- **FREE:** Allow plenty of time for practice and controlled experimentation. Give feedback when necessary.
- **EXPERIMENTATION:** Have students practice their pop over obstacles (snowballs, tracks in the snow, mitts) to improve the timing of their movements. Experiment with popping both off of flat ground and with the help of a jump/ramp or bump in the snow. Timing becomes an issue when popping off of a jump, as the riding will need to time the flexion/extension of the lower joints with the duration of the jump’s take off ramp.

2. Ollie: When a snowboarder uses the flex of the snowboard to assist in jumping, they are ollieing. Ollies can be used either without a bump or jump in the snow, or with.

- STATIC:** When having students attempt to ollie, remember to have them begin with the Freestyle Triangle, and flex hips knees and ankles to start off and shift the hips towards the tail of the board while flexing down. Extend the back leg quickly to build pressure in the tail of the snowboard. Extend the back leg rapidly and forcefully to pop into the air, pull the board closer to the body by flexing the hips and knees, and then extend the legs again in preparation for landing. On landing, absorb the pressure from the ground by flexing the legs equally.
- ACTIVE:** Practice this movement in a shallow straight run, off of a flat base to start. Progress to trying to ollie off of an edge (toe or heelside).
- FREE:** Allow plenty of time for practice and controlled experimentation. Give feedback when necessary.
- EXPERIMENTATION:** Have students practice their ollies over obstacles (snowballs, tracks in the snow, mitts) to improve the timing of their movements. Experiment with ollies both off of flat ground and with the help of a jump/ramp or bump in the snow. Timing becomes an issue when ollieing off of a jump, as the riding will need to time the flexion/extension of the lower joints with the duration of the jump's take off ramp.



ANALYSIS & IMPROVEMENT GUIDE: STRAIGHT AIRS

OBSERVATION	ANALYSIS	IMPROVEMENTS
Arms "flapping" in the air.	Too tall, unstable position.	Position & Balance Encourage students to move their arms down to help with balance. Also, ask students to try to retract the legs up towards the body while in the air.
Leaning back while in the air.	Losing balance in the air.	Position & Balance / Timing & Coordination Practice a centred position during the take-off of the jump, possibly using "coasting" to develop balance. Also, ask students to try to retract the legs up towards the body while in the air.
Not getting air.	Insufficient speed, and/or incorrect timing.	Pressure / Timing & Coordination Practice riding towards jumps with more speed. Also, practice timing the pop (ollie) to coincide with the terrain feature – the bulk of the upward force when jumping should come from the snowboard flexing and releasing. Use the shape of the jump take-off to help this.

ADVANCED SKILL DEVELOPMENT

At this stage, students should be comfortable with most of the following skills:

- Linking sliding turns at moderate speeds on intermediate (blue) terrain.
- Use of the lower joints to turn the snowboard to a mildly varied shape and size of turn.
- Absorption of small bumps and rolls in terrain.
- Basic use of carved turns, on mellow terrain, when conditions allow.
- Basic switch riding, straight airs and basic flatland tricks.
- Controlling speed using turn shape and size.

Refinement of the various riding skills and skill components will help to progress these students on to more challenging advanced manoeuvres and situations. (Refer to the Skill Concept chapter for info on refining riding skills).

PISTE:

REFINING ADVANCED TURNS ON GROOMED RUNS (SLIDING AND CARVED TURNS)

The Student

These snowboarders have the ability to perform sliding turns on blue runs and carved turns on green runs. At times they may find themselves getting a little out of control, especially on steeper slopes and at higher speeds.

Terrain

Blue & black runs, groomed conditions.

Goals

- Begin to develop and demonstrate the Advanced Riding Competencies: Strength & Flow, Arc-to-Arc, Loading & Deflection & Steering Versatility.
- To enhance stability through movements in body position, and the development of a stronger position.
- To refine edging skills.
- To refine lower-body movements (pivot, edging, pressure) in turning the snowboard.
- To add strength and flow to riding; linking one turn to the next.
- To begin to bend the snowboard in turning, for board performance.
- To add versatility in steering movements to riding for varied turn shapes and sizes.



Skill Development Approaches & Example Tactics

<p>POSITION & BALANCE:</p> <p>Balance vs. stability: Centred, mobile, “alert” position. The development of dynamic balance, or balance and stability as a result of continuous micro-adjustments.</p> <ul style="list-style-type: none">• ‘Tapping’ front or back foot• Lower Centre of Mass• Resist upper-body rotation with arms crossed, behind back, etc.• Cowboy Knees• “Tip” laterally into turns	<p>PIVOT:</p> <p>Rotation, Counter-Rotation: Refine lower-body rotational movements for increased efficiency.</p> <ul style="list-style-type: none">• Fall-Line Pivot Exercise• Garland (Within Turning Arc) / ‘Double-Turns’• Fish Turns• Rail to Rail <p><i>*Note: In carved turns, focus on minimal rotational/pivoting movements, to maximize carving performance.</i></p>	<p>EDGING:</p> <p>Inclination, Angulation: Increased edge angle, and earlier in the arc (above the fall-line), utilizing a combination of inclination to start the turn and angulation as edge angle increases. Fine tuning of edging movements using the small joints.</p> <ul style="list-style-type: none">• Sponsor Turns• Inverse Traverse• Inverse Traverse plus Ollie Above Fall-Line• Grab Turns• Euro Carves / Revert Carves• Drinks on Shoulders
<p>PRESSURE:</p> <p>Passive and Dynamic Pressure Management Skills:</p> <p>Create, control and release pressure created in the turn by loading the snowboard.</p> <ul style="list-style-type: none">• Pump Turns• Dolphin Turns• Absorbing undulating terrain• Explore Down Un-Weighting in Turning• Ride with minimal flexion in lower joints	<p>TIMING & COORDINATION:</p> <p>Timing vs. Coordination: Focus on looking ahead to ensure turns are linked effectively. Patience at start of turn will ensure optimal turn entry and exit (rounder arcs) – optimal duration / impulse of movements for desired outcomes.</p> <ul style="list-style-type: none">• Looking Ahead / Follow The Leader• Adjust Corridor / Size of Turns (Rhythm Change Exercise)• Adjust Pace of Movements (Counting)	

ANALYSIS & IMPROVEMENT GUIDE:

ADVANCED TURNS ON GROOMED TERRAIN

OBSERVATION	ANALYSIS	IMPROVEMENTS
Turn shape is not round.	Rushing the top half of turn.	<p>Edging</p> <p>Start applying edge earlier in the turn, prior to any pivoting movements.</p>
Board sliding in carved turns.	Insufficient tail pressure.	<p>Timing & Coordination</p> <p>Develop “patience” in turning – don’t rush to push the tail of the snowboard through turns.</p>
Lack of board performance (bending of snowboard).	No loading.	<p>Position & Balance / Pressure</p> <p>Shift additional weight to back foot, specifically at the fall line. Resist rotational movements.</p> <p>Pressure & Edging</p> <p>Have student perform isolated heelside & toe-side turns, concentrating on slight adjustments in flex of the knees, to maintain constant pressure on the edge, early in the turn.</p>

OFF-PISTE:

REFINING TERRAIN ADAPTATION SKILLS

The Student

These snowboarders have the ability to perform sliding and carved turns on green, blue and some black runs. They are comfortable riding at moderate speeds, and want to explore more advanced freeride terrain, including steeps, bumps, trees, and variable snow conditions (icy to powder). These riders will improve by being exposed to a variety of terrain and situations.

Terrain

All terrain, green, blue and black runs (un-groomed slopes, including bumpy terrain and steeps).

Goals

- To enhance mobility and stability in all-mountain terrain.
- To refine the use of lower body movements to turn the snowboard in variable conditions.
- To refine balance over the edges in variable terrain.
- To add strength and flow in all-mountain riding.
- To develop pressure control skills (loading and unloading the snowboard).
- To develop the skills to link turns and/or manoeuvres in all-mountain situations.



RIDING BUMPS: SUGGESTED TACTICS

Focus on developing agility / coordination skills, along with dynamic pressure control skills which will allow the snowboard to maintain contact with the snow.

- Traversing across the bumps with passive flexion/extension for absorption.
- Traversing with active flexion/extension to absorb or prepare for bumps and troughs.
- “Double-ups” over multiple bumps.
- Down un-weighting to absorb bump at edge change.
- Turning on the troughs only / turning on top of bumps only.
- Edging on back side of bumps.
- Medium or large radius turns in bumps, at various speeds.
- Speed-checks in bumps.
- Using the tail (aft pressure) for speed control.

RIDING STEEPS: SUGGESTED TACTICS

Efficient edge change and active steering will allow the snowboard to complete smaller turns on steep terrain, controlling speed and direction.

- Riding with a lower C.O.M., for stability.
- Down un-weighting for efficient edge change in steeps.
- Combine up and down un-weighting movements (“mid-weighting”).
- Increased steering movements in feet and knees, with minimal upper body rotation movements.
- Use of upper/lower body separation (counter-rotation), where appropriate.
- Spray snow to sides of turns (edging).

RIDING TREES: SUGGESTED TACTICS

Trees force riders to use their Timing & Coordination skills to adjust movements to adjust to obstacles in their path.

- Follow the leader
- Look ahead; look for gaps - not at trees!
- Turning above trees, turning below trees, turning around trees.
- Vary speed.

RIDING POWDER: SUGGESTED TACTICS

Efficient use of slight pressure adjustments in powder snow will help student maintain momentum & speed in relation to changing slopes.

- Use of groomed run edges to “explore” powder and return to groomed.
- Down un-weighted edge change to reduce “diving”.
- Reduce edging movements - “bank” or tilt the snowboard to form platform.
- Straight run with open turns.
- Aft pressure movements - bounce on tail.
- Powder “slashes”.
- “Face shots” - spray snow downhill and ride through.

RIDING ICY CONDITIONS: SUGGESTED TACTICS

Icy conditions require round turn shapes through pivot instead of edge performance, along with a stacked, stable body position for improved balance.

- Lower COM for stability.
- Reduce edge angle, and focus on lower joints pivoting the snowboard to turn.
- Reduce large, gross movements - focus on small joint movements.
- Increase angulation (“Drinks On Shoulders” exercise).

FREESTYLE

REFINING FREESTYLE RIDING

At this stage, students may want to get air! Remember, safety is paramount when introducing jumping.

The Student

This student can comfortably perform basic freestyle manoeuvres such as straight airs on small jumps, basic flatland manoeuvres, and switch riding.

Terrain

- Small (S) and medium (M) features in the park.
- Small and medium jumps on the mountain.

Goals

To develop overall freeriding skill through the use of Freestyle and Terrain Park features...

Improve balance and mobility skills:

- To learn to ride on rail and box features (IE: 50-50), and manipulate the board while on a rail or box (IE: presses, boardslides).
- To learn to grab the snowboard while in the air.
- Improve edging and pressure management skills:
- To learn to get more amplitude to their jumps,
- The use of loading and unloading the snowboard for freestyle performance.

Develop rotational skills:

- To learn airs with rotation (180's, 360's), by developing rotational control and versatility.

Development and refinement of coordination skills:

- To learn more advanced flatland tricks.
- To develop flow and linking of manoeuvres in freestyle riding.

**Skills****POSITION & BALANCE:**

Balanced, mobile, relaxed position across all planes of movement. Balance vs. stability (body position vs. creating and managing stability).

PIVOT:

Using rotation and/or counter-rotation movements to move the snowboard on a box or rail. Use of rotational movements to achieve 180 & 360-degree rotations.

EDGING:

Minimal inclining edging movements on non-snow surfaces. The use of an edge-set to create a platform while spinning, through refined angulation movements.

PRESSURE:

Passive vs. active application of pressure. Relaxed lower joints to absorb various surfaces. Use of fore and aft pressure to feel nose or tail presses, and to use ollies to generate more air.

TIMING & COORDINATION:

Coordinated movements to link manoeuvres. Appropriate duration of movements based on intended outcome.

RAILS & BOXES

Rails and boxes can be a useful tool in developing stability, mobility, and edge regulation skills.

The Student

This student can comfortably perform sliding turns on green and blue runs and should be comfortable absorbing rolling or bumpy terrain.

Terrain

- Small (S), surface level, ride on rail and/or box features in the park.

Goals

- To learn to ride with a flat base on non-snow surfaces.

Skills

POSITION & BALANCE:

Balanced, aligned, and relaxed position.

PIVOT:

Minimal rotation or pivoting movements at this stage, to avoid catching edges.

EDGING:

Minimal edging movements will reduce the risk of falls on boxes and rails.

PRESSURE:

Relaxed lower joints to absorb various surfaces.

TIMING & COORDINATION:

Coordinated movements. Eyes looking ahead.



Suggested Tactics

INTRODUCING RAIL & BOX RIDING

When introducing rail and box riding, a progression, or Building Block approach, is best. This will help to reduce any consequences of falling.

1. **Flat-Base Riding:** Outside of the park, have students practice straight running (in the fall line) with a flat base and no edge angle. Knees and ankles should be relaxed, and have students envision a “target” to focus on. Drawing imaginary rails or boxes in the snow is useful here.
2. **Riding with a flat base on snow-level obstacle:** Using a bamboo pole, stick or other object, have students practice riding across it.
3. **Hands-On On a Box:** The first time students ride on a non-snow surface, it maybe helpful for the instructor to stand beside the box, and hold students’ hands as they slide across. Consider safety - do you have the physical attributes to safely handle a student riding on a box?
4. **Riding Over Boxes &/or Rails:** Remember to choose the type of rail that will best suit your student’s level of ability. The key here is to choose rails or boxes that are flat, short, low and wide. Once students are comfortable with flat-based riding, have them apply the same skills to simple boxes or rails - centred position, flat base, and eyes on target at end of feature.

NOSE/TAIL PASSES ON BOX/RAIL FEATURES:

A nose or tail press requires the rider to move to the front or rear of the board while doing a 50-50, and flex the snowboard so that the opposite end is off the surface. This is a good progression from 50-50’s.

- Have students practice on the snow before beginning on boxes or rails.
- Practice moving the COM towards the nose or tail. Highlight the difference between lifting the nose or tail, and pressuring the nose or tail to get the opposite end to lift. Practice this while sliding.
- Once you’ve progressed to boxes, start with having students nose or tail press at the end of the feature, and progressively start earlier and earlier. Progress to ollie or nollie into the nose or tail press.

ANALYSIS & IMPROVEMENT GUIDE: RAILS & BOXES

OBSERVATION	ANALYSIS	IMPROVEMENTS
Sliding out on edges.	Using edges on box.	Position & Balance Encourage students to stand in a vertically aligned position, with knees and ankles “soft” to reduce edging. Be aware of rotational alignment – keep shoulders, hips and knees aligned on the feature with hands over tip and tail.
Stopping on feature.	Travelling too slowly.	Timing & Coordination Have students approach the feature at a faster speed, and look at the end of the feature.
Coming off feature early.	Approach not straight. Not looking toward end of feature.	Timing & Coordination Practice minimizing turning on the approach to the feature. Have student practice looking at end of the feature while riding on it.

INTRODUCING BOARDSLIDES

1. **Have students practice on the snow before beginning on boxes or rails.** Have them practice by using a counter-rotational movement (“shifty” or speed check) to get the snowboard to move up to 90 degrees across the direction of travel.
2. **Once the movements are consolidated, have them try on a box:** starting in a 50-50, and then pivoting the board to the boardslide position using counter-rotation, by rotating the upper body in the opposite direction that they want the board to rotate.
3. **Progress to hopping onto the feature straight into the boardslide position.**



NAMING BOARDSLIDES

When naming boardslides, unlike the direction of spins or rotation, we name the boardslide based on the approach to the rail or box, and also the nose of the board crossing the feature first. Note: The opposite of this is a “lipslide”, which happens when the tail of the snowboard crosses the feature first.

Backside Boardslides: A backside boardslide is when a rider slides along a box or rail with the board across the feature. The rider is facing downhill and approached with the feature to his/her back, rotating 90 degrees in the frontside direction to get on the feature. Backside boardslides are generally simpler for students to begin learning.

Frontside Boardslide: A frontside boardslide happens when a rider slides along a box or rail with the board across the feature. The rider is facing uphill and approached with the feature to his/her front, rotating 90 degrees in the backside direction to get on the feature.

On ride-on rails or boxes, it's sometimes difficult to specify boardslide or lipslide; in which case the take-off edge can be used as reference (IE: approaching on toe edge, but sliding facing downhill would be considered a lipslide).

COMMON SENSE IS KEY WHEN TEACHING RAILS AND BOXES.

CONTINUALLY EVALUATE WHETHER YOUR STUDENT HAS THE ABILITY TO SAFELY RIDE THE OBSTACLE. IF NOT, FIND A DIFFERENT OBSTACLE!

ANALYSIS & IMPROVEMENT GUIDE: BOARDSLIDES

OBSERVATION	ANALYSIS	IMPROVEMENTS
Rider falls over uphill edge.	Lateral balance.	Position & Balance / Edging Encourage students to keep the snowboard flat on the feature by maintaining relaxed lower joints. Maintain balance over the feet by leaning downhill slightly and keeping the body weight moving downhill with the arms outstretched slightly.
Rider can't get to a full 90-degree boardslide.	More separation of upper and lower body needed.	Counter-Rotation Have student practice separating the upper and lower body in a "speed-check" motion, with the board flat on the snow.
Leaving feature with board still across fall line.	Lack of rotational control to return to normal riding position.	Rotation/Counter-Rotation Have student practice continuing rotation through end of the feature to exit riding switch, or have students keep shoulder in-line with feature, counter-rotating to return the board back to a straight position before end of feature.



REFINING FLATLAND TRICKS

In performing flatland tricks, you are only limited by your imagination!

- Progress from simple single-plane movements (presses), to more complex multi-plane movements (presses with rotation, and then presses with rotation and vertical pop).
- Encourage students to experiment with combining manoeuvres - IE: Nose press 180 (nose roll), or pop-180 to tail press, etc.
- A game of "Betcha-Cant's" can be a good way to challenge students to refine their coordination skills.



REFINING STRAIGHT AIRS

At this stage, students should be confident with small jumps. The next steps are increasing the amplitude of jumps, through the use of “ollies”, and then learning to grab the board.

OLLIES/NOLLIES:

- Ollies (springing off the tail of the board) use the natural flex of the snowboard to help the rider gain lift. Snowboarders must be able to bend their board to ollie. Nose and tail presses (see above) may be good skills to lead into ollies. Nollies are similar to ollies, with the spring coming from the nose of the board.
- To introduce ollies to riders, have the rider flex down into a low position. The rider must then shift pressure to the back foot, while pushing on the back foot and lifting the front foot off the ground.
- At this point, the rider must push down on the back foot with more force, to achieve vertical pop. The spring of the board should snap the rider into the air slightly, at which point they can make the board parallel with the ground and absorb the landing by flexing the hip, knee and ankle joints.
- Ollie-ing at the take-off of a jump will allow the rider to achieve more vertical lift, and more time in the air.

GRABS:

- There are an almost infinite number of grabs a rider can perform in the air. In general, the simpler grabs will be close to the middle of the board and between the feet (Mellon, Indy, Mute).
- Have students approach the jump as they would with any straight air.
- A slight ollie at the lip of the jump will assist students in getting the necessary airtime to grab.
- Once in the air, students should bring the board up toward the hand, by bending the knees (as opposed to reaching for the board, and moving the upper body down. This can result in a loss of balance).
- After grabbing the board, the student should be looking for the landing. Release the grab and extend the legs to prepare to absorb the landing.

ANALYSIS & IMPROVEMENT GUIDE: AIRS WITH GRABS

OBSERVATION	ANALYSIS	IMPROVEMENTS
Not getting the grab.	Position too tall or extended.	Position & Balance Encourage students to retract the legs and board up toward the hands while in the air. Practice various grabs on the snow first to find ones that work best for the student

INTRODUCING AIRS WITH ROTATION (180'S & 360'S)

A major goal of many snowboarders is rotation – more specifically airs with rotation such as 180's and 360's. Understanding the concept of rotation is crucial to mastering airs with rotation. Up until this point, rotation has simply aided this snowboarder in turning left and right. When working up to airs with rotation, safety should be the number one concern. A Building Block approach is the best method for helping your students achieve their first spins, as it breaks down the goal into small, manageable, safe parts.

BUILDING UP TO SPINS – AN EXAMPLE SPIN PROGRESSION

1. **Static rotations, board off:** Have the students practice spinning 180's and 360's the snowboard off, on a gentle slope, by encouraging them to pop with both legs and initiate the spin by:
 - "Winding up" slightly in the opposite direction of the spin
 - Looking through the rotation with their head / eyes.
 - Taking off and landing on two feet Landing without looking down
2. **Static rotations, board on:** Students will find this easier with a solid edge set in the snow. Have students try these rotations by using the same tips as above.
3. **Spinning on snow:** Have students traverse a gentle slope, and concentrate on spinning 180's, 360's and more by using the same techniques as above, on the snow.
4. **Pop 180's (cross-fall-line):** Have students try to spin 180 degrees as above, but this time adding a two-foot pop at the start of the rotation.
5. **Pop 180's with revert 180:** This time students will try to get the feeling of doing a complete 360 rotation by performing a pop-180 (as above), and continuing the spin after they land, for the second 180 degrees (the revert).
6. **Air 360's across the fall line:** Once the students are completing 180's with revert, encourage them to continue spinning in the air, by increasing their wind-up and using larger bumps in the snow to help with air.
7. **Spins in the fall line:** Encourage students to try spinning closer and closer to the fall line, beginning with slow speeds and flat terrain, and progressing to jump features. Fall-line spins require more involvement of lower joints to create an edging platform.

SPIN DIRECTION

Frontside: Any spin where the front of the body faces the direction of travel for the first 180 degrees of the spin.

Backside: Any spin where the back of the body faces the direction of travel for the first 180 degrees of the spin.

CREATING & CONTROLLING ROTATION

Riders can use the shoulders and hips to create rotation by starting with a wind-up, and then rotating in the direction of the spin at take-off. The arms may also be used here to generate more rotation, if needed. To control rotation, have riders use the head and eyes:

- **Backside 180 & Frontside 360:** Have riders look back up at the take-off of the jump upon landing, to stop rotation.
- **Frontside 180 & Backside 360:** Have riders spot their landing downhill, on the landing of the jump.



ANALYSIS & IMPROVEMENT GUIDE: AIRS WITH ROTATION

OBSERVATION	ANALYSIS	IMPROVEMENTS
Rider loses balance in the air.	Position too tall or extended.	Position & Balance Encourage students to look towards the take-off, as well as a slight re-traction of the legs while in the air, for a more stable position.
Rider can't generate enough rotation to complete spin.	Inadequate rotation.	Rotation Encourage student to blend vertical movement with rotational movement during take off. Edging Riders should be setting a slight edge on take-off, leaving a faint "pencil line" in the take off of the jump.
Over-rotation.	Generating too much spin.	Rotational Control Review viewpoints for controlling rotation with the head/eyes. Pressure Control Have students focus on flexing the legs on landing, to stop rotation.



NOTES:

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

EXPERT SKILL DEVELOPMENT

At this stage, students should be comfortable with the following skills in advanced terrain and speeds:

- Refined use of a centred and mobile body position, lower body movements to turn the snowboard, and balance over the edge.
- Advanced use of Timing & Coordination skills, to allow for strength, flow, and linking of complex manoeuvres in riding.
- Advanced ability to load, unload, and steer the snowboard for performance in all-mountain riding.

Creating instances where students are forced to adapt to varied situations will help to progress these students on to more challenging advanced manoeuvres and skills.

A STRATEGIC APPROACH

At this level, it's important that students can develop a tactical, or strategic approach to riding in expert terrain. Encourage students to improvise solutions to challenging situations "on the fly". Have them experiment with faster and slower riding, a variety of turn types (sliding vs. carving) as well as rounder and more open turn shapes. Teaching riders at this level is about guiding them to find solution to tactical challenges due to terrain, conditions, manoeuvres, or skills.

PISTE:

EXPERT CARVING



The Student

These snowboarders have the ability to perform carved turns on most groomed runs. At times they may find themselves having difficulty maintaining the "pencil line" track, especially on steeper slopes and at higher speeds.

Terrain

Intermediate and advanced runs, groomed conditions.

Goals

- To carve at higher speeds on steeper slopes.
- To improve timing skills to develop versatility in carving skills – varied shapes and sizes of carved turns.
- To add variation to movements, allowing for quicker decision-making and adaptation skills.

Suggested Tactics

"EDGE, PRESSURE, STEER" MODEL

This sequence of movements can assist students at this level to maximize the performance of their carved turns. Encourage riders to follow this sequence:

1. Neutral position between turns.
2. Establish edge "grip" through a lateral, or inclined, movement of the body.
3. Load the snowboard through a combination of lateral movement of the mass inside the turn, and flexion/extension in the lower joints.
4. Steer the snowboard to the desired path of travel.

POSITION & BALANCE:

Position the upper-body in a slightly open position at start of toeside turn (chest oriented toward nose), to encourage lateral balance and to allow the snowboard to carve.

Assume an “aggressive” position in the upper-body with increased flexion at the hips, creating stability that allows the lower joints to turn the snowboard, while maintaining mobility for continuous adjustment.

PRESSURE:

Loading & Unloading: Pressuring (bending) the snowboard and allowing the energy stored to re-direct into the new turn will allow for lively, dynamic riding.

In shorter turns, the use of lateral movements in the feet (pedalling) will encourage the addition of torsional pressure in the snowboard.

PIVOT:

Rotation: Resistance to rotational movements at start of turn to ensure the board is carving at the start of the turning arc.

Counter-Rotation: Experiment with counter-rotational movements at start of turns, as well as delayed rotational movements later in the turn, to add power and force to turns.

TIMING & COORDINATION:

Linking: Approach riding as a series of linked manoeuvres. Encourage students to work to combine a series of difficult movements into one effort.

Vary duration and impulse of movements to get varied outcomes.

EDGING:

Versatility: Refined and varied use of the snowboard’s sidecut, along with varied edge angle to create varied turn shapes.

Experiment with “bracing” against the edge – maintaining a clean carved track while the body changes positions (rotation, counter rotation, vertical movement).



OFF-PISTE:

EXPERT FREERIDING SKILLS

The Student

These snowboarders have the ability to perform sliding and carved turns on green, blue and black runs. They are comfortable riding at high speeds, and want to explore expert freeride terrain, including steeps, bumps, trees, and powder. These riders will improve by being exposed to a variety of terrain and situations, and developing their ability to react and decide on the best approach to a given terrain challenge.

Terrain

All terrain, green, blue, black and double-black runs (un-groomed, including bumpy terrain).

Goals

- To ride at higher speeds on steeper slopes.
- To perform shorter radius turns in challenging situations.
- To improve timing skills to develop versatility in all-mountain riding skills.
- To add variation to movements, allowing for quicker decision-making and adaptation skills.



EXPERT FREERIDING: SUGGESTED TACTICS

- Vary line - rounder turns, around and over bumps.
- Vary speed - faster speeds in bumps create more pressure to deal with. Push the limits!
- Vary turn size - larger turns in bumps create the need for dynamic absorption in the midst of turning.
- Vary movements - experiment with up and down un-weighting, and a combination of the two. Inclination and angulation movements can be blended in freeride terrain.
- Vary terrain - expose students to a variety of terrain situations, to develop a sense of autonomy and decision-making.
- Experiment with moving the snowboard forward and back under the body.
- Isolate steering movements within a turn (allowing the snowboard to create small "gar-

FREESTYLE:

CREATING VARIATION IN FREESTYLE RIDING

The Student

This student has a high level of confidence in park and/or freestyle terrain. Their skills will be developed through safe challenges and the creation of new movement sequences.

Terrain

Small (S) and medium (M) and large (L) terrain park features.

Goals

- To learn to expand their “bag of tricks” in the park.
- To apply existing freestyle skills to larger features, with more speed/amplitude.

Suggested Tactics

POSITION & BALANCE:

Develop enhanced awareness and mobility, to achieve a larger variety of freestyle manoeuvres. *Examples:* Presses on rails with slope. Boardslides on challenging features. Spins with grabs.

PIVOT:

Add variety to movements used to control rotation, through rotation and counter-rotation. Use of head, shoulders, hips and legs/feet (together or separately) to influence rotation. *Examples:* Complex rotations on rail/box features. Spins on and off of rails or boxes. Variety of airs with rotation, including beyond 360-degrees, and on larger jump features.

EDGING:

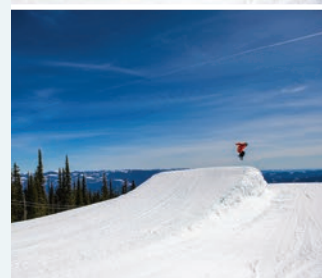
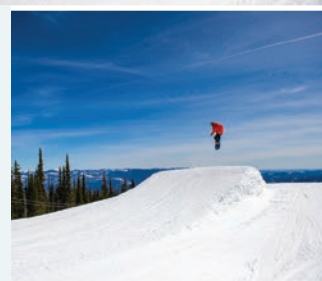
Refined use of edging to create take-off and rotational platform. Ability to maintain flat base over varied box and rail features. *Examples:* Boardslides through kinked or curved features. Appropriate edge angle on approach to rail/box or jump features. Use of edges to control exit from features.

PRESSURE:

Loading, unloading the snowboard and creating/absorbing pressures appropriate to features and desired outcome. *Examples:* Boardslides through kinks in rails/boxes. Urban-style rails.

TIMING & COORDINATION:

Adjustment of duration and power of movements in relation to features and manoeuvres. Appropriate sequence of movements according to desired outcome. *Examples:*



ROTATION VARIATIONS OFF OF RAILS

- **Sweeps:** Rotating on the rail in the same direction the rider got on the rail.
- **Switch-ups:** rotating on the rail in the opposite direction the rider got on the rail.
- **Same ways:** rotating off the rail in the same direction as the initiation of the slide.
- **Pretzel:** rotating off the rail in the opposite direction as the initiation of the slide.



APPENDIX 1:

TEACHING CHILDREN

Teaching children isn't just about the technical aspects of snowboarding. Children make up the majority of students learning to snowboard, and as such, special attention needs to be paid to how you conduct children's lessons.

*In addition to this information, please be sure to review Chapter 4: Risk Management as well as the **Kids Can Snowboard Teaching Guide**, available on our web site.*

THE BASICS OF PHYSICAL DEVELOPMENT IN CHILDREN

Understanding the differences in physical capabilities gives the instructor an advantage in working with children. Using their insights into a child's development, an instructor can adapt their teaching methods to get the best results by making learning meaningful and fun for kids. Children learn differently than adults and as they grow they are continuously developing and changing. Physical and mental development in children follows a predictable pattern. The sequence of development remains constant, but the rate of development will vary from child to child.

Muscular control and coordination do not develop evenly throughout the body. A child gains motor control from the mid-line of the body out to the extremities. This means a child can control the larger muscle groups (trunk and hip joint area) before the smaller ones (arms, hands, legs, ankles). Children rely on larger muscle groups to move and regain balance than the smaller ones.

Control develops from the head down to the feet. Children can control their trunks before their legs, hips before their knees, ankles and feet, and hands before their feet.

Younger children are not capable of subtle movement in their ankle joints to control lateral (edge-to-edge) balance. The shoulders and the upper body are constantly adjusting between forward and upright positions in order to maintain balance.

Hands will often mimic what children are trying to make their feet do. Encouraging such movement can be effective at getting the legs and feet to perform.

The centre of mass in a child's body is disproportionately high until approximately age 8 (and a helmet adds to this!). Children need a wider stance to help stabilize this top-heavy body. Because motor control and strength are not well developed at this stage, children use their bones rather than their muscles to support their frame. The joints are stacked one over the other, in a wide, straight-legged stance with the hips aligned over the heels. The upper body bends forward from the waist to compensate for the hip position. On steeper terrain and at higher speeds, extra forces are put on the board causing the child to need to "lock" into this position in an effort to resist the forces. With this stiff, inflexible stance, the child has difficulty learning balancing movements in the turn.

Terrain and speed are important factors in the development of skills. Practice new movements on relatively easy terrain and make sure the speed is appropriate to allow progress. Once movements have been repeated and refined, you can progress to steeper terrain – this can be a fabulous built-in reward system.



CHARACTERISTICS OF CHILDREN AS THEY GROW

4 AND UNDER

PHYSICAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Tires easily—has low stamina	Keep on-snow sessions short.
Stance may be biased towards the back foot. Lacks small muscle co-ordination—uses large muscle groups to maintain balance and may appear clumsy and uncoordinated.	Avoid one-footed manoeuvres. Instructor should assist student with mobility. Focus on fun and creating comfort sliding in the winter environment.
Has difficulty separating the activity of the upper and the lower body (referred to as “upper/lower body separation”).	Focus on simple movements generated from the core. Be realistic with expectations of progression.
Lateral movement is easier than vertical movement.	Turning effort will be generated through inclination (bending at the waist).
Not yet independent or able to look after themselves.	Constant monitoring of physical comfort (clothing, energy etc.).

MENTAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Short attention span.	Reward attention with “fun” rewards like a short session building a snowman.
Vivid imagination.	Use games with lots of imagination and NO RULES.
Ego-centric – only able to focus on their own needs.	Children in this category should always be taught in a private lesson situation.
Copy cats.	Learn through imitation.
Easily overwhelmed with too much.	Copes best with ONE instruction rather than a series of instructions.
Cannot understand mirror images.	Stand BESIDE the child to demonstrate or FRONT of the child, facing the same way as the child.
Do not understand cause and effect.	Control effect with clear instructions and suitable (safe) terrain.
Excited to use words but not always able to express feelings – reactions that are out of proportion are a sign of frustration.	Stop. Find out what is the problem because their learning will stop if the frustration continues.

PHYSICAL LITERACY

Children who are physically literate move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person.

Physical Literacy provides a solid foundation for children and youth to develop the skills, knowledge and attitudes they need to enable them to engage with poise and confidence across a wide variety of activities. The development of physical literacy is now a reality for educators and practitioners and many provincial physical education curricula now identify the development of physically literate students as the major outcome of physical education programs.

Learn More: www.physicalliteracy.ca



5 TO 7 YEARS OLD

PHYSICAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Have varying amounts of energy.	May still need rest periods.
Beginning to want to challenge limits.	Allow for some experimentation within the bounds of SAFETY.
Coordination improving but still highly variable – look for inability to skate, have control staying in a line, stopping and turning on command.	Group kids according to size and coordination, not just age.
Beginning to refine motor skills – this can come and go as nervous system tries to catch up to growth.	Be prepared for varied coordination within a group. One-footed exercises may be appropriate for some and not others.
Beginning to perform simultaneous lateral movements and develop upper and lower body separation (e.g.: upper body rotation while sweeping back foot).	Start to teach refinement of movements where appropriate.
Susceptible to injuries because they are less coordinated and have slower reaction times.	Make sure the rules of safety are simple and clear.

MENTAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Still have fears and will attach to adults quickly.	Manage fears by creating a comfortable, safe environment.
Age of greatest dropout rate if they have a bad experience.	Create fun and memorable experiences. Mix in enough of what they “want” (freestyle, fun tricks, etc.) with what they “need” (skill development).
Can work well in pairs.	Pair up the children for some activities.
Team begins to take on meaning at around age 7, but they still have difficulty understanding and accepting rules — they think, “It’s okay for me to bend the rules, but not for you”.	Keep the rules to a minimum and keep them simple. Games and activities should always be kept “win-win” – there should be no losers in snowboarding..
Sense of independence.	Allow for independent, experimentation (within safe parameters).
Thought process is: STOP – THINK – EXECUTE E.g.: They see the chairlift ramp approaching but can’t process the information fast enough and miss getting off.	Keep instructions simple and use repeated cue words often (“straighten board, stand, straight run”) – include the source of their lost attention (staring into the trees) in the lesson to keep their attention.

8 TO 11 YEARS OLD

PHYSICAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Have unlimited amounts of energy.	Less talk, more rock!
Likes to challenge limits of performance – feels “invincible”.	Give students safe, yet challenging goals.
Generally, at 8 or 9 years of age they have the strength and coordination to balance in the centre of the board and make movements to stay there.	Challenge student with basic freestyle manoeuvres (ollies, 180's) and more challenging terrain, when appropriate.
Beginning to develop fine motor movement. Can move all four quadrants independently and can separate upper body activity from lower body activity.	Improvements can now focus on smaller joints.

MENTAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Unlimited curiosity.	Incorporate some Guided Discovery teaching approach.
Rely on feedback from both peers and adults.	Provide lots of positive feedback and promote encouragement amongst group members.
Games and activities should always be kept “win-win” – there should be no losers in snowboarding.	Encourage participation for the enjoyment of the activity.
Tests authority – respects the instructor as an authority figure, but has little respect for the instructor's intelligence.	Set clear guidelines for behaviour and stick to them. Remember that what you permit, you promote.

12 TO 15 YEARS OLD

PHYSICAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Age of motor skill refinement.	Can now begin to ride with the same skill refinement as adults.
May experience growth spurts and temporary periods of clumsiness.	Be considerate and show empathy and encouragement.

MENTAL CHARACTERISTICS	TEACHING CONSIDERATIONS
Learns effectively by whole-part-whole method.	Teach the whole manoeuvre, teach a part, and put the part back into the whole. Encourage lots of mileage.
Puberty may cause emotional changes and anxiety.	May be sensitive – be careful with criticism.
Wants to be independent from parents.	Responds to clear expectations and opportunities to express independence.
Gender difference becomes an issue.	If applicable, create same gender groupings.
Can benefit from visualization techniques.	Use analogies to aid understanding.

LEARNING STYLES

When was the last time you saw a group of young children sitting, enjoying a lecture?

Before the last stage of mental development that begins with adolescence, children cannot reason by using abstract concepts. They need to relate everything to something concrete, something real, in their environment. They need to see, feel and do.

The same principles apply on snow. An instructor will experience successful teaching with children by:

- Using verbal directions that are short, simple and keeping them to a minimum
- Demonstrating manoeuvres many times during a lesson
- Encouraging children to repeat successes over and over
- Encouraging children to experiment with movement
- Using games instead of technical jargon or exercises intended for adults
- Helping the younger children experience feeling by manual assistance
- Giving children ONE goal at a time (baby steps).
- Giving positive, specific feedback (applauding the child's successes with comments that pinpoint the details of the success)

LESSON PRESENTATION

Introducing Yourself

When you are introducing yourself to your class, take some time to get to know something about each one of them, and to let them get to know you. You can even make it fun. Here are some suggestions for making those first few minutes a success and for laying the groundwork for a good teaching environment.

- Make eye contact with the children. This will require you to remove your goggles or glasses if you are wearing any. If necessary, go down on one knee or bend over to the child's level so that the children can see your face without craning their necks.
- Consider giving each child a nickname if you feel comfortable with nicknames. Tell them why you chose this name. This will make them feel special and important. Be prepared to adopt a nickname yourself, and be prepared to have some children object to another name.
- Some children will be receptive to a name game (e.g.: toss a foam cube or other soft object (like a glove or a hat) from one to another and have each person say either his name or the name of the person to whom he is tossing the cube).
- Get to know the children's interests. Ask them about their favourite "thing"— an object, activity, person or animal. Find out what other sports they enjoy.

Use of Games and Activities

Games and activities are important when teaching children. Although it is not necessary to use games throughout the entire lesson, we must keep in mind that children learn best through play. A new skill (or refinement of an old skill) will be more appealing to a child if it is wrapped up in the form of a game. Make sure you consider the age of the group when deciding the games or activities you will be using during the clinic. Balance the games with time just to ride and enjoy the movement without structure. The children will be reinforcing their skills with no conscious effort.

Make sure the activities/games you choose help develop one of the five skills of riding. Once you have determined the skill that will be the focus for the lesson, select activities and games that will develop that skill. It is important to correlate the game to the skill, and the game and skill to the age group. Some activities may be used to help develop more than one skill. If children enjoy a game, they will not mind repeating it.

Setting Goals

When setting goals for children the instructor must find a balance between the child's goals and the realistic goals that can be attained in the lesson. A child often has goals that include riding freestyle terrain and learning the basics of snowboarding. The instructor can find balance by rewarding participation in basic exercises with fun, kid specific games and freestyle manoeuvres.

Creating different levels for grouping children according to their age and riding ability serves two purposes. Not only does it give the snowboard school a convenient way of forming classes, it sets goals for the children. Achieving a new level of boarding becomes a reward for personal accomplishment. Colours, animals, numbers, figures or vehicles can designate the levels; whatever works for the boarding school.

ALWAYS KEEP SAFETY IN MIND!

The S.A.F.E. Model and Kids

In order for kids to progress, they must feel confident. The S.A.F.E. model (Static, Active, Free, Experimentation) provides a framework for students to find that confidence.

Ensure that you allow kids the time to progress to the "Experimentation" phase of the model before introducing new skills. This will ensure that they have consolidated and refined the existing movements, and have the necessary confidence to move on to more complicated skills.

QUICKRIDE FOR KIDS

TEACHING 3-6 YEAR OLDS

Kids aged 3 to 6 are quickly taking up snowboarding, thanks to advancements in kids' equipment. Here are some things to remember when teaching these little ones...

Do...

- ☐ Ensure that equipment fits them, and is made for someone their size - not just a mini adult board!
- ☐ Adjust your expectations! Progress at this level will take on many forms, and will happen in many small steps.
- ☐ Incorporate fun, games, and plenty of trial and error.

Don't...

- ☐ Don't bother trying to have them skate or move with one foot attached. Strap both feet in and pull them with a tether on the board, a ski pole, or hula-hoop.
- ☐ Don't rush to get them turning. Focus on balance first in varied situations and speeds.
- ☐ Don't expect them to last for long. Start in 15 minute chunks and progress from there.



PRE-QUICKRIDE PROGRESSION

Before jumping into the QuickRide System with kids aged 3-6 years, consider the following steps, and take your time to get them there successfully.

PRE-QUICKRIDE STEPS	QUICKRIDE PHASE
A: Off-Snow Exploration (equipment & balance) On carpet, learn about the equipment (doing up boots, and working the bindings), and practice balancing on a wobble-board or on the snowboard.	BASICS
B: On-Snow Exploration (balance and sliding) Using an aid like a retractable tether on the board, a ski pole to hold, or a hula hoop, explore balance while sliding by towing kids around a flat slope.	BASICS & SLIDING
C: Straight Running With “J-Stops” Using a mellow slope, allow kids to straight-run and experiment with allowing the board to pivot and stop by looking with the eyes. Both feet should be strapped in for this.	SLIDING & CONTROL
D: Mileage and practice Don't rush it! Take the time to practice and experiment with these skills. Expose students to new slopes and speeds. If available, try terrain undulations and slider boxes. Once comfortable, then progress to the Control phase of the QuickRide System.	CONTROL

1. Basics

When children come out for a lesson, they may be a little nervous and apprehensive, especially if it is their first time. Beginner riders have the added challenge of having to become familiar with their equipment, how it works and how to put it on. They also need to be able to identify “their” boards.

Here are some games one can play to familiarize children with their equipment:

- **Yard Sale** – Get the children to place their boards in a neat pile. Time them to find their board and return to their starting point. You might ask them to strap in their front foot.
- **Boot Games** – Get the children to play games in their boots to ensure the boots fit well. Play follow the leader, for example, getting the children to twist in their boots, walk on their tip-toes, walk on their heels, etc. Have them perform manoeuvres they would do with their board on, for example, jump, rock from heels to toes, spin 180's. These manoeuvres will be easier to perform in their boots without the boards and will familiarize them with the feelings they will experience later on while wearing a board.
- **Relay Races (ages 8 and up)** — Once children know how to put on their boards, you can have them do a relay race. Both teams start with their boards off. Each individual has to put his board on the front foot, skate a distance, and tag another member of their team. The person who has been tagged puts on his board and skates back to tag another member. If there are not enough people to make 2 teams, simply time the one group. This will develop group participation and interaction and challenge the children at the same time.
- **Simon Says** — Have children strap in both feet and play Simon Says while making them balance, edge hop, etc. This is definitely a method to get them laughing, balancing, falling and learning to get up using guided discovery.
- **Freeze Tag** – The instructor is “it” and goes around tagging people. Once tagged, a person must remain frozen in some kind of snowboarding pose until another unfrozen person touches him and frees him. Designate an area within which to play so kids remain together in a confined area.
- **Follow the leader** may be used as well. Use your imagination to get kids learning by doing. After trying balancing and mobility games, get your group to try sliding on gentle terrain. There is no need to rush to the top. Spend time at the bottom until you feel your children are competent and ready.

2. Sliding

Find a gentle slope and get the children to practice a glide. Ask them to mimic their favourite animal, super-hero or favourite snowboarder while gliding. Then move into a glide by pushing on their toes to get the board to change direction. Next, try heel side. Ask them to move their arms toward their toes or heels in a slow, deliberate manner, like “Frankenstein” or the “Zombies”.

Games to play while gliding:

- **Tall like a house/ small like a mouse:** Get children to glide trying to be tall or small.
- **Animal Game:** Ask a child to imitate his favourite animal. The other kids try to guess what it is.
- Draw a line in the snow and challenge the child to slide over the “rail”.
- While sliding on the gentle slope, have the child try different grabs to highlight the different planes of balance.

3. Control

Once your class is comfortable gliding, they will learn to side slip/traverse. Make sure the terrain is appropriate – not too steep or with too much traffic.

Most children will find the heelside is easier to start with. Don’t rush to get to the toeside - spend as much time as is necessary learning to control direction on the heel edge first. In general, the younger the child, the more difficulty they will have on the toe edge.

Games that will help children learn to stop while sideslipping:

- Pretend there are bugs under your toes or heels and you are trying to squash them – this will promote toe/heel edging.
- Call out “red light” or “green light”. The children stop or go according to the call like cars in traffic.
- Put down markers to indicate how far the children may side slip and where they must stop.
- Designate a fuel station. The children side slip (or traverse) to that point. Once they reach the “gas station”, they must stop to re-fuel and then may begin moving again.
- Get children to realize when they push on both heels or toes equally, they will slow down or stop. It is essential that children know how to control their speed.

Games that will help with direction change:

- Put markers on the hill and have children try to make their way to the markers. Make sure the pattern you create is achievable.
- Pendulum with some rotation can also be explained as similar to an air to fakie in the half pipe or more simply, riding regular and switch.
- Younger children, 7 and under, may not have success with traversing. A more appropriate approach may be simple J Turns.
- Remember that once children can pendulum comfortably on one edge they can start to explore much more of the mountain.

4. Turning

Once children are capable of side slipping with some directional control, it is time to introduce turning. Once they have the hang of turning children will be able to comfortably ride beginner terrain.

The selection of terrain is crucial! Use a gentle slope that is well groomed and not too busy. Here are some games to play to help children learn to turn:

- **Dance Exercise:** Be creative. Give the exercise a different name, for example, “pretend magnets”: you and the student become magnets at the hands and you help him/her to turn.
- **Garland Exercise (“Chicken-Out Turns”):** This exercise helps them to initiate the turn and to learn how to control speed at the end of the turn.
- **Basketball Turns:** Children are low going across the fall line and stretch or reach for the turn. This promotes flexion / extension, and pivoting.

If the class is young, avoid using the words “left” and “right”. Try attaching stickers to their hands and feet and name each body part after the sticker. Ask the child to turn the hand or foot with the corresponding sticker.

Make sure children practice equally on both sides. Children will usually be more successful on the heel side because they are able to use the support of the high back. Get them to practice balancing on the toe edge on flatter terrain by timing them. Ask, “Who can balance for 5 seconds on toe side?” Encourage them to increase the time gradually and reward them often.

Remember how the front foot did not want to remain sideways during skating. It wanted to return to a walking position, making you feel as if the board had a mind of its own. Make it fun for children to learn these difficult manoeuvres of walking, skating, climbing and gliding on their boards. And what better way than to play games!

The use of games is important not only to create a fun learning environment but also to reinforce the skills that will help these students later in the learning process and throughout their snowboarding journey.

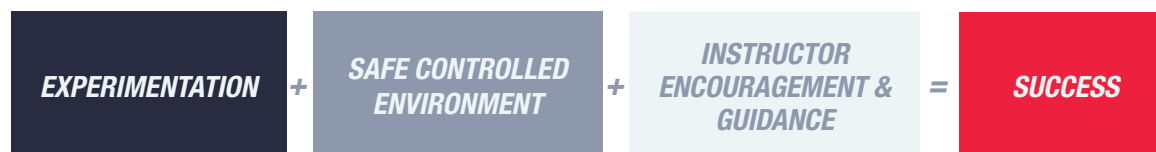
QUICKRIDE REFERENCE TACTICS FOR CHILDREN

GOALS	KEY CONCEPTS	CHILD-FRIENDLY TACTICS
BASICS: To learn to use the equipment, and gain comfort moving around on the snowboard with one foot attached.	EQUIPMENT MOBILITY	<input type="checkbox"/> Handshakes, name game. <input type="checkbox"/> Boot game / Freeze Tag <input type="checkbox"/> Find your equipment <input type="checkbox"/> Obstacle course (skating) <input type="checkbox"/> Relay Race
SLIDING: To become comfortable standing on the snowboard while it is sliding.	STRAIGHT RUNNING	<input type="checkbox"/> Tall / Small <input type="checkbox"/> Animal Game <input type="checkbox"/> Freestyle grabs to highlight planes of balance <input type="checkbox"/> Imagine riding a box or rail for balance awareness.
CONTROL: To learn to control both speed and direction with both feet attached to the snowboard.	SIDESLIPPING PENDULUM	<input type="checkbox"/> Red Light/Green Light <input type="checkbox"/> Squish bugs <input type="checkbox"/> Markers / Targets <input type="checkbox"/> Obstacles (hop over, under, around) <input type="checkbox"/> Visualize air to fakie in the halfpipe for direction change
TURNING: To learn to turn (changing edges in the fall line).	BEGINNER TURNS	<input type="checkbox"/> “Chicken-Out Turns” (Garland) <input type="checkbox"/> Laser Guns <input type="checkbox"/> Dance Exercise <input type="checkbox"/> Magnet hands <input type="checkbox"/> Hula Hoops
FLOW: To learn to explore the mountain safely.	NOVICE TURNS	<input type="checkbox"/> Bend & Stretch <input type="checkbox"/> Basketball turns <input type="checkbox"/> Small doorways <input type="checkbox"/> Follow the Leader <input type="checkbox"/> Turn Shapes

MOVING TO INTERMEDIATE SLOPES

Once children are linking turns comfortably on beginner terrain, it is time to move on. Be sensitive to their fears and apprehensions. What might seem small or flat to the instructor may appear intimidating to the child. For example, if you were to return to your grade school, the water fountains would seem low to the ground. But, to the child, they would be a perfect height. Bear this in mind. You can first challenge your class by using the philosophy, “maximum speed on minimum terrain”.

Once children can negotiate beginner terrain with ease, they will need guided mileage on their boards. Keep them busy! Use ollie contests, lines in the snow, beginner boxes and easy rollers to challenge and maintain interest. Children learn successfully through guided discovery: the instructor sets the parameters, and allows the children to experiment within the safe boundaries.



Here are some activities you can do with children who are ready to move from the beginner slopes. Vary the imaginative aspect of the game to suit the age group and interests of the children:

- **Squish the snow snakes or ice the cake:** Children concentrate on squishing the snow snake during the turn, or icing the cake, or flattening the play-dough. The flatter board will make it easier to turn.
- **Follow The Leader:** Lead the children to interesting terrain and have them experiment while riding. Have them ride with flexed legs/stiff legs. Play with balance—fore/aft, lateral, and vertical. Use questions to make them aware of the contrast of feelings with the experimentation. Make sure children change their place in line so that everyone has the opportunity to ride behind the instructor.
- **Obstacle Course:** In a sheltered area, set up a course where students must go around, under, over, through items that will not injure them, e.g. bamboo poles, sponges, hula-hoops, etc.
- **Tightrope walker:** Have children ride with an object (sponge, cone, old glove, etc.) on the head and keep it from falling off.
- **Cat & Mouse:** The child in front tries not to get caught by the child in back by making turns that vary in size, shape and rhythm, but not through speed. Make sure the children do not turn back up the hill.
- **Jumping Bean:** The kids ride in a line and when the leader calls out “Taco Bell” or “chili con carne” (use your imagination!) and starts to jump, the rest of the group start to jump. There may be a pause in jumping while turning and then the beans go off again.
- **Animation:** Suggest an object or animal or person to a child and have him/her imitate the style. The rest of the group has to guess the object/person/animal. (Ride like a lion, like a fighter plane, like a ballerina) Make sure the suggestion is appropriate to the age group. You may find that the group has some good suggestions.
- **Synchro pair riding:** One child leads and the other child follows, but not necessarily in the same tracks. The first person turns and the follower tries to turn at the same time as the first person – not in the other person’s tracks.
- **Putt Putt:** The children try turning at a slow speed. Then they make a new series of turns at a higher speed. And again, with each new series of turns, the speed increases (to a controllable level). Ask them which speed is easier for turning, and why.

These are only a few of the activities that will help develop all the skills in a way that is fun. All these activities can be made to focus on one particular skill or can be modified to focus on another. Be creative and have fun. If you are having fun, so will your group. Remember to make goals attainable. This will build the child’s confidence and their trust in you. Snowboarding is lifetime sport. You are instructor, mentor and guide. Be sure to share your knowledge of how to best enjoy the mountain environment along with the technical components of snowboarding.

**YOU ARE
ONLY LIMITED
BY YOUR OWN
IMAGINATION!**

MOVING TO MORE ADVANCED TERRAIN

Groomed Terrain:

At this level, we will also need to introduce carving skills and speed control by carving long to medium turns on green and blue terrain.

Once the children are comfortable with these carving manoeuvres, move them into short radius fall-line turns and intermediate bumps.

Varied Terrain:

Once children are comfortable on intermediate terrain, they need to work on more refined edge control to increase their comfort zone on steeper terrain, bumps, and deeper, softer snow. Children should be able to ride in control on easy black diamond slopes before they progress to the more challenging conditions, bumps and crud.

Challenge children to change the size and shape of their turns. If children do the same type of turn all the time, they will be intimidated on steeper, narrower terrain. Remember, variety is the spice of life and riding.

REMEMBER TO KEEP IT SAFE, BUT EXCITING AND FUN! IF CHILDREN ARE HAVING FUN, THEY WILL LEARN AND WANT TO RETURN.

When introducing moguls, choose the easiest terrain possible so your class can experience changes in pressure control and balance without excessive fear. Have children traverse the run to get the feel for moguls. Make sure they look up the run to avoid any collisions before crossing. As soon as possible, get them to practice more in the fall line—this is safer line from the point of view of traffic.

A mogul run with one side groomed so your class will be able to go in and out of the moguls is the best option because the groomed section provides an escape route.

Freestyle Terrain:

Kids of all ages and abilities are interested in riding freestyle terrain and are able to be successful given the right introduction. Most resorts are now providing progression based freestyle terrain (terrain parks) to augment the many natural features available on the hill (rollers, ridges, etc.).

Remember to start small! Any man made features should be flush with, or very close to the ground and instructors should always focus on avoiding falls wherever possible. Confidence is key for your students and safety should always be front of mind. Be sure to teach students about proper park etiquette and safety and make sure they are familiar with the Smart Style responsibility code.

Here are some activities to do with your class in all terrain:

- **Obstacle Course:** Set up a course using props — cones, bamboo, hula-hoops, etc. Be sure to set up the course so the children go over, under, around, through etc.
- **Line Game:** Have children make different lines in the snow – from wide to narrow tracks. Ask what they had to do in order to change the width or type of line.
- **Hop Turns:** Ask the children to begin the turn with a hop in the direction of the new turn. Use this exercise with longer radius turns.
- **Penguin Walk:** Ask children to run to their partner, with both feet in the binding, as though they were running with their feet unattached to the board.
- **Ollies:** Get class to practice their ollies, toe and heel side, while traversing. This is definitely a good way to tire them out! A bamboo makes a great “ollie bar”. Challenge riders to jump over the bar.
- **Follow the Leader, or “The all mountain chase”:** Lead your group all over the hill – through moguls, rollers, terrain parks... Get them to ride with stiff legs, then with flexed joints. Control speed!
- **Volcano run:** The children ride varied terrain and observe where the pressure builds.
- **Electric Fence:** Have children ride within the imaginary boundaries of a narrow corridor to avoid “getting a charge” from the electric fence along the sides of the corridor.

EQUIPMENT CONSIDERATIONS FOR CHILDREN

Kids snowboarding equipment has come a long way in recent years. Kid-specific equipment now allows children to start snowboarding earlier, and more successfully.

As kids aren't always aware of how their equipment should fit or be set up, it is your responsibility as the instructor to ensure they are set up for success.

Boots

Some considerations:

- Children don't always know if their boots are too small or too big. Ensure that boots fit well by checking their foot in the liner, or against the sole.
- Although only one pair of socks is ideal they can often be used to help snug up boot fit with small children.
- Boots that are too big will not allow kids to control the board, and may pose a safety hazard (boot slipping off on chair!).
- Ensure closure system is snug but not tight.

Bindings

Some considerations:

- Be aware of how to perform basic binding adjustments, but each resort may have a policy regarding this that you will have to adhere to.
- Look for bindings with simple straps that are easy for kids to fasten.
- Always check stance width and angles in kids' set-ups. Kids require a wider base of support relative to their height.
- In larger children, check for heel and toe overhang (boot/binding centred on board).

Boards

Some considerations:

- Look for boards that are sized appropriately for the child. IE: Children's boards should not just be small versions of adult board. Flex, width and length should all match the child's size. Ideally boards should be sized based on weight but a quick on snow guideline is to have board length fall between shoulder and nose.
- Boards that are not too long or heavy will be cumbersome.
- Look for kids boards with topsheet traction (stomp pad), as well as base bevel, to minimize edge catches.



Photo courtesy of Burton Snowboards

INSTRUCTOR TRAINING

Pedagogy: Training For Trainers

CASI's mandate is to train and certify snowboard instructors, and it is this training of both potential and certified instructors to which we apply the term "pedagogy". By using this terminology, CASI differentiates between an instructor teaching a client how to snowboard better, and an Evaluator or trainer teaching the instructor how to teach the client.

Learning how to teach effectively has proven to be more difficult for many candidates than learning how to ride to the standard of an exam. For this reason, the Evaluators (the teachers who conduct a course) must be more than competent snowboard instructors in order to pass on the skill to others; they must be knowledgeable teachers themselves who can train others to teach.

Embedded deep within snowboarding is a culture of learning. Whether it is sessioning in the park, or out stoking each other after a steep run, we are always striving to improve. In order to improve this learning process, a flexible framework has been developed to help achieve personal goals, snowboard school goals, or course candidate goals.

WHEN TEACHING PEOPLE HOW TO RIDE, THE INSTRUCTOR IS TEACHING THE STUDENT. WHEN TRAINING PEOPLE HOW TO TEACH, THE TRAINER IS TEACHING THE INSTRUCTOR.

LANGUAGE WHEN TEACHING HOW TO DO VS. HOW TO TEACH

INSTRUCTOR TO STUDENT: HOW TO DO	TRAINER TO INSTRUCTOR: HOW TO TEACH
Explanations for flow and simplicity. Information is more direct, with the instructor telling the student what, why, how, etc.	Questions for thinking and analyzing. More discussion based, allowing the instructor to problem solve more to increase understanding.
<i>Talking directly to them as students.</i>	<i>Often talking about the "imaginary student".</i>
"We'll use this mellow slope because..."	"When we teach, we'll use this mellow slope because..."
"Try to extend your legs more as you absorb that bump..."	"When you teach, try to extend your legs more as you absorb that bump to show your students a better demo".
"What did you think of that exercise?"	"How do you think that exercise will help your students?"
"When we ride down here, what do you think we should do with our arms?"	"When we teach someone on this slope, what could we ask our students to do with their arms, before we ride down here?"
"When it gets steeper, let's get lower for more stability and range of movement."	"What do you think our students should do when it gets steeper to gain more stability and range of movement?"
"What do you think will be challenging about this slope?"	"As an instructor, what do you think will be challenging for your students about this slope?"
"Let's ride down here and apply those movements..."	"Let's ride down here and apply those movements, thinking about what our students would be feeling."
"We'll use a simple exercise to help us learn the timing of this movement."	"When we teach, we use simple exercises to help our students learn the timing of this movement."
"Here's some feedback: try to lean a little earlier at the start of the turn".	"You'll get better edge grip if you lean a little earlier at the start of the turn... do you know why that is? Good - if you know why, you can explain it better to your students."

I. BASIC INSTRUCTOR TRAINING SESSIONS

Basic training sessions are generally approached in a three-part format, and aim to teach lesser-experienced instructors about the Practical Teaching Skills (refer to the Teaching Theory chapter).

1. **Introduction of the teaching skill**
2. **Sample lesson demonstrating the teaching skill**
3. **Session wrap-up and conclusion**

Note: In the above phases of the training sessions, your role will change from that of “trainer”, during the introduction and conclusion, to that of “instructor” during the sample lesson, and back to “trainer” during the wrap-up. It’s important to make this distinction clear.

1: SESSION INTRODUCTION

The goal of the instructor training session is to introduce or refine the understanding of a teaching skill that instructors can employ in their lessons (e.g.: Guest Service & Safety, Demonstrations, etc.) Your introduction should answer the following questions for your instructors:

- **What is the new teaching skill or topic to be explored?**
- **Who is this skill good for? What student characteristics?**
- **Why would an instructor choose to use this skill in their lesson?**
- **When is this skill useful?**
- **How is the strategy used to improve the students’ lesson experience?**

Once these questions are answered, it’s time to further explore or develop the teaching skill that is being presented. For example, in the case of teaching your instructors about the skill of Guest Service & Safety, you may wish to show them a sample of a lesson that pays special attention to this aspect of teaching in a lesson scenario.



YOUR GOAL FOR INTRODUCTORY TRAINING SESSIONS IS TO GIVE YOUR TRAINEES TOOLS TO MAKE THEIR FUTURE LESSONS MORE EFFECTIVE.

2. SAMPLE LESSON

Now it's time to show the teaching skill in action! When a sample lesson is used to demonstrate a teaching skill, it's important to specify the following criteria prior to the lesson:

- **Technical goal of the sample lesson (remember, this is different from the goal of the training session!)**
- **Student Ability Level**
- **Situation and terrain (includes snow conditions, terrain to be used, etc.)**

Try to present your sample lesson in the same way you would present to an actual student. Pay attention to all of the critical elements that make a good lesson (The Training Cycle, pacing, safety are a few examples) with special care paid to illustrating the teaching skill that your session is attempting to develop (your session goal).

3. SESSION CONCLUSION

The wrap-up or conclusion of the session is your time to reflect back on your sample lesson and draw out the important “take away messages” that you would like your instructors to use in their future lessons. Highlight the parts of your sample lesson where you showed a clear example of the teaching skill at hand.

Questions are an effective tool to use in your conclusion to ensure that your group has a good grasp on the concept, and to ensure that your message was clearly understood. Try to use questions to get your instructors to try and relate the teaching skill to other lesson scenarios (riding skills, students, terrain, etc.)

Your goal for introductory instructor training sessions is to give your trainees tools to make their future lessons more effective.

II. ADVANCED INSTRUCTOR TRAINING SKILLS

The advanced instructor training session combines elements of the structure of the introductory session, and further develops the understanding level of the students on a more specific level. The following are elements crucial to successful training sessions for advanced instructors.

Advanced Pedagogy – Trainer vs. Instructor Roles

By the time trainers are training high-level instructors their presentation abilities should be such that they are comfortable switching in and out of roles within a single session, and their instructor students intuitively know when they are being taught pedagogical ideas, and when concepts deal with teaching the public. This is a crucial skill of advanced trainers.

Combined Goals

Goals for advanced training sessions may have multiple angles. For example, the trainer may wish to increase the instructor's level of knowledge of a particular teaching skill or strategy, while also making them better snowboarders. This presents a challenge to the trainer to effectively plan and combine the pedagogy information to be presented with the technical information. Also, the trainer must take into account details such as tactics, terrain, A & I concepts, questions, etc. to be sure that both aspects (pedagogical and technical) support each other.

In the case of dual goals for a session, it's important to draw a link between the technical riding skills being developed, and the pedagogical skills that are being taught.

Building on the basic pedagogy model and session structure, the following elements should be included in your advanced pedagogy session:

1. **Pedagogical: Improving the group's understanding of the various teaching skills, strategies and tools that CASI promotes.**
2. **Technical: Isolating one of the various riding skills or outcomes in the technical (riding) skill development of the group.**

Less is More!

Many times, advanced training sessions build on existing knowledge, refining your instructor's riding and/or teaching skills. For this reason, specificity is crucial. In short, less is more at this stage. Many, if not all, of the basics regarding teaching strategies and riding skills have been covered by this stage. Instructors working with advanced riders, or training for higher-level certification courses, need to know the finer details of these skills and strategies. Consult the Skill Development Model for tips on Refining and Creating Variation in your instructors teaching and riding skills.

When structuring advanced training sessions, try to ensure that you're not overwhelming instructor students. Refining or learning advanced skills takes a lot longer than learning lower level ideas, so make that you account for this in your session plans. As the session leader, give yourself a clear and specific goal for the session. There's no need to teach everything you know about snowboarding - remember, it's not always about your goals, but rather what the instructors need to be successful. Find creative ways to refine and push your instructor's knowledge levels.

Developing Analysis & Improvement Skills

Sessions developing the Analysis and/or Improvement skills of your instructors may use a couple of varying approaches. A sample lesson may be presented, with special attention paid to illustrating how and when analysis and improvement is taking place. Alternatively, the session leader may choose to use an A & I Development Tactic, to give instructors some practice in watching (analysing) and delivering improvements to their students. Common tactics for developing the Analysis or Improvement skills include:

- **Circle Around**
- **Divide The Class**
- **The Telephone**
- **Follow The Leader**

Circle Around

Have the group split into pairs so that they can watch only their partner. Ask the first member of the group to start down the run, stopping after a predetermined number of turns. Follow this with the next person, who will stop a set distance below the first, followed by the third, fourth, etc. The group descends down the run in this revolving sequence.

As the exercise is progressing, partners should be watching each other, and formulating a plan for analysis or delivery of improvement. At the completion of the exercise, have each pair communicate their analysis.

Divide The Class

In pairs, one partner will ride down a predetermined part of the run. Pairs will watch each other from various vantage points, and at the bottom of the run, communicate their analysis or improvement plan.

The Telephone

Good with large groups, this exercise involves the first member of the group riding down the run, away from the group. The session leader will facilitate the analysis of the riding with the group. Once a plan has been reached, the next member will be sent down the run to relay the analysis. At this point, the group will then analyze this person's riding. This continues until there are no instructors left.

Follow The Leader

A useful tactic in analyzing someone's riding is to simply follow him or her as they ride. This allows for a close-up view of the various movements or situations that may be providing challenges.

Analysis and improvement sessions for instructors are very important in developing their overall teaching effectiveness. It should be noted that the above tactics for developing these skills are for instructors only! We wouldn't ever be developing these skills in our students (because in that situation, it's the instructor's job to provide the feedback).

A successful instructor training session will provide instructors with tools, tactics, and a better understanding of the teaching strategies they can use in their everyday lessons.

SEASONAL SESSION PLANNING (LONG TERM TRAINING)

The key to effective training is good organization, not only for a single session but for a full season as well (or multiple seasons). This planning section will illustrate key components to consider when planning both seasonal and session plans.

Seasonal Planning (Long Range)

Seasonal plans structure the goals of the school, director or supervisor, and the needs of the instructors into small manageable chunks, which will then be planned into individual sessions. During the long range planning of a course, the instructor organizes all the skills and knowledge to be learned into a logical and coherent progression.

Long range planning enables the instructor to:

- Ensure all the items are included in the lesson series.
- Ensure the skills and competencies are reviewed.
- Present technical material in a logical sequence.
- Determine if adequate time has been scheduled to teach the sessions.

How do you design a long-range plan?

The exact method depends upon the individual teacher. The following steps can assist you:

1. Brainstorm, contemplate and understand the aim of the season or course.
2. What are the goals for your training program? How did you arrive at this goal? Were the instructors asked about their goals for the season?
3. List all the topics, activities or skills to be covered in the course, season, and program. Group together related items.
4. Order these into a logical learning progression. Put items of lower skill first, progressing to more difficult.
5. Slot the sessions/lessons with the available times.

***Note:** Be sure to consider the number of lessons and time available. Schedule items to be provided for maximum learning and practice. Be Realistic. Plan for lost time because of weather or terrain conditions, absenteeism, etc. Allow for a great deal of practice time, particularly when working on new material.*

Sometimes it will become apparent that adequate time has not been scheduled. Then, the instructor must reconsider the long-range lesson plan:

- Is it possible to increase the number of sessions?
- Can using on-going evaluation and feedback save time?
- Are you trying to teach “beyond” the student?

It may be necessary for the instructor to devise a way to cover more in each session than originally planned. Using a more direct teaching approach or keeping class sizes smaller may achieve this. How you divide up the training material will depend on many factors. Some of these factors cannot be controlled in advance.

Review

The season plans should be updated and revised after each session. This planning process should become part of every post-session evaluation. Consider using a rating system, or mid-season evaluation process to gauge the effectiveness of your seasonal plan.

How may each of the following affect your long range planning?

- The level being taught.
- The number and ability of candidates.
- Weather misfortunes (powder days...very hard to session through!).

Long term training plans can form the backbone for successful snowboard schools. Involve your instructors, supervisors and directors in the planning process. As a trainer, your “clients” are your instructors. Your session plan must satisfy many goals - the instructor’s, the resort’s, your goals, as well as the snow school director’s goals. The most successful trainers take all of these perspectives into account when developing training plans.

SESSION PLANNING (SHORT TERM TRAINING)

Session plans allow for fluid presentations of relevant material, and can be accomplished in set time limits. Effective session planning depends on an up-to-date season plan.

Individual session plans can be difficult to make far in advance, because their effectiveness depends on the success of the lessons that precede them. Finalize your next session’s plan after reviewing the outcome of the previous session.

What goes into planning the session?

In the season plan, you roughly describe the topics and tactics you wish to cover. Your session plan tells you how you are going to achieve the goals, and what you are going to need. To plan the session, identify the following:

- Your NEW topic or SKILL
- Your TEACHING STRATEGY
- Required TERRAIN
- The TIME scheduled for each component of the session
- TACTICS for use
- KEY WORDS to mention
- QUESTIONS to ask
- RIDER ABILITY
- Additional MATERIALS or points to cover

Should you write your session plan down?

Yes! Remember that the purpose of the session plan is to help YOU teach effectively. If you are going to forget your lesson, or are inexperienced at teaching the specific session, you will likely feel more confident writing it down. With time and mileage in the trainer role, you may be able to develop session plans “on the fly”, based on the day’s conditions, goals and session attendees.

Written plans can also serve as a reference for future sessions, teaching strategies, and evaluation of the session’s effectiveness. Consider saving all session plans to create a session book, for future use at your resort. Hold on to past session plans for future use, as they can combine to form a comprehensive training reference for you or your snow school.

COMPONENTS OF A SESSION PLAN:

Session goals

List the goals for the session. Make certain the goal is S.M.A.R.T. The goal could be as simple as covering the beginner turn in full detail, to sharing Analysis & Improvement tactics, or to introducing pedagogy concepts to hopeful Level 3’s.

At the advanced stages, your session goals will be twofold - to develop instructor’s pedagogy knowledge, while also developing their technical riding ability.

The Method of Presentation

Identify and utilize a method of presentation or combination thereof. A method of presentation will not only aid in organizing your lessons, it will also help your students comprehension of the session.

Timeline

Have you considered the length of the chairlift? How about buckling in? There are numerous factors when wanting to maximize the time for a session. Most sessions need to be finished on time in order to allow instructors to prepare for upcoming lessons. Do a dry run through if at all possible to time the various components of your session.

Rider ability

State your rider ability for the lesson. Use the ability level and manoeuvre style to aid in setting up your session.

Terrain

Identify the intended terrain for each tactic. Flat areas for static exercises are sometimes difficult to happen across, so plan your session terrain well. The terrain chosen should support the technical goal of your session.

Tactics

List and briefly explain each intended tactic. Try to jot down the important points to highlight during the use of the tactic. Points such as: key words, linked skills and/or analogies. Also helpful is to jot down a few extra tactics in case of unexpected changes (terrain, teaching challenges, equipment malfunction). We are stronger teachers and pedagogues if we always have some extras in our back pocket. Simple drawings (stick people can snowboard) can also aid in a well-planned session.

Using Questions - “Facilitation”

Ask a variety of questions. Very simply put, ask questions that will result in the anticipated response, or take your session in the direction you would like. For example, your choice of questions can alter the current train of thought, enhance understanding of a current idea, or bring to light areas of lesser understanding. Write a few questions down so that they are fresh in your head for the end of the lesson, but don't be afraid to react to the session outcomes when using questions.

TIPS AND TRICKS:

Concept Maps

Use a concept map to organize either your session or season plan into logical sequences. A concept map is just a large scrap piece of paper on which you write your ideas, goals, tactics, teaching strategies, etc. All that you wish to accomplish during the session/season. Afterwards, group and link the items into logical sequences and then follow up by numbering them and transferring the info to a session/season plan.

Diagrams

A diagram could be used to illustrate a possible class formation, or an A & I drill. Diagrams are also great to use when teaching a freestyle half-pipe session or introducing delays to a group of coaches or athletes. Leave some space on your session/season plans for diagrams.

Test Run

When completed take your lesson plan for a ride, and test run your plan. Check the terrain, lift times, weather forecasts, etc. Run through it and see if any adaptation should be made before using it out on any groups. And always try out any new tactics or skills before you teach them. The worst, most humbling moments occur when you realize that a chosen tactic does not work or is too difficult for the group.

Critical Reflection

None of us run perfect sessions, and more often than not, we can all improve on our own sessions. So take advantage, and write down the improvements. Take a minute after each session to decide whether the session accomplished its goals. If you were to run the session again, what would you do differently?

TRAINING SESSION PLANNING CHECKLIST

- ☐ The Training Session is organized and well structured (introduction; warm-up; practice; conclusion).
- ☐ The duration of the Training Session is appropriate for the age and ability level of the participants.
- ☐ The Training Session starts on time, and the time allocated for the session is respected.
- ☐ The activities designed for the session have well-defined goals.
- ☐ The instructions given are clear, brief, and simple.
- ☐ The chosen activities are appropriate for the ability and proficiency of the participants and they present exciting and reasonable challenges to them.
- ☐ Appropriate safety measures are implemented.
- ☐ Time is not wasted during the session, or in transition from one activity to the next.
- ☐ Participants are actively involved throughout the training.
- ☐ Participants are having fun, and are demonstrating genuine interest in the activities.
- ☐ The overall tone of the session is positive.
- ☐ The choice of terrain is appropriate for the ability and proficiency level of the participants.
- ☐ The choice of equipment (freeride, park or carving) is relative to the session plan.
- ☐ Level of the participants.
- ☐ The goals and objectives of the session have been mutually agreed upon.
- ☐ The goals and objectives of the session for ride improvement.
- ☐ The goals and objectives of the session for practice teaching.

PHYSICS & BIOMECHANICS IN SNOWBOARDING

“There are no rights and wrongs on snowboarding - only consequences.”

Understanding biomechanics and the laws of physics, and how they relate to human movements, is essential to be an effective instructor.

As your students progress, their movements will become more refined and fluid. Figuring out which movements need to be reinforced will be more difficult. Here is where we introduce various biomechanical principles. The purpose of these principles is to strengthen your understanding of “action vs. reaction” in snowboarding.

For further information, please review Appendix 4: Basic Anatomy & Movements For Snowboarding

ESSENTIAL CONCEPTS OF PHYSICS

This section summarizes various concepts that can help you in your day-to-day teaching.

Newton's Laws of Physics

Objects at rest stay at rest, and objects in motion stay in motion, unless acted on by an outside force

An object continues to do whatever it happens to be doing unless a force is exerted upon it. If it is at rest, it continues in a state of rest (demonstrated when a tablecloth is skillfully whipped from under dishes on a tabletop and the dishes remain in their initial state of rest). If an object is moving, it continues to move without turning or changing its speed.

Force = Mass x Acceleration

The force required to change an object's momentum is determined by the mass and the rate of change in velocity (acceleration). Since a snowboarder's mass remains constant, we can assume that the force applied is proportional to the rate of change in velocity. For example, stopping or changing direction quickly requires more force than stopping or changing direction slowly.

Every action has an equal and opposite reaction

Trying to determine the equal and opposite forces can be quite complicated at times but the important thing to remember is that every action has a reaction.

Mass: This is the weight of an object (e.g.: a snowboarder who weighs 75kg).

Balance: Balance is achieved when the forces acting on a body are in equilibrium. Assuming there are no changes in these forces, a balanced object will not fall over.

Stability: Stability refers to an object's resistance to external forces. A low wide object is generally more stable than a tall thin object: it is harder to push over.

Balancing: Refers to the constant, dynamic movements made, both subconsciously and consciously, to manage instability and/or to regain balance. Balancing movements involve both the body moving over the board and the board moving underneath the body.

Centre of Mass (COM): The centre of mass of an object is an imaginary point around which all the mass of the object is equally distributed. (The centre of mass of a soccer ball is right in the centre, but the centre of mass of an egg would be closer to the rounder end). In people, different body types have different relative locations of COM.



Men typically have a COM located just above the navel while women typically have a COM located just below the navel. In snowboarding, the centre of mass of a rider changes as the rider changes his/her body position. There are times in snowboarding when a rider's centre of mass is outside of his or her body (e.g.: during a method grab).

Base of Support (BOS): The location on a body or object where most of the weight is supported. The larger the base of support, the more stable objects will be. When snowboarding, riders can increase stability by riding flat-based or spreading their weight evenly across the working edge. Riders typically choose a longer board for increased stability when free-riding and a shorter board for less stability and more playfulness for freestyle riding.

***Note:** Changing the stance width also affects stability, wide stances are more stable and narrow stances are less stable; however if a stance is too wide it can make it difficult for a rider to be mobile, and a more narrow stance can provide a larger base of support while pressing on the nose or tail.*

Velocity: The speed and direction at which an object is travelling

Acceleration: The rate of change of velocity. This can be an increase or decrease in speed or a change of direction.

MOMENTUM: $\text{MOMENTUM} = \text{MASS} \times \text{VELOCITY}$

The combination of speed and weight. A heavy rider travelling at a certain speed has more momentum than a lighter rider travelling at the same speed. Momentum travels in a given direction - for example, a rider straight-lining has their momentum travelling in a straight line, downhill.

Linear Motion: Any movement that occurs along a straight path, where all parts of the body or object move an equal distance in the same direction.

Centripetal Force: Centripetal force makes a moving object follow a curved path. In snowboarding when the board is placed on edge it can/may create a centripetal force to make a turn.

Angular Motion: Any motion where an object rotates around an axis. Angular motion is created by the application of force (torque) at some distance from the axis of rotation of a body or object. In other words, the force does NOT act directly through the centre of gravity.

Torque: Torque equals force times the perpendicular distance from the force to the axis of rotation. The farther a force is applied from the axis of rotation the greater the twisting force will be produced. Think of rotating with arms outstretched vs. in tight against the body.

Moment of Inertia: A measure of an object's resistance to changes in angular motion. Objects with mass distributed further from the axis of rotation will be more resistant to changes in angular motion (higher moment of inertia). Longer snowboards will be more resistant to changes in angular velocity, however the added length creates more torque between the snow and the board.

Moment Arm: In a simple way, a moment arm can be thought of as a leverage force. The bigger the perpendicular distance away from the point of rotation the lever is, the more powerful it becomes.

Impulse: Impulse is the result of applying a force for a given amount of time. If we apply a force to an object we can change its momentum, so impulse can be thought of as a force that changes the direction or speed of an object. Impulse can be generated



STABILITY FACTORS

Mass: The greater their mass, the more stable objects are. In snowboarding, heavy riders have an advantage in choppy snow because more force is required to knock them off balance.

Centre of Mass (COM): The lower their centre of mass, the more stable objects will be. Snowboarders can crouch down to become more stable through turns and when landing jumps or sliding rails.

Base of Support: The larger their base of support, the more stable objects will be. When snowboarding, riders can increase stability by riding flat-based or spreading their weight evenly across the working edge. Riders typically choose a longer board for increased stability when free-riding and a shorter board for less stability and more playfulness for freestyle riding.

over a long or short period of time. Impulse is critical in situations that require changes in speed and direction of movement. Impulse is involved every time a rider turns, jumps or rides varied terrain.

Applied Force (A): This is the force exerted on the ground by the rider and snowboard, through the base of the board and/or edges. It is also known as the Contact Force. The axis this force is applied can be seen by drawing a line from the COM, through the riders feet; we call this the Balance Axis.

Ground Reaction Force (GR): This is the force exerted on the snowboard and body by the ground. For example, a person standing on the ground exerts a contact force on it (equal to the person's weight) and at the same time an equal and opposite ground reaction force is exerted by the ground on the person. When a snowboarder rides over a bump, the ground exerts an equal and opposite force to the riders momentum hitting the bump. Snowboarders experience this as a build up of "pressure" between the snowboard and the snow. While standing on a slope, part of the ground reaction force will move a rider down the fall line.

Elastic Potential Energy: Elastic potential energy is potential energy stored as a result of deformation of an elastic object, such as the stretching of a bow.

Friction: The force that resists relative motion between two bodies in contact when sliding against one another.

PHYSICS OF STABILITY ON A SLOPE

Gravity (G) on a level surface only has one component pulling the rider's **COM** down into the ground at a 90° to the surface of the terrain. This creates an **Applied Force (A)** in this direction. For a rider to be stable, this Applied Force must therefore be aligned with and in direct opposition to the **Ground Reaction Force (GR)**.



If the rider aligned their COM towards the rear of the board (and therefore not aligning the A Force against the GR Force), this would cause a tendency for the rider to "loop out" or fall backwards, over the tail of the board. Similarly, a rider whose COM is towards the nose of the board would have a tendency to "nose dive", or fall over the nose. In either case, the A and GR forces are not in direct opposition to each other, therefore causing an imbalance in forces and thus instability.

Stability also relies on the forces from the rider being balanced with the forces from the terrain. If someone were to push you to the left, you'd move to the right to counter balance the push. This is stability... moving into a position from which all forces can be balanced, so they don't push you over.

Gravity on a downhill slope is different - instead of one component only pulling the rider's COM directly down (vertical), **gravity (G)** is divided into two components; one that is parallel to the pitch of the **slope (GS)**, and one that is perpendicular to the **slope (GN)**.

Similarly, the opposing force from the **ground (GR)** now has two components; the component of **friction (GRF)**, resisting the rider from moving down the slope, and because the surface is firm, the ground also pushes back on the rider at an angle perpendicular to the surface of the terrain (**GRN**).

People are used to balancing on slopes in a world where there is friction at the surface. This is why beginner riders tend to move their weight back when they slide downhill, as they are expecting a “force” that will hold them up, and resist them from moving down the hill.

However, the physics between balancing on a slope when stationary compared to when moving (sliding) down a slope. In the first scenario there is a GR Friction Force (GRf). This force resists the board from moving down the hill. If this force is reduced by the surface being slippery, like snow, the net (combined) GR force changes from exerting vertically on to the rider, to pushing the rider at a perpendicular angle.

Because the angle of the GR Force changes, the rider must move into a different position to maintain balance and stability.

To put this simply...

- **To be stable, a rider needs to balance against any forces acting on them.**
- **Different forces are happening on a downhill slope, compared to a level surface.**
- **Different forces are happening when stationary, compared to moving.**
- **Being stationary on a slope requires friction. In the presence of friction, a vertical position creates stability.**
- **Moving on a slope loses friction. In the absence of friction, a perpendicular position creates stability.**

ADAPTING TO CHANGES IN FRICTION, TERRAIN SURFACE AND TERRAIN PITCH (STEEPNESS)

To remain stable, a rider needs to make constant adjustments as the forces acting on them are also constantly changing. As soon as there is any ground friction force (GRf), the rider will need to adjust their position accordingly. Bumps or changes in surface conditions that result in a ‘resistance’ to or deceleration of the snowboard, will require the rider to react and adjust their position, if they wish to maintain their stability.

To counterbalance against this resistance the rider needs to adjust their COM slightly towards the tail. A classic example is performing a 50-50 onto a sticky box or rail. Conversely, if this resistance is reduced or removed (faster snow, steeper terrain, colder section of box) the rider needs to “project” their mass downhill: much like a mast on a ship would “tip” as the ship rolls down the back side of a wave. Constant changes in friction, terrain surface or pitch (angle) of terrain, all result in different forces acting on the rider to different degrees and at different angles. Constant change in these forces therefore requires constant movement and adaptation to stay balanced and stable as possible.

Beginners to intermediates tend to “think out” these adjusting movements, making for reactive riding. Advanced and Expert riders start to make these adjustments autonomously (without thinking), creating precise, efficient movements and more fluid, smooth riding.



In any sport where someone is moving with gravity, down a slope with little to no friction, to be stable they must align their Balance Axis (the line from their COM through their BOS) against the GR force; they must “tip” themselves downhill.



Since boardsliding a rail and snowboarding down a slope are all friction low environments; no friction, means no GRf force to balance against, so remaining “upright” would be less stable.

It is therefore important for the Balance Axis to pass through the feet. The Line of Gravity (which is simply an imaginary line from the COM, directly down,) does not need to pass through the feet, as it would on a level surface, or if the person was static on the slope. This understanding is key to teaching riders correct Position & Balance techniques when snowboarding downhill.

Teaching beginner snowboarders to “tip” their weight down the hill is one of the first hurdles for any instructor, since people are programmed to stand in a position to “resist” gravity pulling them down the hill, rather than letting their body “tip”, and to go with it.

PHYSICS & SNOWBOARDING: THE FORCES IN ACTION

What follows is a description of how the above forces and concepts come into play while we are snowboarding. This is by no means an exhaustive description, but it will hopefully help to create an understanding of how the snowboard behaves and how forces affect it whilst we are riding.

Turning & Steering The Snowboard

Snowboarders use the force supplied by gravity to accelerate them down the slopes. The fall line, or gravity line, is the path that a ball would roll down if dropped at the top of a mountain. A snowboard that is running on a flat base will travel in a straight line following the fall line of the slope. If a rider wishes to change their direction of travel/momentum away from the fall line, they may use the snowboard to create a centripetal force.

A turn can be achieved by tilting the snowboard onto an edge. The sidecut shape of the edge can create a centripetal force that will deflect the rider’s momentum in a new direction. In order for a change in direction and momentum to be achieved, (i.e.: a ‘turn’) the snowboard is normally* tilted onto an edge. The higher the edge angle of the board, the more centripetal force is generated by the sidecut. If the snowboard is only pivoted on a flat base, the rider’s momentum will not be affected. A good example of this is when a snowboarder performs a boardslide on a box. The board is pivoted 90 degrees to the direction of travel, but the rider travels straight along the box.

In order for us to vary the size and shape of our turns, we can use different amounts of edge angle, apply pressure, and pivot the board to change the outcome. Effective steering of the snowboard is a combination of these things. Adding rotational movement to create a sliding turn will slow us down for two reasons: there is increased friction between the edge and the snow, and a reduced time in the fall line.

**Deep powder creates a base of support for the snowboard, and this creates a centripetal force, and in a similar way, a banked turn in a boarder-cross track would allow a change of direction on a flat base.*

Pivoting & Spinning

Rotational movements made by the body can be transferred to the snowboard, but there are different outcomes possible. Pivoting or spinning on the snowboard will not necessarily affect the direction of travel of the rider, and are examples of angular motion.

Bending the knees and ankles while rotating these lower joints will create more torque and thus pivot the snowboard with more force. Initiating a spin with the arms far from the body will create more torque. Riders can change their moment of inertia by moving their arms into different positions. If a rider wants to spin faster they should bring their arms closer to their body. If a rider wants to spin more slowly they should move their arms away from their body. Grabbing the board and adding a tweak while spinning is an alternate way to change moment of inertia and control rotational speed.

Impulse & Stability in Turns

The longer the edge is applied, the more the rider's momentum will change direction, so there will be a larger impulse. A higher edge angle will create more centripetal force, and will cause a bigger change in momentum, which is again, a larger impulse.

In order for the snowboard to redirect the rider's momentum in a turn, the rider's COM must be in line with the BOS (i.e.: the working edge). To help understand this, imagine you are a passenger in a speeding car, and you are holding an egg cup with an egg in it. When the car goes round a corner, you feel yourself moving towards the side of the car. If you keep the egg cup upright, the egg will come flying out the side of the cup. In order to keep the yolk off the upholstery, you tilt the egg cup towards the middle of the turn. If you tilt the cup too much, the egg falls out the other side. As the car comes out of the turn and starts to travel in a straight line, you have to gradually level out the egg cup.

If the egg is rounder end down, its C.O.M is quite close to the base of support so there is a margin for error if you haven't got the cup tilted at exactly the right angle (it has some stability). If you turn the egg, so the pointed end is sitting in the cup, the egg's C.O.M is now higher and further away from the B.O.S. This means that the egg will topple out more easily if it is not quite inline with the forces and stacked over the egg cup (it has less stability). When we are snowboarding, we can imagine our bodies as being the egg, and our snowboard is the cup. Our bodies need to be tilted towards the centre of the arc, but not too much. If we are lower, we are more stable, and therefore have a bigger margin for error.

Pressuring The Board

The combination of our momentum, body movements, ground reaction forces, centripetal force, and friction all create changes in pressure between the snowboard and the snow. They can also help us store and release energy in the board through its change in shape.

As snowboarders, we are constantly experiencing the ground reaction force in different ways. The ground reaction force acts in the opposite direction to the force being applied to it. In snowboarding, it can generally be thought of as acting 'vertically' on a rider, and is responsible for increases in pressure between the snowboard and the snow. The ground reaction forces can change the momentum of a body in motion.

When a snowboarder lands a jump, the impact or impulse of force can be very large. If the rider lands with stiff legs, the average force is very high for a brief period of time, and the landing is painful. If the rider absorbs the landing with their legs, their mass and velocity at the moment they hit the ground is still the same, but by flexing, they are spreading the impulse of force over a longer period of time and therefore the average force experienced over that time period is lower (and less painful). The same principle applies when a snowboard travels over a bump. If the rider has stiff legs there will be a higher average force than if the rider has soft legs and spreads the impact over a longer period of time.

A rider's body movements can also create an impulse of force. Sudden vertical movements can be used to generate an impulse of force between the snowboard and the snow. If a rider is in a very flexed position and extends suddenly, this will create a build up of pressure between the snowboard and snow. When the rider reaches the top of their extension, there will be a momentary un-weighting of the board as the momentum of the COM continues upwards. Gravity will bring the COM back down again. A sudden downwards movement of the COM will initially create an un-weighting effect on the board, but as the rider starts to reach a fully flexed position and their COM decelerates, an impulse of force will be created.

In a turn, pressure is experienced as the ground reaction force increases on the snowboard. For example, at a given speed and turn shape, a smaller radius carved turn will create a greater ground reaction force (more pressure) on the snowboard, and a larger radius carved turn with the same shape will create less ground reaction force. Sliding the board through a turn will help to reduce the rider's speed because not as much force is being directed straight towards the BOS, the ground reaction force acting on the rider will be lower.

Flexing the Board

A rider can create a Moment Arm longitudinally (from nose to tail) over their snowboard. When moving towards the tail of the board, the back foot generally becomes the centre of rotation, and when moving towards the nose, the front foot generally becomes the centre of rotation.

Movements of the COM fore and aft on the board will create leverage over the snowboard and cause the board to flex. Because of the elastic nature of the materials a snowboard is made of, the board will store the force being applied to it as elastic potential energy. With proper timing of movements, this elastic potential energy can be released to aid in un-weighting the board. The perfect example of this is in an ollie.

Maximum Force

The more joints riders use in a movement, the more muscles they contract, and the more force they can exert. For example, turning the snowboard with just the shoulders produces less force than turning the snowboard with the head, shoulders, hips, knees and feet.

Maximum Speed

Skills calling mainly for maximum speed are timed sequentially — larger, slower joints start the movement, and faster joints contribute once the preceding joint reaches peak speed. For example, while starting a big spin a rider will rotate his/her head and shoulders in the direction of the spin followed by their hips, knees and then feet.

Novice vs. Experienced Riders

Experienced riders can create and absorb forces over a shorter range of motion than a novice rider. This means more experienced riders can create and control larger forces associated with more advanced riding and they are more efficient than novice riders. The experienced rider will be able to remain balanced through larger ranges of motion.

The COM in Powder, Slush and at Speed

Powder and slush create more friction on the snowboard than groomed snow conditions. The effect of this drag means that the effective centre of the snowboard is moved further back, and if a rider does not adjust the position of their COM accordingly, there will be a moment arm created over the front foot. Anyone who has gone over the nose of his or her board on a pow day can understand this concept!

The effect of friction on the snowboard is similar to that of powder and slush. After a certain velocity is reached (which varies depending on a number of complex factors), the higher the speed, the more friction exists between the board and the snow. This means that when a snowboarder is travelling at a higher speed, they are more susceptible to changes in the relative position of the snowboard's effective centre. If a rider wants to add stability at speed, they may move their COM towards the tail of the board.

Summary

Fully understanding the forces involved in snowboarding would require a degree-level understanding of physics. It is not the role of a snowboard instructor to give lessons in the science of snowboarding, but a good basic grasp of how the forces act on a snowboard will help you to understand the skills concept more fully. Initially, some of these explanations or concepts may seem difficult to grasp. As your riding level and experience of teaching increases, your understanding of these concepts will become more refined.

PHYSICS & BIOMECHANICS PRINCIPLES: SUMMARY TABLE

BIO-MECHANICAL PRINCIPLE	RIDERS' ACTIONS
<i>Balance and Stability</i>	
When riders want to become more stable, they could...	<ul style="list-style-type: none"> • Lower their centre of gravity • Widen their base of support • Place their centre of gravity in the middle of the base of support • Increase their mass
When riders want to move quickly (become less stable), they could...	<ul style="list-style-type: none"> • Raise their centre of gravity • Narrow their base of support • Move their centre of gravity outside the base of support • Decrease their mass
<i>Use All Joints in Order</i>	
When riders want to create maximum force, they should...	<ul style="list-style-type: none"> • Use as many joints as possible • Use joints simultaneously
When riders want to produce maximum speed, they should...	<ul style="list-style-type: none"> • Use as many joints as possible • Use all joints in order, from largest and slowest to smallest and fastest
<i>Impulse</i>	
When riders want to apply maximum force, they should...	<ul style="list-style-type: none"> • Move their joints through a larger range of motion
<i>Angular Motion</i>	
When riders want to create motion about a fixed point or fixed axis, they should...	<ul style="list-style-type: none"> • Apply force some distance from the axis of rotation
<i>Moment of Inertia</i>	
When riders want to spin faster, they should...	<ul style="list-style-type: none"> • Move extremities closer to the body (decrease their moment of inertia)
When riders want to spin more slowly, they should...	<ul style="list-style-type: none"> • Move extremities farther away from the body

For more information on biomechanics and sport technique, see the second edition of *Sport Mechanics for Coaches*, by Gerry Carr and published in 2004 by Human Kinetics.

APPENDIX 4:

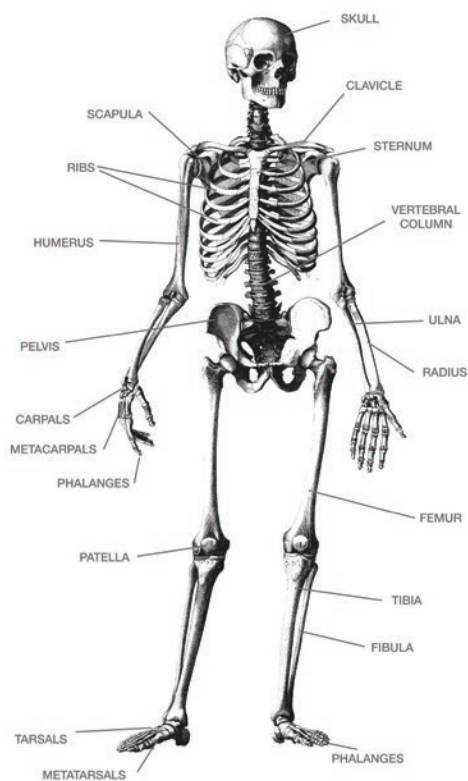
BASIC ANATOMY & MOVEMENTS FOR SNOWBOARDING

A basic understanding of the parts of the human body and how they function will help instructors to teach effective lessons based on sound bio-mechanics.

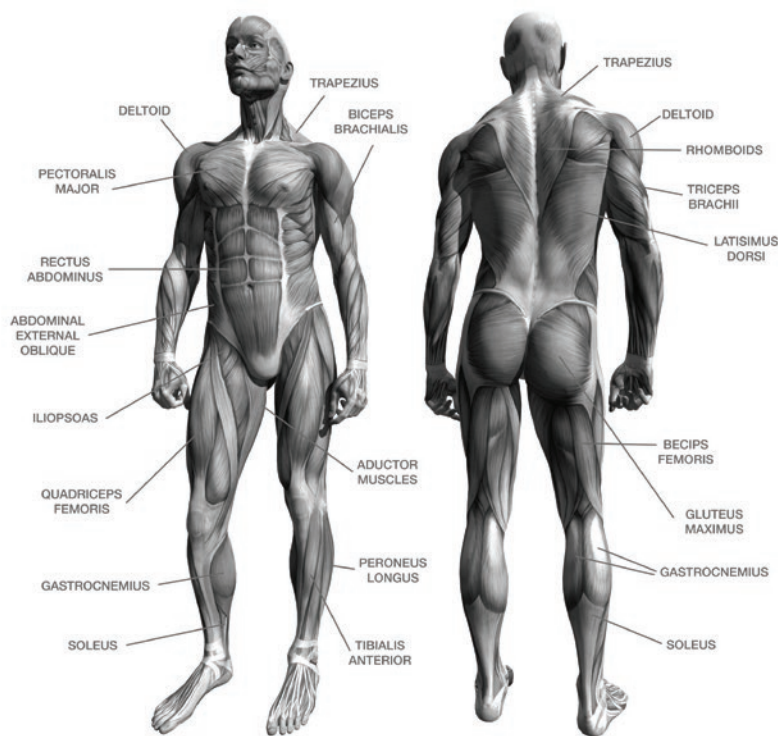
THE MUSCULOSKELETAL SYSTEM

It's important to know which parts of the body have a major involvement in snowboarding.

THE MAJOR BONES OF THE BODY:



THE MAJOR MUSCLES OF THE BODY:



TERMINOLOGY

It is useful to understand the basic language of anatomy so as to be able to explain movement in a concise way and with a standard terminology.

- **Anterior:** Towards the front of the body. E.g.: The nose is on the anterior of the face.
- **Posterior:** Towards the back of the body. E.g.: The buttocks are on the posterior of the body.
- **Superior:** Towards the highest point. E.g.: The head is superior to the body.
- **Inferior:** Towards the lowest point. E.g.: The foot is inferior to the chest
- **Medial:** Towards or at the mid-line of the body. E.g.: The nose is to the medial of the ears.
- **Lateral:** Away from the midline of the body. E.g.: The little toes are on the lateral aspect of the foot.

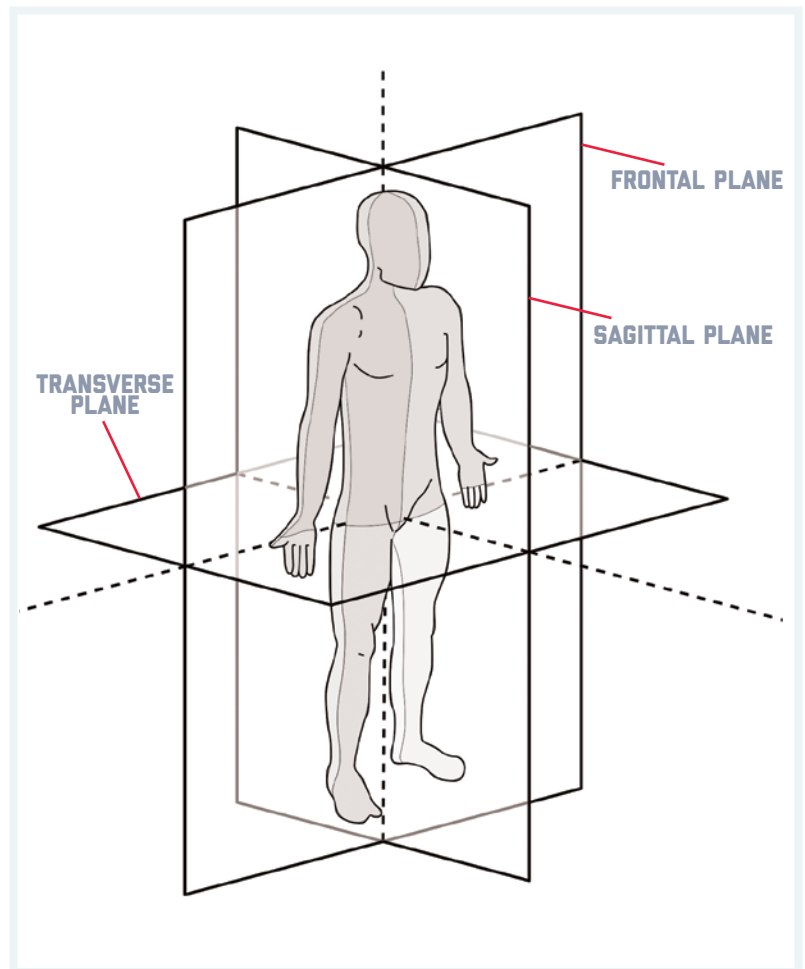
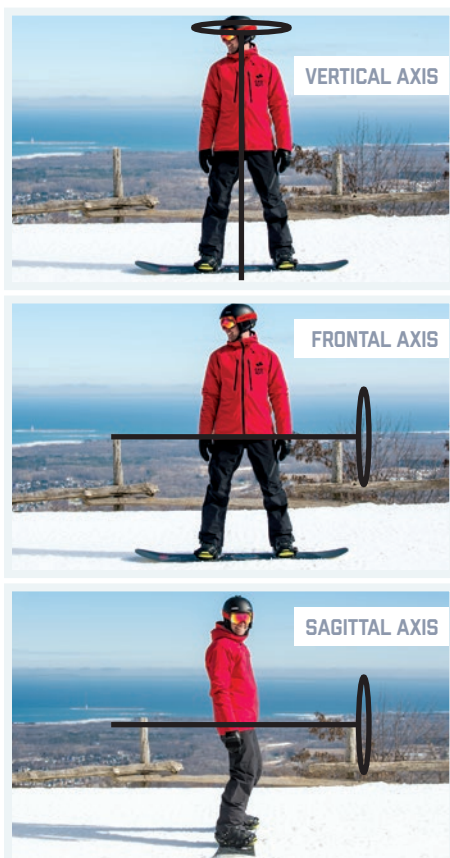
Planes & Axes

There are three planes and axes for the human body:

- **The Sagittal Plane:** Lies vertically and separates the body into left and right halves.
- **The Frontal Plane:** Also lies vertically but separates the body into anterior/posterior halves.
- **The Transverse Plane:** Lies horizontally and separates the body into superior/inferior halves.

An axis is a straight line around which an object rotates. There are three axes of rotation.

- **Sagittal axis:** passes horizontally from posterior to anterior and is formed by the intersection of the sagittal and transverse planes.
- **Frontal axis:** passes horizontally from left to right and is formed by the intersection of the frontal and transverse planes.
- **Vertical axis:** passes vertically from inferior to superior and is formed by the intersection of the sagittal and frontal planes.



TYPES OF MOVEMENT

- **Abduction:** Is movement away from the centre. E.g.: Raising a straight arm to the side.
- **Adduction:** Is movement towards the centre. E.g.: Bring arm back down.
- **Flexion:** Is reducing the angle between two parts of the body by articulating a joint in the anterior-posterior or frontal plane.
- **Extension:** Takes place in the same plane as flexion, however it increases the angle between the moving limbs/parts of the body.
- **Rotation:** Involves rotation of a limb in a joint. E.g.: Rotating the femur in the hip socket
- **Dorsiflexion / Plantar Flexion:** Dorsiflexion is when the toes move towards the knees. Plantar Flexion occurs when the toes are pointed away from the knee.
- **Pronation / Supination:** Pronation is when the foot rolls inward towards the big toe around the ankle joint. Supination is when the foot rolls outward towards the small toe around the ankle joint.
- **Circumduction:** Involves the circular motion of a limb. E.g.: Rolling up/down the windows while jumping.

Examples of Movements:

MOTION	EXAMPLES
Flexion/Extension	Squatting Jumping Tucked Front Flip
Abduction/Adduction Lateral Flexion	Making a snow angel Nose Grabs
Rotation	Baseball Swing 360 Spin Lower body rotation

LOCOMOTIVE MOVEMENTS

In a simplified way, human movement occurs when the Central Nervous System (CNS) sends signals to the skeletal muscles to contract. This will result in a contraction of the muscle.

There are three types of muscular contraction we should consider:

1. **Concentric Contraction:** This is when the muscle shortens and generates force (e.g.: contracting the quads and glutes as the knee and hip extend while taking off on a jump).
2. **Eccentric Contraction:** This is where the muscle lengthens under tension (e.g.: the quads and glutes stretch as the knee and hip flex when a person lands from jumping to decelerate the body).
3. **Isometric Contraction:** An isometric contraction generates force without changing the length of the muscle (e.g.: bracing against the pressures created in a turn - the muscles tense but do not change length).

In snowboarding, we use varying combinations of these three types of muscular contraction at different times depending on the movements our bodies are making.

PARTS OF THE BODY

The “Core”

The lumbar spine (lower back), abdominals and pelvis can be thought of as the “core” of our body during snowboarding. When snowboarding, we are aiming to achieve the relative stability of this part of our body by maintaining a strong and neutral posture.

The role of the abdominals and lumbar muscles is to hold the spine in a neutral and healthy position, and to allow the lower body to move around underneath whilst supporting the upper body and head and without compromising the alignment of the spine.

Pelvic tilt is achieved through movement of the lumbar spine and is controlled by the abdominals, back and hips. The pelvis has a neutral position (which does vary from person to person) that we should generally try to maintain while snowboarding.

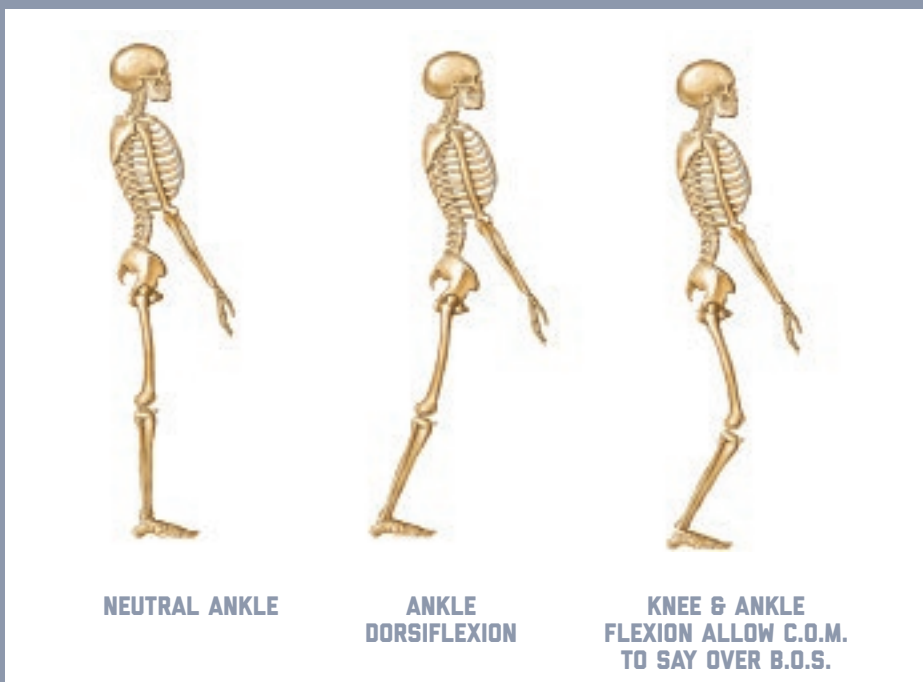
Flexion, lateral flexion, and rotation of the spine all occur in snowboarding, but these movements can place the spine in a weak position, which causes poor stability in less experienced riders. More experienced riders will intuitively understand the correct timing for when to bend in and out of weaker positions, and when to be in an aligned and neutral position.

Hip, Knee & Ankle

The hip joint is crucial for achieving balance and stability in sport. The hip joint serves as the link between the torso and legs, and flexion at the hip is used to balance the upper body over the lower body. Flexion of the hip joint moves the Centre of Mass (COM) towards the anterior (back) of the frontal plane.

Initially, flexion of the knee will move the COM towards the posterior of the frontal plane, i.e.: towards the heels. Once the knee has passed through 90 degrees of flexion, further flexion will move the COM back towards the anterior of the frontal plane. The quadriceps, hamstrings, gluteals, and adductors control flexion of the knee.

The ankle is an often overlooked joint when it comes to snowboarding, but its role in allowing a rider to move in a balanced way is very important. Dorsiflexion moves the COM towards the anterior of the frontal plane (towards the toes), and plantar flexion moves the COM towards the posterior of the frontal plane (towards heels).



MOVING THE PARTS

Balanced Bending & Straight Back vs. Upright Back

Isolated flexion of the knees, without any flexion from the ankles or hips in a standing position will most likely make a person fall over. In order for a person to perform a balanced squat movement, there must be flexion of the ankle, knee and hip joints, so that the centre of mass remains over the middle of the feet in the frontal plane. The flexion at the hip in a balanced squat movement will cause the back angle to the ground to change. As the knee reaches 90 degrees flexion, the pelvis is furthest away from the feet and so the back angle will be quite “flat”, approximately between 45 and 30 degrees to the ground.

You will often hear coaches in various sports asking their athletes or students to maintain a straight back; students, and some coaches often misinterpret this. The idea of a straight back is to keep the vertebrae in the spine in a neutral and aligned position. Unfortunately, a lot of athletes and students take the verbal cue to keep a ‘straight back’ to mean keep a vertically upright position with the back. This leads to all sorts of strange bending in the lumbar spine and/or the COM being too far back over the heels.

Toeside vs. Heelside

In snowboarding, it is important that a rider knows how to move their COM laterally across the snowboard in the frontal plane. This is so they are able to keep their COM over the working edge of the board (the Base of Support). Because of the asymmetry between the anterior and posterior of the human body, we will need to bend the joints in different ways in order to achieve balance and stability over the toe edge or heel edge of the board.

ON THE HEEL EDGE, A RIDER WILL ASSUME A POSITION WHICH LOOKS SIMILAR TO A WALL SIT POSITION. WHILE SNOWBOARDING A RIDER MAY BE ABLE TO MAINTAIN THIS POSITION BECAUSE OF THE FORCES CREATED BY MOMENTUM.



ON THE TOE EDGE, THE POSITION WILL LOOK MORE SIMILAR TO THAT OF A SPRINTER RISING OUT OF THE BLOCKS AT THE START OF A 100-METRE RACE, WITH THE ANKLE AND KNEE MORE FLEXED THAN THE HIP.



Rotation & Counter Rotation

In snowboarding, rotation of different parts of the body is a key component of performing most manoeuvres. Rotational movements of the body are highly complex and can be difficult to separate into compartments, but there are some general types of rotation that we should understand:

- **Whole body rotation** is rotating the whole body in the same direction. This is a type of compound movement that requires movements in multiple joints. Examples of this would be a 360 spin in the air. In order to generate this type of rotation, there must be something to oppose the force of the body rotating. In the 360 example, it would be the board's edge on take off. This type of rotation can achieve maximum rotational force but can also be too powerful and imprecise. This type of rotation can be initiated through a combination of other types of rotation.
- **Counter rotation** uses core rotation to achieve simultaneous turning of the upper and lower body in opposite directions. Examples of this type of rotation include shifties, speed checks and some board slides. Counter rotation can be a very quick movement, making it very useful, but it is limited by the flexibility of the body and can lead to riders ending up in unstable body positions if they do not have the skill to realign themselves.
- **Upper Body Rotation / Separation** is achieved by using lumbar and thoracic rotation to rotate the upper body whilst keeping the lower body still. This type of rotation can be used by riders to generate tension in the body to aid spinning or turning and is often called anticipation or pre-wind.
- **Lower Body Rotation** occurs when the lower body rotates to catch up with, or turn ahead of, the upper body. Again, this type of movement occurs through rotation of the lumbar and thoracic spine.
- **Femur rotation** involves rotating the femur in the hip socket either laterally or medially. Because a snowboarder's feet are in a fixed position, rotating the femur laterally causes the foot to turn on its side and creates pressure on the outside of the snowboard binding. Rotation of the femurs can help to adjust the position of the COM, which can aid stability and balance.

Lateral Flexion

Flexion of the spine towards the side of the body will cause a "C-shape" curve. Think of a child making a teapot shape and pouring out the tea from one side and you will understand how side flexion works. The shoulders tilt to one side, and this moves the centre of mass to the side of the body. This movement can also be exaggerated by moving the pelvis in the opposite direction by rotating the femurs laterally, which creates a more pronounced C-Shape in the body.

This movement is also important in snowboarding as it gives a rider control of their COM in a fore and aft direction over the board. If a snowboarder did not use side flexion while riding, they would not be able to perform a number of important manoeuvres such as ollies, or be able to keep balance while riding powder. Too much lateral flexion will take the spine out of alignment and place it in a weaker position.

ANATOMICAL GENDER DIFFERENCES

While recent research suggests that gender difference in sporting performance, position, and injury rates are not due to anatomical differences, but more to do with patterns of movements, the anatomical differences between men and women is worth learning to tailor lessons to specific students.

Typically, women are shorter, have a wider and slightly differently shaped pelvis with shallower hip sockets. Female's ligaments are thinner and more flexible and women usually have a greater range of motion. Women, even the leanest of elite athletes, have a higher body fat percentage and less muscular development, and therefore lower muscular power-to-weight - something taken into account by snowboard manufacturers when making female-specific snowboards.

It is important to note that many of these anatomical differences do not apply to all women, or to women only. Humans come in many shapes and sizes, and current theories about the gender differences in athletic pursuits focus less on anatomical differences and more on gender-specific movement patterns. However, the following two are commonly discussed differences:

- Centre of Mass (COM)
- Quadriceps Angle (Q Angle)

CENTRE OF MASS

- Centre of mass location rearwards and lower.
- Muscle Imbalances: Relying on quadriceps (front of thigh muscles) and cantilevered balancing of arms & upper body and hips.

TEACHING SOLUTIONS & MODIFICATIONS

Equipment: Frequently bindings are placed too far towards heel edge because of small size of rider's feet in proportion to height. Set up bindings centred edge-to-edge or biased slightly towards toe-edge to bring COM towards midline of equipment.

Specific Coaching:

1. Encourage COM positioned over centre of equipment, rather than folding upper body forward to balance rearward-displaced COM.

Q ANGLE

- Knees turn inwards / "Q angle" or "A frame"
- The quadriceps or "Q" angle is the angle at which the quadriceps muscle meets the kneecap compared to the line formed by the ligament attaching the kneecap to shin.
- Normal Q angle for men is 8° - 15°
- Normal Q angle for women is 12° - 19°
- This difference is most commonly attributed to women's broader pelvis, shorter thighbone (femur) length, and more inwards twist of the femur; however pelvic tilt, foot position and muscle weakness also increase the amount the knee appears to turn inwards (A-frame).

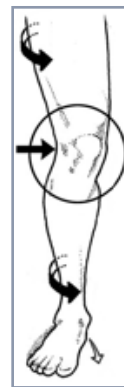


TEACHING SOLUTIONS & MODIFICATIONS

Equipment: Even though in normal gait toes might be straight or toe-in, set up snowboard with 25-30° angles between the feet to encourage neutral or external rotation at the hip to encourage knees moving in line with feet as opposed to tracking inwards. E.g.: +18 degrees front / -12 degrees back = 30 degrees total.

Encourage knees to track over the feet with flexion:

1. External rotation at the hip = knees track more naturally over the feet,
2. Encourage weight distribution to be on outer edge of foot, rather than medial side.
3. Accept some “A-frame” position when riding from female riders with larger Q angles anatomically.



DIFFERENCES IN MOVEMENT PATTERNS

Most of the differences in injury rates between male and female athletes (in particular the significantly higher incidence of ACL injury to female athletes) have to do with movement pattern differences and muscle coordination. These fall into two broad categories:

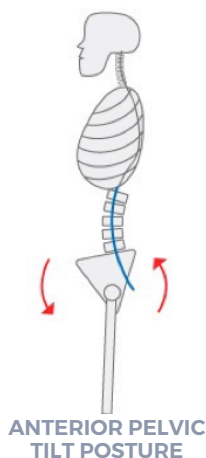
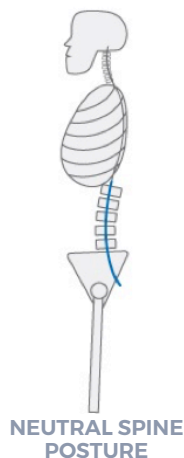
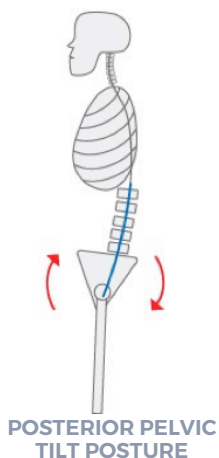
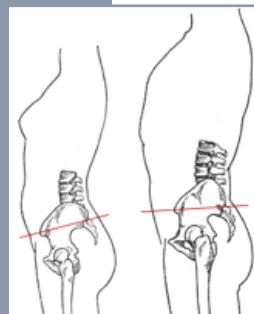
- Postural differences: anterior pelvic tilt
- Landing mechanics

PELVIC TILT

- Females typically have greater anterior pelvic tilt.
- Culturally acceptable posture for women = front of pelvis tilted down & forward, tailbone lifted higher & hips moved posteriorly; increased curve in the low back.
- Greater flexibility in spine, hips & hamstrings allow women to achieve this posture more comfortably than males, and removes strain from typically weaker core.
- Anterior pelvic tilt reduces range of motion in internal & external rotation of the hip.

EXCESSIVE ANTERIOR PELVIC TILT

- Excessive curve in low back / hips appear back & prominent, chest is moved forward
- If wearing a belt: the buckle in the front would sit much lower than where the spine meets the tailbone
- Knees move more inwards (more A-frame) with flexion
- Reduced ability to steer with lower body
- Encourage neutral or slightly posterior pelvic tilt when teaching Neutral Position.
- Long term, encourage an increase in core strength, and change posture to neutral/ slight anterior tilt for better spinal health in all sports & daily living activities.



LANDING MECHANICS

- Differences in the balance of quadriceps & hamstring strength (“Q:H ratio”). In general, women may be proportionally stronger in the quadriceps and weaker in the hamstrings, even in elite athletes. This manifests in a difference in landing mechanics:
 - Men may land with ankles more flexed, and absorb impact through ankles and knees (greater shin velocity).
 - Women may land with less flexion at the ankles, absorb impact through knees and hips. The hips and COM move back, torso and arms move forward to try to balance.
 - When manoeuvres can be anticipated and landings or terrain absorption happens when the snow slider is balanced, falls will be minimized.
 - Long-term exercise plans aimed at creating more flex at ankles, tracking of the knees out over the little toes rather than inwards, and more hamstring involvement may help female snowboarders, as well as reducing ACL injury rates.



The rider on the right bends forward at the hips/“breaks” at the waist or “pikes”. Active/reactionary position when dealing with terrain pressure.

NOTES:

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

TERRAIN AS A TEACHING TOOL

Using terrain to your advantage is a great way to maximize the results of your lessons. The best instructors have been using terrain in their lessons for many years. With experience, your ability to translate terrain features on the mountain into teaching tools will increase. This section will give you some tips and tricks.



TERRAIN AND BEGINNER SNOWBOARDERS


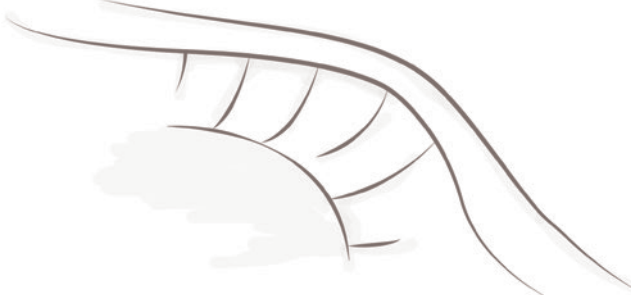
The biggest hurdle for new snowboarders is getting used to the feeling of sliding, or gliding, on snow. Add to that being attached to a snowboard, and the challenges add up fast. Feelings like acceleration and deceleration, absorption, flexion / extension, and rotation can all be daunting for new riders.

The QuickRide System provides a proven framework to help your students progress to turning. Using QuickRide in conjunction with complimentary terrain (either purpose-built or natural terrain) will positively affect your beginner lesson experience.

Many resorts are now providing sculpted terrain features for beginners to use to experience the sensations associated with snowboarding for the first time. The following chart will help you to use terrain features effectively.

THE QUICKRIDE SYSTEM AND TERRAIN

GOALS	KEY CONCEPTS	COMPLEMENTARY TERRAIN
BASICS: To learn to use the equipment, and gain comfort moving around on the snowboard with one foot attached.	EQUIPMENT MOBILITY	Look for... <ul style="list-style-type: none"> ❑ Flat areas free from traffic, distractions, excessive noise, or other safety hazards. ❑ Use obstacles such as bamboos poles, soft cubes / toys to move around. 
SLIDING: To become comfortable standing on the snowboard while it is sliding.	STRAIGHT RUNNING	Look for... <ul style="list-style-type: none"> ❑ A gentle slope with a flat area and small counter-slope at the bottom (for speed control). ❑ Mini half-pipe for dropping in and decelerating on the opposite side. ❑ Small, gentle rollers with a return wall at the end to help feel gliding with small vertical movements (absorption). 

<p>CONTROL: To learn to control both speed and direction with both feet attached to the snow-board.</p>	<p>SIDESLIPPING PENDULUM</p>	<p>Look for...</p> <ul style="list-style-type: none"><input type="checkbox"/> Slightly steeper slopes for sideslipping, to assist with edge angle.<input type="checkbox"/> A banked slope will assist with direction change tasks like the Pendulum and Power Pendulum. 
<p>TURNING: To learn to turn (changing edges in the fall line).</p>	<p>BEGINNER TURNS</p>	<p>Look for...</p> <ul style="list-style-type: none"><input type="checkbox"/> Very gentle, open slope for initially trying turning.<input type="checkbox"/> Small banked slopes will help re-direct the rider in the opposite direction.<input type="checkbox"/> Berms can assist in feeling the shape of turns. 
<p>FLOW: To learn to explore the mountain safely.</p>	<p>NOVICE TURNS</p>	<p>Look for...</p> <ul style="list-style-type: none"><input type="checkbox"/> Runs or slopes with some variation, to help students feel the need to change turn shape and size for speed control.

For more info, check out this link:
<http://learntoskiandsnowboard.org/adult-kids-tips/terrain-based-learning-explained>

RIGLET PARKS



Photo courtesy of Burton Snowboards

Riglet Parks were created by Burton Snowboards as part of their Learn to Ride program. “Riglet” refers the retractable Riglet Reel leash mounted on Burton kid’s boards to allow young riders to be pulled by a parent or instructor. A Riglet Park is a fun and engaging environment to help kids under 12 experience snowboarding. These purpose-built environments may include rollers, surface-level boxes, quarter pipes, and berms, banks, and other obstacles. Kids are able to slide and glide through the parks with the help of instructors and begin to develop the skill necessary for riding the whole mountain.

The parks help kids to learn by doing, in a snowboard park environment. If your resort provides a learning park for young snowboarders, use it! Refer to our Teaching Children chapter for some tips on teaching young kids, but the key is mileage and practice – get your students sliding in a controlled fashion and developing balance skills from day one. Start by using a tether (or “Riglet Reel”) attached to the snowboard so you can move kids from feature to feature safely. Ensure that both feet are strapped in, and have your students focus on simply feeling the sensations of gliding up and over obstacles on a flat base.

For more info, visit: <http://burtonriglet.com>

USING NATURAL TERRAIN

Your resort may not provide purpose-built terrain features for teaching. Luckily, the mountains provide endless opportunities to use natural terrain features to accentuate your lessons. Once your students are out of the beginner area, begin to choose terrain with skill-development outcomes in mind.

Some examples...

Balance & Stability:

- Becoming more skilled on the snowboard relies on improving our ability to react to changes in balance and improve our stability.
- To improve lateral balance, looks for natural banked runs and emphasize “tipping” laterally into the valleys.
- Vertical balance can be improved by using undulations / rollers in the terrain (see below).
- Surface-level boxes or rails (or trees/logs!) can help students improve balance on a flat-based snowboard (minimal or no edge angle).

Carving:

- Speed control is a common concern when learning to carve.
- Choose terrain with natural counter slopes and flatter terrain to remove the intimidation of speed.

Terrain Adaptation / Absorption Skills:

- Learning to absorb terrain is all about freeing up the range of motion in the lower joints (hips, knees and ankles).
- Look for undulating terrain, and follow a simple Building Block approach – the terrain you choose should be on the mellower side early on in the learning process, and can progress to more challenging as students become more skilled.
- Rollers, larger bumps, cat tracks, snowboard cross tracks may all be appropriate for teaching absorption skills.

Timing & Coordination Skills:

- Improve your student's coordination skills by creating external timing changes.
- Tree runs provide the need to turn “on demand”, rather than wherever is comfortable. Ensure slopes and speeds are suitable to your student level.

These are just a few examples of the opportunities to use terrain to your advantage when teaching. A common trait of experienced instructors is that ability to monitor the terrain around you, and translate that terrain into a usable teaching tool.

FREESTYLE TERRAIN

Teaching in freestyle terrain requires special attention to safety details regarding the environment students are learning in. Here are some various environmental instructing factors to consider when teaching in the Terrain Park.

TERRAIN PARK SAFETY



Always start your day with a thorough park inspection. You will need to point out to your students certain important safety considerations before riding it.

Stop zones: Point out specific areas where your students will stop between park sections. Teaching your riders to face uphill when they stop will help them gauge if they are in a safe spot.

Feature highlights: Check the takeoff transitions, length of tables and condition of the landings before riding the jumps. Watching other riders will also help your students gauge speed and flight path.

Spotters: Explain to your riders the spotter signs. “O” for OK, “X” for NOT OK. These signs are of crucial importance at busy resorts.

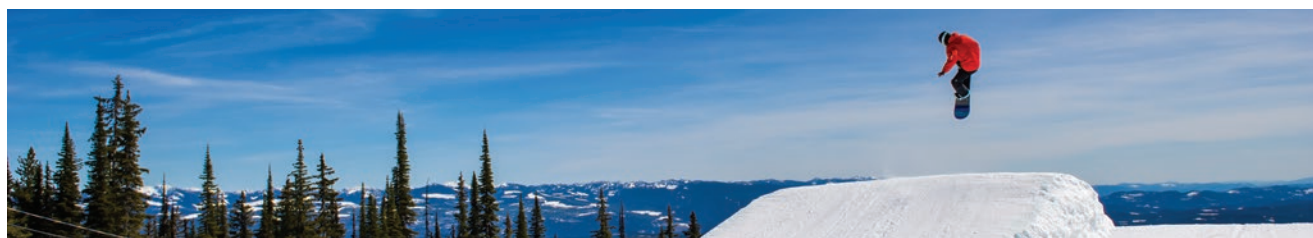
Drop-in calls: It is important for students to call their drop-in, especially at the halfpipe or at any jump with multiple takeoffs. Riders should get in line or raise their arm (if there is no organized line), calling “Dropping next!” When it is safe to go they have the right-of-way and need to call out “DROPPING!” Teaching proper park “ethics” will help riders get along.

SMART STYLE

Freestyle Terrain Designation & Rating System

Freestyle terrain may include halfpipes, as well as terrain parks and natural terrain features. They are provided for your enjoyment and offer adventure, challenge and fun. However, freestyle terrain use, like all riding, exposes you to the risk of serious injury. Prior to using freestyle terrain, it is your responsibility to familiarize yourself with all instructions and warnings and to follow “your responsibility code”.

- Freestyle Terrain contains man-made and natural terrain variations.
- Freestyle Terrain changes constantly due to weather and use.
- Inspect Freestyle Terrain before using and throughout the day.
- In jumping and using this terrain, you assume the risk of serious injury.
- Be courteous and respect others.
- One user on a Terrain feature at a time.
- Never jump blindly - use a spotter when necessary. Look Before You Leap!
- It is your responsibility to control your body on the ground and in the air.
- Always clear the landing area quickly.
- Always ride in control and within your ability.



THE TERRAIN PARK “PICTIONARY”

Tabletop Jump

Tabletop jumps offer a wide takeoff to allow various lines of approach. Approaching this shape of jump from the side will allow the rider to see what distance he must clear to reach the landing. The lip of the jump is at the same height as the flat-top. This makes the jump safer in the event of a rider not making it to the landing (the rider will only drop as far as he has risen).

Tombstone Tabletop Jump

The tombstone tabletop is a more advanced feature. These jumps send the rider to a substantial drop in elevation as the takeoff is sometimes up to 3 meters higher than the flat top. This makes for dire consequence when a rider fails to reach the landing. Adding to the difficulty is the amount of rise from the base of the takeoff to its lip. It is more difficult to gauge how fast to ride in order to make the landing (lots of speed is lost while riding up the takeoff).

“Hip Jump”

Some tabletops have groomed sides that make for a different trajectory option. Riding the jump as a hip makes it similar to riding a spine jump. The hip option is useful to test the “kick” of the takeoff and the amount of speed necessary to reach the landing. The slight change in direction needed to match the hip landing reinforces straight airs in the halfpipe.

Hip Jump with Tombstone

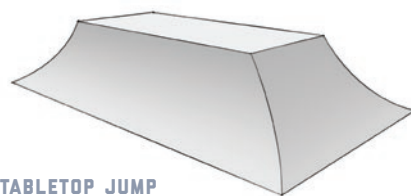
Once again the tombstone raises the level of difficulty. Because tombstone hips usually have steep takeoffs and landings, special care should be taken when picking the line of trajectory. Riders can easily overturn on the takeoff, projecting them to land on the flats. Hip jumps are an effective feature to introduce halfpipe spins.

Spine Jumps

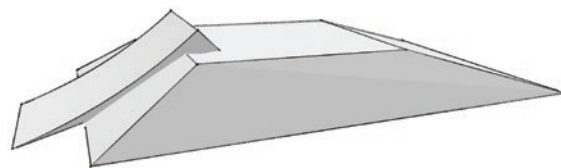
Spine jumps offer many different trajectory options. The most obvious choice is going left or right. Spines closely simulate the trajectory of halfpipe airs. Landing on a strong edge and completing the shape of the takeoff turn offers the same feeling as landing an air in the pipe and carving hard across the bottom. Entry-level students can use the very edge of the takeoff to introduce small airs and advanced riders can jump it from end to end.

Gap Jumps

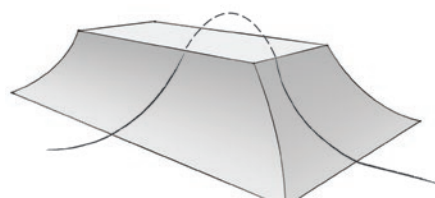
Gap jumps are becoming a thing of the past in terrain parks. Their “unforgiving” shape has claimed many riders. Great ability at judging the required speed to clear the gap is essential to avoid catastrophic consequences. Obviously riders should already be riding much larger tabletops confidently before they attempt to clear gaps. Instructors should avoid using gap jumps with their students as a serious safety consideration.



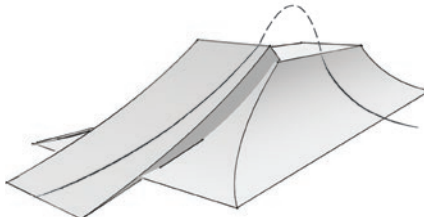
TABLETOP JUMP



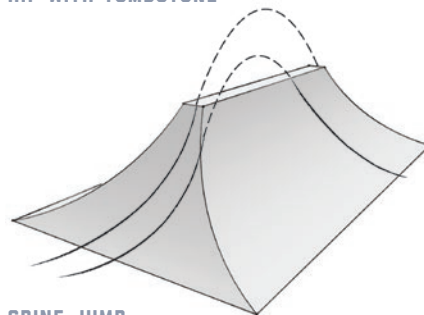
TOMBSTONE TABLETOP JUMP



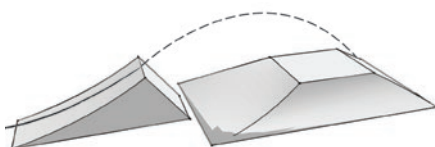
HIP JUMP



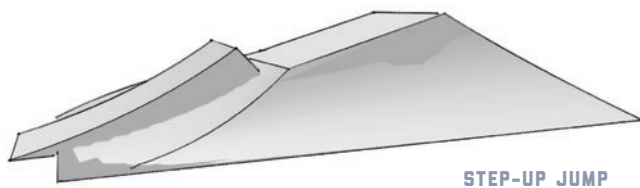
HIP WITH TOMBSTONE



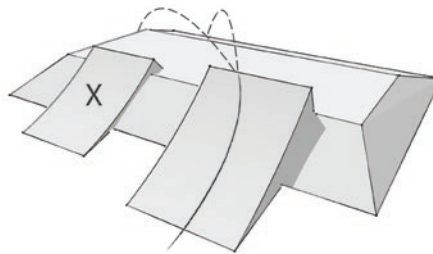
SPINE JUMP



GAP JUMP



STEP-UP JUMP



TRANSFER JUMP

Step-up Jump

Step-up jumps are rare in ski area terrain parks. A well-designed step-up can have some psychological benefits to your students. When the landing roll matches the flight trajectory, riders are never much higher than the snow. This shape helps with riders that are uncomfortable with the height provided by tombstone tabletops. Instructors must be wary of the “gap” aspect of a step-up. Although not as catastrophic as colliding with a straight wall of snow, failing to reach the landing will result in an uphill impact.

Transfer Jump

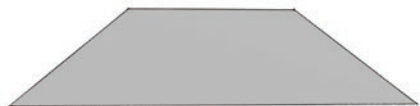
“Transfers” are less obvious trajectories over classic features. In the above example, the rider can use the right-hand takeoff and drift toward the left-side landing or even the left side hip. Spotting (or blocking other takeoffs) such a flight path is crucial to avoid collisions or unexpected snow conditions (ill-maintained landing).

TAKEOFF AND LANDING COMPATIBILITY

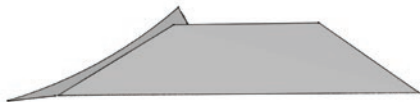
Beginner Table Top Landing:



Table Top Landing:

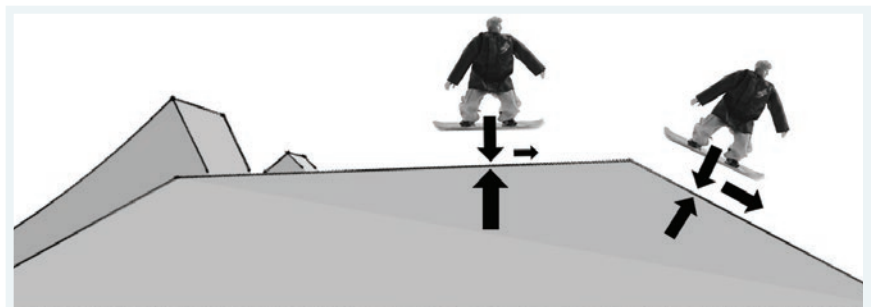


Tombstone Table Top Landing:



SLOPE OF THE LANDING

Steep landings eliminate less momentum at the moment of impact. Changes in momentum are the source of “pressure”. In more dramatic changes to momentum, the rider will feel more pressure. Pressure eventually amounts to pain.



In the example above, both riders have the same trajectory in the air (they used the same takeoff). The “natural force” (exerted by the ground) is always applied perpendicular to its surface. If the rider’s momentum is parallel to the natural force, as in the example on the right, the impact will be great (painful) and little momentum will be transferred to the horizontal plane. Keep in mind that a steep landing will also prolong the direct pull of gravity. Your riders will still accelerate until the slope is reduced. This is intimidating to less skilled riders.

Well-designed jumps can offer the feeling of never even leaving the ground (or never returning to it for that matter). When the landing slope is parallel to the flight trajectory, riders will feel close to no impact force when they touch down.

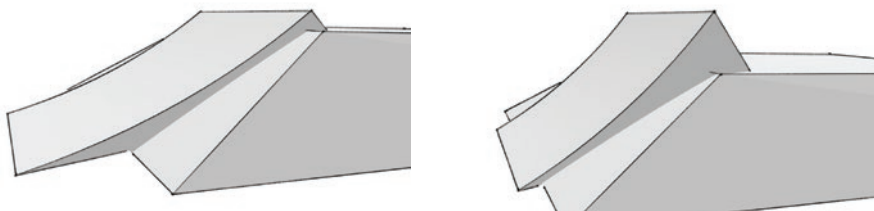
Instructors should teach their students to anticipate jump trajectories and assess the value of their landings. Watching others ride the jumps can help your students gauge the proper speed and trajectory. Demonstrations speak much louder than words.

Length of the flat-top: To ride longer jumps, students simply need more speed. Riding at higher speed requires better timing and coordination to safely perform the same

manoeuvres.

Radius of the takeoff transition: The transition is what deflects a rider's momentum upward.

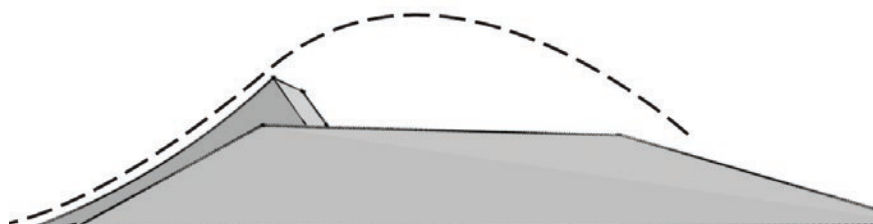
Tight transitions do so in a short distance. The resultant change in direction is sudden and can throw off a student's balance. Longer transitions (larger radius) transfer mo-



mentum more gradually giving the rider time to adapt to the change in direction.

In this example, the jump on the left has a dramatically tighter transition than the jump on the right. As a guideline, a snowboard (without a rider) should lie almost flat (only its camber should rise off the snow) on the steepest part of any jump. Even following this guideline, instructors need to understand that riding faster will accentuate the “kicky feel” of any jump.

Takeoff angle: The final angle of a jump also plays an important role in defining the flight path it provides. The lip angle of a jump has a significant effect on a rider's axes of rotation. Varying the lip angle can be used to modify tricks (turning upright spins into



corked ones).

When teaching new tricks to riders, a little digging can go a long way in making the feature work for the trick in mind. If digging were not an option, perhaps learning a dif-



ferent trick (that would work with a given feature) would be more effective instructing.

HALFPIPE “PICTIONARY”

Roll-out deck: This is the flat area at the top of the walls. Riders hike up the pipe on the roll out decks.

Flat bottom: The flat bottom is the flat area at the bottom of the pipe. It varies in width throughout the season. A wider flat bottom gives riders more time to set-up between hits. When it gets too wide, riders lose the “trampoline-like” feel of halfpipe riding.

Wall height: The vertical distance from the flat bottom to the lip of the pipe. This factor is controlled by the size of the grooming machine used. “Regular pipes” are generally

3 to 4 metres deep. The word “superpipe” was coined by the makers of the “super pipe dragon”. Their machine can shape a 6-metre transition. The term superpipe is generally attributed to pipes that exceed 5.5 meters (16 feet).

Transitions: The transitions are the curved part of the walls. These must be maintained regularly for the pipe to keep a consistent, smooth shape. Well-maintained transitions are fun and easy to ride. The transitions should reach vertical but not beyond it.

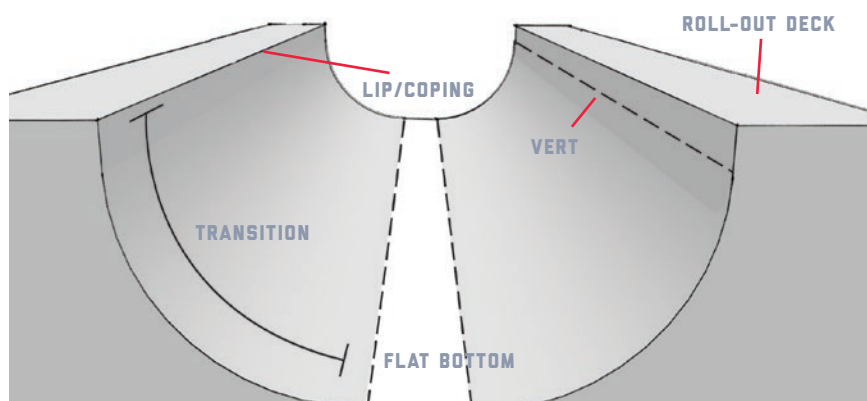
Halfpipe shaping machines produce different transitions. The two main shape types are radial and elliptical. Radial transitions are easier to ride, as their rate of ascent is consistent. Elliptical walls have a quick transition at their base. They get steep very quickly and make the pipe look more like a box.

Varying the line of approach in the pipe has a substantial effect on the feel of the transitions. Riding straight across the pipe provides the tightest transition possible. Riding steeply down the pipe lengthens the transitions and makes them less “kicky”.

Vert: The vert is the top portion of the wall. “Vert” stands for vertical section. Not all halfpipes have vert and some have plenty of it. The ideal is four to eight inches (10-20 cm) of vert. There is no need for a long vertical section. In this example, both pipes have the same transition. The left-hand pipe has more vert. Given the same amount of speed, the rider on the right will end up higher over the lip because the pipe just goes to vert. The rider on the left is simply riding uphill for a longer distance before leaving the snow.

Slope of the pipe: The slope of the flat bottom and roll-out decks has an impact on how riding the pipe will feel. In steep pipes, riders need powerful edging ability and plenty of strength to maintain their line across the flat bottom. Pipes that are less steep make it more challenging to maintain speed and can limit the number of hits in one run.

Length of the pipe: The length of a halfpipe has little effect on how students need to ride for performance. Longer pipes will require more endurance as they prolong the duration of effort.



RAIL “PICTIONARY”

Boxes: Also called “fun-boxes”, boxes are features with a wide sliding surface. Some are made of metal and others are plastic. The plastic ones should have metal coping (that is level with the plastic) along their edges. Boxes can be built in many different shapes to challenge more advanced riders.

Rails: Rails are slender metal surfaces or pipes. They can be built in a multitude of shapes and sizes.

Shotgun, Single-Barrel and Flat Bar Rails

For safety purposes, rails should have solid panels between their supporting legs. The surface must be made of solid steel and be free of burrs. Flat-bars should have rounded edges to prevent board damage or cuts to riders falling on them.

How a rider must get on the rail can vary.

- “Ride-on” rails have snow piled-up to the level of the rail. Riders do not need to get any air to slide “ride-on” rails.
- “Skate-style” rails have no ramp at all. The rider must generate the required lift himself by popping, ollieing or nollieing.
- “Gaps” are sometimes found between the ramp (snow) and the rail. Riders must have enough speed to clear the gap and land on the rail.

Skate-style and gap rails

Ride-on rail: Instructors should pay special attention to the ramp’s condition. “Highways” or ruts on the takeoff can make riders lose their balance before even reaching the rail.

Curved rails & boxes: Curved rails add to the fun by gradually varying the plane of the rail. Riders must adjust their stance throughout longer transitions (than kinked rails).

Rainbow shapes provide a similar feeling to jumping. The “weightlessness” allows a rider to spin easily on the rail. Rails that curve to the side are once again more challenging. Riders must now balance through a change in direction (left or right).

“S” and Dragon rails alternate between more than one direction of curve. “S” rails go left and right, “dragon” rails go up and down. t

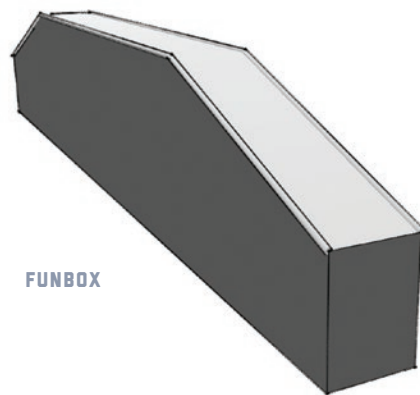
Kinked rails: Kinks are sudden changes in a rail’s shape. Kinks mostly go up or down (side kinks do exist and they are extremely difficult to navigate).

Kinked rails and boxes challenge student balance. Riders must adapt their stance from section to section. In a 50/50, it is fore and aft balance that deals with vertical kinks. In a boardslide, lateral balance must be adjusted.

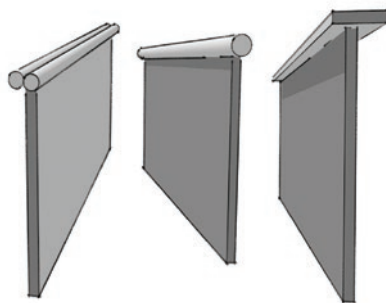
Downward kinks eliminate pressure as drops in terrain would, allowing students to air and perhaps change to a new sliding stance (Boardslide to frontside boardslide after the kink for example).

Upward kinks are more challenging. The added pressure from the uphill transition can easily throw a rider off balance.

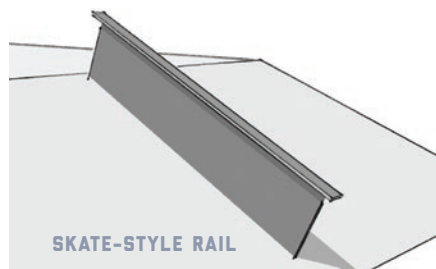
“Wall rides” and picnic tables will also be encountered. Boxes and rails with other rails sticking out from their side panels are being used in California. Of course Rail design will continue to evolve and new challenging shapes will come up. Meanwhile, bigger, higher versions of these shapes will keep on challenging your students.



FUNBOX



RAILS



SKATE-STYLE RAIL



C-BOX



DOWN AND FLAT-DOWN RAILS

HALFPIPE RIDING

The following information has been adapted from the Canadian Snowboard Coaching Program - Competition Introduction Reference Manual (2008).

The biomechanics of halfpipe riding are similar to that of freeriding; the same riding principles and techniques are used. Standing balanced on both feet, perpendicular to the snow (in the freestyle triangle) is the key.

Confidence & Control

As the halfpipe feature itself is a unique part of snowboarding, it will take some gradual increases in height up the wall as riders get used to it. Start small and build muscle memory, balance, and confidence by slowly going further and further up the wall.

Key Concepts to Halfpipe Riding

Take Off: At the lip of the pipe, the body should be perpendicular with the vert, with the head towards the virtual centre of the transitions.

Down Angle: The angle of the edge of the board to the lip of the pipe when exiting – the amount of the angle will change the curve of the air and the speed of the rider.

Riding the Uphill Edge: Always ride the uphill edge of the board (toe edge on frontside wall, and heel edge on backside wall); edge change occurs at the apex of the air.

Standing On The Board: Maintaining the centre of mass over top of the board will give a stable position and allow the board to accelerate up and down the wall of the pipe.

Pipe manoeuvres must be performed above the lip. Amplitude (height) above the lip is one of the defining factors in pipe riding and is as important as technical manoeuvres. Speed is a critical factor in halfpipe riding; riders need to be able to ride confidently at high speeds. In order to do any manoeuvres including straight airs, riders must be able to get to the lip of the pipe.

Riders need to know how to maintain and generate speed in the halfpipe. Adjusting the following factors will allow the rider to gain or maintain their speed in the pipe:

- Drop-in speed: The speed the rider drops into the pipe
- Down Angle: The angle of the board when compared to the lip of the pipe. The rider will travel faster when the board is more downhill.
- Pumping: Applying pressure to the board against the wall on the down and up transitions to propel rider forward at a faster speed.

To maintain speed in the pipe riders can apply the follow tactics:

- Decreasing Edge Angle: The more edge on the wall, the more friction, and the slower a rider goes.
- Lip-to-Lip Airls: Airls performed that leave from the lip and land at the lip. This will maintain more speed than early takeoffs or pushing off wall and landing lower on wall or in the flat bottom.
- Waxed snowboard base: A waxed board will decrease the friction on the base, which will help the board run faster.

Halfpipe and quarterpipe riding deserve special attention as all the riders' forward momentum gets transferred from the horizontal to vertical. Transitions change a rider's momentum so quickly that the rider must maintain their centre of gravity directly under the snowboard at all times. The centre of gravity must move with the board as it moves up the transition all the way until it is vertical.

Dropping!

A pipe run always begins with the drop in. Riders need to understand how to effectively and efficiently enter the pipe to be able to have solid lines through and airs out of the pipe. A rider should be able to set the desired line at the drop in and maintain the same line through to the takeoff. Movements for dropping-in:

- 50/50 the coping: Ride parallel to the coping, just on the edge of the pipe.
- Roll-in: Use a slight edge angle to enter the pipe. Drop the body over the front of the board while allowing the board and body to roll onto the vertical wall. This movement must be done quickly. In a good roll-in the rider's head should be at the same height on the wall as his feet.
- Line: Transfer the centre of gravity back over the centre of the board and set the desired line/edge and maintain it through the transition while keeping the centre of gravity in the centre of the board.

Factors affecting line choice:

Wall height, pipe length, pitch pipe built on, width of pipe walls, trick choice, and snow quality, just to name a few.

Example:

Higher pipe wall = longer pipe = open lines = more speed

Small wall height = short pipe length = steeper lines = less speed

Small wall height = longer length = flat pitch = open line to build speed

Pumping

With a solid edge, the rider can push (pressure the board) against the bottom of the transition to accelerate down and across the pipe using the entire transition to transfer as much momentum toward the opposite wall.

Key points to Pumping:

- Pumping movements are based on feeling and controlling pressure. It takes time and mileage to develop this pressure control skill.
- In hard snow conditions, pumping while the board is carving is more effective than pumping from a flat base. The carving edge transfers more force against the solid surface.
- In slushy or soft snow conditions, pushing against a carving edge will cause it to sink and momentum will be lost. A flatter base offers a greater surface area to push against.
- Riders can pump while travelling up or down any transition. Pumping while re-entering the pipe is most effective as gravity is also providing acceleration.

Basic Pipe Manoeuvres: (performed forwards or switch)

Frontside Air: A straight air on the riders FRONTSIDE wall. Up on toe edge, down on heel edge.

Backside Air: A straight air on the riders BACKSIDE wall. Up on heel edge, down on toe edge.

Frontside Alley-Oop: A straight air on the riders FRONTSIDE wall where the rider turns UP the pipe instead of down. Up on toe edge, down on heel edge.

Backside Alley-Oop: A straight air on the riders BACKSIDE wall where the rider turns UP the pipe instead of down. Up on heel edge, down on toe edge.

Air-to-Fakie: Rider rides up the wall on edge and into the air and returns without rotating, now riding switch on the same edge as the take off. These can be performed on either wall, frontside or backside.

Rotations in the Halfpipe

Rotations performed in the pipe are executed by the same movement timing as rotations off any other feature. The only difference is that 180s, 540s, 900s etc. land regular while 360s, 720s and 1080s land switch.

TACTICS GLOSSARY

The following tactics will help you in presenting technical concepts to your students. Remember, many tactics may be associated with more than one skill. Alternate skill focuses have been listed.

POSITION & BALANCE

Butter Yoga

While standing on flat, groomed terrain (feet strapped in), have students experiment with testing the limits of their balance by balancing over the nose or tail of the snowboard, and adding elements like rotation or edging to increase the difficulty level, and challenge balance. Similar to Flatland Manoeuvres, but static (not sliding).

Flatland Manoeuvres / “Butters”

Alternate skill focus: Pivot/Steering, Edging, Pressure, Timing & Coordination

While riding on flat, groomed terrain, have students experiment with testing the limits of their balance by balancing over the nose or tail of the snowboard, and adding elements like rotation or edging to increase the difficulty level, and challenge balance.

Hopping Between the Turns

Alternate skill focus: Edging, Pressure

While completing linked turns, have students lightly hop on two feet during the traverse phase of the turns. Ensure students are taking off and landing on both feet. One to two inches of air beneath the snowboard is sufficient.

Riding Fore, Aft & Centred

Have riders shift the centre of mass (COM) over the front foot, back foot, or equally over both feet, while linking turns. This allows riders to feel the differences in fore/aft balance, and find a suitable position for comfort and stability.

Side Slipping 180 Jumps

Alternate skill focus: Pivot/Steering, Edging, Pressure, Timing & Coordination

Have students sideslip on moderate terrain on the heel edge. With weight distributed evenly over both feet, have them flex the lower joints, and extend to hop. During the hop, the body should rotate as one, turning the board 180 degrees. Students should land on the toe edge, facing up hill, with weight still distributed evenly over both feet. Repeat to return to the heel edge. Riders should feel the importance of body alignment and the Neutral Position.

Sliding 360's On Snow

Alternate skill focus: Pivot/Steering, Edging, Pressure, Timing & Coordination

On mellow terrain, have students ride with a centred position over both feet. By turning the head, shoulders and hips, have them begin to turn either toward the heel edge or toe edge.

Have students continue to turn past 180 degrees and continuing to maintain balance by looking through the rotation with the eyes, and maintaining a centred position. 360's should be performed in both the frontside and backside directions.

Static Jump / “T” Stance

On flat terrain and without moving, with both feet strapped in to the snowboard, have students establish a balanced, centred position over the board. Have them flex to lower the body, and extend rapidly, jumping lightly to leave the ground. On landing, ask them to ensure that they are maintaining a position that is aligned and centred by feel both feet contact the snow simultaneously. While riding, try the same movements, focussing on maintaining a position similar to an upside-down “T”.

Switch Riding

Alternate skill focus: Pivot/Steering, Edging, Pressure, Timing & Coordination

On terrain suitable for their ability level, have students link turns in the direction opposite to their natural stance.

Toe to Toe / Heel to Heel

Alternate skill focus: Pivot/Steering, Edging, Pressure, Timing & Coordination

To enhance balance skills, have students try to ride and complete only toeside turns.

Begin with a regular toeside turn, in their natural direction. In the traverse phase, before the edge change, have students complete a sliding frontside 180 (rotating the nose of the snowboard downhill), and then complete a switch, or fakie, toeside turn. Again, in the traverse phase at the end of this turn, complete a sliding 180 (nose of the board rotating downhill), and repeat the sequence. To complete all heelside turns, have riders begin with a heelside turn, and instead of frontside rotations between turns, have them complete backside rotations. For advanced riders, have them attempt the same exercise using hop or ollie 180's, instead of sliding 180's.

PIVOT / STEERING

Garland / “Chicken-Out” Turns / Fall-Line Pivot Exercise

Alternate skill focus: Edging, Timing & Coordination

Have students begin in a sideslip (on either edge), and then shift pressure slightly over the lead foot to establish a slight direction change. To initiate a pivot, have students turn the head, shoulders and hips down the hill, allowing the snowboard to move toward the fall line. Allow the snowboard to flatten, and approach a flat base. As the snowboard approaches the fall line, have students rotate in the opposite direction, away from the fall line, and back to the starting position. Ensure that students are not changing edges in the fall line. Practice multiple times on the toe or heel edge, and then switch to the opposite side. This exercise allows students to feel the effects of rotation on the initiation and completion of the turn.

Fish Turns / Roller Coaster Turns

Alternate skill focus: Timing & Coordination

As an analogy to encourage steering at a higher level, have students picture a fish, where the tail always follows the head as the fish swims. Alternatively, they can envision a roller coaster car, where the last car must follow the path of the first car. Have students attempt to recreate this feeling in their snowboarding, by steering progressively with the front foot, followed by the back foot, in a variety of turns.

Headlights on Knees

An analogy to promote the use of the knees in intermediate riders, have them imagine they are riding in the dark, and with spotlights attached to each knee. As they ride, they have to “shine” the light in the direction of travel, helping them to begin to steer the snowboard with the lower body.

Motor Boat

Have students imagine they have an outboard motor on the tail of their snowboard. They must hold onto the throttle of the motor, ensuring that they maintain alignment. To turn the “boat” to the heelside, the throttle needs to be pushed toward the toe edge (thus rotating the shoulders and hips to the heelside direction). To turn to the toe edge, the throttle must be pulled toward the heelside, rotating the shoulders and hips toward the toeside.

Complete a series of linked turns using this analogy ensuring that alignment and rotation are maintained throughout. Sound effects optional.

Rail to Rail (Carving)

Alternate skill focus: Timing & Coordination, Edging

On mellow terrain, have students begin in a straight run. Have them roll onto the toe edge, establishing a carved turn (pencil line track in the snow), and then roll to the heel edge, carving again. Terrain should be flat enough that speed control isn't difficult, as students aren't completing full turns, but are simply “rolling” or steering onto edge for a brief period, before switching to the opposite

edge. Challenge students to feel the knees and feet directing the snowboard to the new edge, and increase the pace of the edge changes as steering skill increases.

Static Steering Exercise / Mason Jar

With students on a flat area of the hill, and both feet attached to the snowboard, have them isolate the knees and feet and envision a turning motion. Have students “direct” the knees toward the heel edge by both rotating and driving them toward the nose of the snowboard, and in the opposite direction for the toeside. As an analogy, have them imagine an extra-large “Mason Jar” sitting on the snowboard between the feet. The lid of the jar is at knee-level. Have them picture loosening and tightening the jar’s lid with each steering motion.

Static Rotation Exercise

On flat terrain, and with the snowboard not attached to the feet, have students feel total body rotation as a means to create their first turns, beginning with the head and shoulders, and progressing to the hips, and finally continuing to the knees, feet and the snowboard. Have students try rotation towards the heel edge as well as the toe edge, while ensuring their eyes are focussed forward, over the “nose” of the board.

Twist the Disks

Have students practice the Static Rotation Exercise (as above) with the snowboard off, but focus on completing the rotation by slightly turning the feet to affect the snowboard. Have students imagine their binding disks are loosened, allowing them to rotate the binding around the disk, when completing this movement. At higher levels, have students envision this analogy while riding.

X-Turns

Alternate skill focus: Position & Balance, Pressure

On flat terrain, with both feet attached to the snowboard, have students perform a small hop, in conjunction with slight rotation of the body toward the toe or heel edge. Once completed a number of times, the resulting pattern in the snow should resemble an “X”.

To progress, have students feel the effect of using strictly upper-body rotation, and then incorporating lower-body involvement (steering) with the knees and feet. This allows students to feel the effects of a centre pivot point in short radius turns, as well as the use of rotation with lower-body steering. Ensure that alignment is maintained throughout this stationary exercise.

EDGING

Clock Face Analogy

As rider ability increases, students should have the ability to engage the new edge earlier in the new turn. Have students imagine a clock face, with one side of the circle representing a turn arc. Use this analogy to point out to them where the new edge should be established

(IE: 10 o’clock and 2 o’clock). An engaged edge is evident through the point at which the snow begins to spray away from the turning arc.

Drinks on Shoulders

Alternate skill focus: Position & Balance

As a means of creating angulation, have students ride, envisioning they have drinks balanced on each shoulder. Their goal is to avoid spilling the drinks as they increase the edge angle, by increasing the amount of angulation used.

Stop-N-Hop’s

Alternate skill focus: Pressure

On terrain suitable for ability level, have students sideslip at a moderate speed on either the toe or heel edge. Have students stop by flexing the lower joints, thus increasing the edge angle. After stopping, students should balance on edge, and attempt three hops (either uphill or downhill) by maintaining a balanced position over the edge, and keeping a stable edge grip. Have students try on both the toe and heel edges, as well as hopping both up and downhill.

Hop-Carved Turns

Alternate skill focus: Position & Balance, Pressure, Timing & Coordination

Have students complete a series of sidecut turns (as described above). During the edge change phase of the turn, have them hop slightly off of both feet at the end of the turn, and land on the new edge at the start of the next turn. The edge change takes place in the air, and students must find a pencil-line carved edge immediately upon landing.

Inverse Traverse

Alternate skill focus: Position & Balance

An exercise to encourage a commitment to an early edge-set. At the exit from the turn, extend the traverse phase across the hill, and attempt to set the downhill edge and maintain the direction of travel across the hill. Repeat as terrain allows.

Pour Water From Boots

Alternate skill focus: Pressure

An analogy to have students begin to develop smooth application and removal of edge angle in carved turns. Have them imagine their boots are filled with water, and as they begin each turn, they are trying to pour the water in a controlled fashion. As they finish the turn, they are to gradually stop pouring the water, changes, and begin on the opposite turn.

Sidecut Turns

Alternate skill focus: Position & Balance, Pressure

On mellow (green) terrain, have students ride in a balanced, centred position. With slight inclination (lean) to the toe edge, have them establish a carved turn, and simply maintain that position, allowing the sidecut of the snowboard to dictate the turn shape. Once the toe turn is completed, gradually return to the centred position, and incline to the heelside, maintaining a carved turn, and again relying on the sidecut of the snowboard to create a completed turn. Safety and speed control are important considerations – ensure that the terrain is flat enough to keep speed to a safe rate.

Slap Base

On suitable terrain for ability levels, have students try to create a quicker edge change by using the ankles to “slap” the base of the board on the snow while changing edges. Have them envision the slapping sound of the edge change. While this may be impossible to achieve, the analogy can be very effective in creating an efficient edge change.

Speed Checks

Alternate skill focus: Pivot / Steering

Have students ride with a relatively flat base, allowing the speed to increase. Have them quickly turn the snowboard across the fall line, and apply a maximum amount of edge to briefly slow the snowboard down, and then return to the starting position. Safety is the largest consideration when completing this exercise.

Sponsor Turns

To create an earlier edge within the turn, have students envision they have sponsors standing along the sides of the run. With each turn, their goal is to show the base of their board to the sponsors standing at the side of the run. This analogy is effective in helping to increase the amount of edge used in the turn. For advanced riders, have them attempt to show the base of the snowboard uphill, creating a quicker edge change, and maximum edge angle.

Spray the Trees

Alternate skill focus: Pressure, Timing & Coordination

To increase the amount of edging students are applying, have them attempt to spray snow to the sides of the run (trees), while riding.

Static Edging Exercise

Alternate skill focus: Position & Balance

With the front foot attached to the snowboard, and on an area with a slight slope, have students practice edging the snowboard using the hips, knees and ankles. On the heelside, have them focus on “sitting” toward the bindings, as well as flexing the ankle slightly to moderate edge. On the toeside, have students maintain an upright position, with the hips under the shoulders, and move the knees toward the snow to create edge angle.

PRESSURE

Cowboy Knees

Alternate skill focus: Position & Balance

Have riders focus on maintaining a stance with knees apart (as if riding a horse), to help to maintain even pressure across the entire length of the snowboard. This also assists in absorption, as their range of motion is increased when the knees are free to flex and extend.

Dolphin Turns

Alternate skill focus: Position & Balance

To encourage board performance and independent pressuring of the front and back foot, have students perform shorter radius sliding turns. As the student approaches the end of the turn, prior to edge change, have them pressure the tail of the board, and use this pressure to leave the snow, similar to an ollie. In the air, the board is re-directed toward the new edge, and the rider lands with excess pressure on the front foot, and then continues with the following turn. Repeat this sequence for each turn – finish on the tail, change edges in the air, land and start the new turn on the nose of the board.

Fall-Line Stops

Alternate skill focus: Position & Balance, Edging

To increase student's understanding of flexion and extension movements, have them straight run on moderate terrain (both feet attached to snowboard). Have students initiate a 90 turn, bringing the snowboard across the fall line, and apply edge and pressure to stop the snowboard. Ask students to try this multiple times, on both edges. Ask students to identify the movements involved in stopping the snowboard – extending the legs to apply pressure, and flexing to control pressures.

Ollies / Nollies

Alternate skill focus: Position & Balance, Timing & Coordination

Beginning on flat terrain, have students attempt ollies and nollies as a stationary exercise.

If needed, assist student to shift weight to the tail of the snowboard, while flexing the lower joints. In an explosive motion, extend off of the tail of the snowboard, into the air.

Retract both legs under the body while in the air, and slightly extend to land, landing on both feet equally. To complete a nollies, perform in the opposite direction (springing off the nose of the snowboard). An important consideration when performing ollies/nollies is to ensure that adequate flex is achieved in the lower body, and that the student is using the “spring” in the snowboard to assist in the ollie or nollie.

Pump Turns

Alternate skill focus: Edging

Have students ride at a moderate speed on open terrain, completing large radius sliding or carved turns. As they progress through the turn, have them experiment with vertical movement – flexing and extending to change the pressures affecting the snowboard. As they flex, the edge angle increases, thus decreasing the turn radius. Extending will cause an initial loading of pressure on the snowboard, resulting in a release or rebound when done at greater speeds. This exercise allows students to begin to feel the effects of resultant pressure, as well as increased performance in the snowboard.

Small Straight Airs

Alternate skill focus: Position & Balance, Timing & Coordination

Have students ride over undulating terrain, suitable for their ability level, and experiment with rapid extension at the top of bumps or rolls in terrain. Their extension should be timed with the natural un-weighting of riding over a bump, to allow the snowboard to leave the snow. Ensure students are landing with “soft” legs, flexing the hips, knees and ankles to absorb the landing.

Static Down Un-Weighting

Alternate skill focus: Position & Balance, Pivot/Steering, Edging, Timing & Coordination

Used to illustrate the concept of down un-weighting. On flat terrain, with the front foot attached to the snowboard only, have students assume a flexed, low position with the back foot on the board, between the bindings. Have them extend and project the body slightly toward the toe edge. Move the back foot out onto the snow to support the body. Start to move back toward the snowboard by flexing the legs, and “retracting” the legs under the body. Move the foot back onto the snowboard, and extend the opposite way, toward the heel edge. Repeat as necessary, allowing students to feel the concept of un-weighting by “pulling” the snowboard off the snow in conjunction with the edge change. Also, have them feel the pressure between the snowboard base and the snow increase as they extend away from the board.

TIMING & COORDINATION

Counting, Singing, Gates, Pylons

Set a rhythmical pattern for riders to follow, either by counting or singing in their head, or with the use of gates or obstacles. This allows riders to begin to develop symmetry between toe and heelside turns.

Follow-Cam Run

Similar to “Top Gun Turns”, but used in a Terrain Park. Have students pair up, with the leading rider setting the course, and the trailing rider following.

Side Slipping to Short Radius Turns

Have students begin on a moderate slope by side slipping in a narrow corridor. After side slipping for approximately 15 metres, have them complete a single turn to the opposite edge, and side slip again. Repeat this sequence, reducing the distance the rider is side slipping each time, until they are completing short radius turns in a narrow corridor.

Slopestyle Run

Have students plan in their head their run through a terrain park, or through a challenging run prior to riding down the run. The challenge to their Timing & Coordination skills lies in accomplishing all of the manoeuvres or direction changes that they had planned.

Top Gun Turns

Have students ride in pairs, with the front rider setting the path, and the following rider trying to follow. This exercise develops coordination and timing skills in riders, as they are forced to ride out of their natural rhythm or chosen path. Have students switch roles and repeat.

Tornado Turns

On terrain with a consistent slope, ask students to begin by completing large radius turns.

As they progress down the slope, ask them to begin to speed up the timing of their movements, to allow the radius of turns to begin to decrease to medium, and if suitable, short radius turns over the course of the run. Ask them to try to determine what they had to do to change the radius of the turns.

Feel free to add your own exercises and drills...

EQUIPMENT SET-UP

Since the late 70's when snowboarding involved standing on a plastic "snurfer" or on a wooden sled while holding a rope, the sport has undergone a tremendous evolution.

CHOOSING THE RIGHT EQUIPMENT

The following information will facilitate making the best choice.

1. Riding Skill

When first learning to ride, look for learning-specific equipment (e.g.: Burton LTR). This kind of board will make it easy to learn. Some companies are currently making boards that feature centred stances, soft flex patterns, topsheet traction, and a bevelled base profile to help minimize edge catches.

2. Intended Use

TYPE OF BOARD	TYPE OF TERRAIN
Camber / Twin or Directional Shape / Stiffer Flex	Groomers / Hard Pack (on-piste)
Rocker, Flat or Hybrid / Directional & Tapered Shape	Varied terrain / backcountry / soft snow (off-piste)
Camber or Hybrid / Twin Shape / Twin Flex	Park / Freestyle

3. Foot Size

The width of the board should accommodate the length of the foot with minimal heel or toe

overhang. Considering that a narrower board is more responsive edge to edge, the rider should choose the narrowest board possible that will accommodate the preferred stance and use.

4. Size & Weight

These are important factors that will influence your choice of board. A snowboard adapted to your weight will be much easier to handle and allow you to get the most out of it. Most manufacturers will have a recommended weight range for every size of each model.

BASIC TERMINOLOGY

Running length

This is the true measure of the functional length of the board - the length of the edge that is in contact with the snow during a turn. It is commonly measured as the distance from the widest point in the tail to the widest point in the nose.

Width

The overall width of the board is the distance from edge to edge, usually measured in three places.

- **Nose:** The width of the board at the widest point in the nose
- **Waist:** The narrowest point in the middle of the board
- **Tail:** The widest point in the tail of the board

The width of a board determines how fast the edge-to-edge transfer can be made in a turn. A wider board will require more time than a narrower board.

Sidecut

A snowboard is the most narrow at its waist, about half way between the tip of tail. The transition from a wide tip to the narrow waist, and again to a wide tail is a smooth arc referred to as sidecut. The simplest way to gauge the sidecut is to put the side of the board perpendicular to a wall and measure the gap between the wall and the edge of the board. It can also be seen as curvature in the edge when looking down the length of the board along its base.

The sidecut of a board is usually a section from the circumference of a circle (although some manufacturers may use more complex arc equations). The radius of the circle used to create the sidecut helps to define the natural turning radius of a board - the smaller the radius of the sidecut, the smaller the turning radius of the board. Logically, this translates into a deeper side cut depth.

BOARD BENDS

Camber:

Powerful, poppy, and precise—camber speaks to the core values of board design. Offering a snappy suspension, camber distributes weight evenly over the entire length of the board for smooth, continuous edge control from tip to tail.



Rocker:

Rocker overall, including between and outside your feet, enhancing playfulness (through increased pivot) and float in deep snow.



Hybrid:

A blend of camber and rocker offers the best of both worlds. Rocker overall, between or outside your feet, enhancing playfulness and float. Subtle camber zones focus edge-control for crisp snap, added pop, and powerful turns.



Flat:

A flat profile between the feet means stability, better balance, and continuous edge control. The tip and tail sometimes kick up with an early rise outside the feet for the catch-free, loose feeling you'd expect from rocker.



BOARD SHAPES

Directional Shape:

The classic snowboard shape, designed to be ridden with a slightly longer nose than tail to concentrate pop in the tail while still giving you plenty of float, flow, and control to rip any terrain or condition.

Twin Shape:

Perfectly symmetrical for a balanced ride that's equally versatile when ridden regular or switch. Jib, spin, stomp, and butter with a greater balance of freestyle mobility and cat-like stability no matter which way you point it.

Tapered:

A tapered shape means the nose is wider than the tail, promoting smooth turn entry and subdued turn exit, stability at speed, and enhanced deep snow flotation.

BOARD FLEX

Twin Flex:

The flex is perfectly symmetrical from tip to tail for a balanced ride that's equally versatile regular or switch.

Directional Flex:

This flex pattern features increased stiffness/pop in the tail and a more forgiving nose that allows riders to easily maintain control through all terrain and conditions.

BOOTS & BINDINGS

The two most important factors to consider when buying boots and binding are:

- Intended use (terrain / style of riding)
- Comfort

Boots

The choice of boots will depend on your size and weight and your style of riding whether it is Freeride, Park or Carving; boots come in all shapes and form, from super flexible to very stiff.

Soft boots

For use with traditional strap bindings, soft boots provide ample stability and comfort, yet are also soft enough to provide ankle mobility.

Hard boots

For race boards riding at higher speeds, hard boots provide far more support and stability; they provide a quicker and more precise response when carving, although minimal versatility in varied terrain.

BINDINGS

Soft Boot / Strap Bindings

Like the soft boots, strap bindings come in many shapes and forms. Various level of stiffness, size and adjustments are offered by all binding manufacturers such as:

- Forward lean adjustment
- Highback rotation
- Strap length and height adjustment
- Base plate adjustment (canting, toe ramps, etc.)

Hard Boot / Plate Bindings

Plate bindings are the attachment for hard boots and are often combined with a riser plate as an interface between the bindings and the board. Various level of stiffness, size and adjustments are offered by all plate bindings manufacturers such as:

- Boot size adjustment
- Adjustable heel lift
- Adjustable toe lift
- Adjustable lateral inclination (commonly called “canting”)

SNOWBOARD, BOOT & BINDING SET UP

It is important to have the equipment set up for optimal performance and comfort. It is important to experiment with the set up of your boots and bindings until you find something that works well for your style of riding.

STANCE WIDTH

There are no right or wrong answers here but remember that too wide or too narrow will impair your ability to make the snowboard perform. Most snowboard manufacturers have recommended stance options printed on the board; this is a great starting point. Do some experimenting to find the stance width that's most comfortable for you.

POSITION ON THE BOARD (tip to tail)

Most snowboard manufacturers have a reference position printed on the board; this position is the optimal position to get the most out of the board (if your board does not have a reference point for stance simply start for the narrowest point of the board (waist) and go equal distance towards the nose and tail). If you need a wider stance simply move the front binding towards the nose the SAME amount as you move the back binding towards the tail and towards the centre of board for a narrower stance.

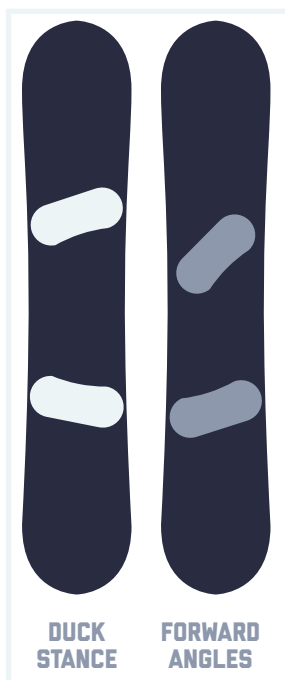
CENTRING TOE AND HEEL SIDES

It is important to minimize toe and heel overhang in order to reduce drag when putting the board on edge. Start by placing the boot in the binding and placing them both on the board and centre the boot from edge to edge. With the boot pointed straight across the board so there is an equal amount of toe and heel overhang or under hang. If you have small feet (women/kids) you should aim to have your toes as close to the toe edge without going over to avoid unnecessary flexing of the lower joints to put the board on edge. If the board chosen does not allow for minimal overhang of toes and/or heels, consider a wider board.

STANCE ANGLES

Stance angles are dictated by a number of factors, including riding style, boot size, board width and board type. Similar to stance width; you should try different angles until you find angles that provide a comfortable and efficient position for your style of riding.

Duck Stance:



Positive angles on front foot / negative angles on the back foot. For example: +18 degrees front / -6 degrees back.

Good for various riding styles as it allows for versatility between forward and switch directions.

Due to its versatility this type of stance is most commonly used. The specific stance angles will vary based on your chosen riding style, your physical characteristics, and your equipment.

Forward Angles:

Positive angles on front foot and on the back foot. For example: +18 front / +6 back.

Mostly used on speed or carving set-ups and race boards (alpine race and snowboardcross).

This stance will allow for a more open position (facing the nose of the board) and more efficient lateral movements from turn to turn, but will sacrifice some of the versatility that is found with a negative back foot angle, particularly as binding angles become more and more extreme (e.g.: on an alpine race board, binding angles may be as high as 60 degrees forward).

HIGH-BACK ROTATION (soft boots)

Most strap bindings have the option of rotating the high back. The more the highback is aligned with the heel edge of the board the better the response may be. Experiment to find the position that suits you the best.

FORWARD LEAN

Most bindings (and hard boots) have forward lean adjustments. Forward lean can create a more direct response to the heel edge, by placing the knee and ankle in a more flexed position. Experiment with varying amounts of forward lean looking for the right balance of comfort and response.

Note: Too much forward lean can lead to have your ankles “locked” in the flexed position, which can lead to a lack of mobility in certain situations. Experiment to find the amount that is best for you.

BASEPLATE TOE RAMPS

Many bindings incorporate “toe ramps”, which ensure a solid connection on the toese edge between the boot and board. Ensure that the toe ramp is aligned properly for boot size and does not create overhang.

CARE & MAINTENANCE

Once you have chosen your board, proper care and maintenance will enhance its performance and longevity.

Basic tools and materials for proper maintenance:

- Electric hot waxing iron
- Variety of waxes for different temperatures
- Plastic scraper
- Stiff nylon brush (to remove wax from the structure in your base)
- Soft nylon brush (to polish your wax after scrapping and stiff brushing)
- Rags (to clean base before waxing and remove final wax residue from brushing)
- 90-88 degree edger or square block (for edge sharpening)
- Medium fine soft bronze/brass brush (to clean metal shards from your edging file/block after each pass)

Supplementary tools and material for advanced maintenance:

- 12” bastard file
- 4” bastard file (or specialized file adapted for an edger)
- Honing stone
- Sandpaper (80-120 silicon carbide grit)
- Wax remover
- Epoxy glue
- 3” clear tape
- C-clamps and wood blocks
- Abrasive nylon pads
- Polyethylene (flakes, wire, candle, etc.)
- Appropriate apparatus to apply the polyethylene

BOARD TUNING

Snowboard manufacturers use a variety of base grinding and final factory base treatment methods. However, both new boards and used boards should undergo regular maintenance for better performance and increased longevity.

1. Cleaning the base

Before working on the base, clean the base to remove dirt that has accumulated during transportation or regular use. Don't forget to clean the top surface, too. Use a wax solvent and a clean rag to remove the dirt build-up. A soft brush may be used to further remove dirt lodged in the small scratches on the base.

Note: Since the wax remover will remove some of the beneficial wax that has already penetrated the base during previous treatments, it is important to always wax your board after using solvents on the base. Avoid using wax remover near open flames.

2. Check the Edges

Repair

If you damage an edge, it should be repaired in the following manner:

- Pull out the damaged portion or push it back in (depending on the problem) to restore the original shape of the edge.
- Remove any burrs or bumps caused during impact by sanding.
- Dry the area thoroughly (either overnight and/or with hair dryer).
- Clean the damaged area with acetone.
- Fill the cavities with epoxy (injected if possible).
- Sandwich the top plate and base around the affected area with clear tape, wood, and c-clamps. Let dry thoroughly.
- Remove clamps, wood and tape, re-sand and sharpen.

Note: It is recommended that a professional do this type of work.

3. Check the Base

a) Types of Bases

Most bases are made of polyethylene. Depending on how the polyethylene is made, the final product will be one of the following:

i) Extruded polyethylene which:

- Is less expensive
- Is difficult to structure and wax
- Has a poorer performance

ii) Sintered polyethylene which:

- Is more expensive
- Is highly porous making it easy to
- Structure and wax
- Has good to excellent performance

iii) Sintered polyethylene with graphite or other product combinations which:

- Have similar qualities to regular sintered bases but respond optimally within smaller temperature ranges.

b) Shape of base (edge-to-edge)

Flat bases are beneficial for alpine and race boards since they allow quicker edge to edge transitions and generate more speed.

Slightly convex (“bevelled”) bases are beneficial for freestyle and all around boards. They provide a more fluid edge-to-edge transition, which is highly desirable for un-groomed, freestyle and all-mountain terrain.

c) Base repair

Small scratches usually do little more than affect the aesthetics of the board. Large, deep scratches and gouges, however, can do serious damage to a board if they are left un-repaired. Besides affecting the board’s performance, humidity may seep through the gouges and cause the board to de-laminate. Bases can be repaired in the following manner:

1) Dry out the area to be repaired thoroughly (use a blow dryer and/or overnight drying).

2) Clean the area to be repaired

- Use a wax solvent and a rag
- Remove any jagged edges with a sharp knife or razor blade
- Sand lightly with silicon carbide sandpaper.

3) Fill the hole or gouge with hot liquid polyethylene obtained in one of the following manners:

- P-TEX repair gun (usually available in most ski shops)
- Melting a P-TEX candle or P-TEX wafers with an acetylene torch
- Lighting a P-TEX candle on fire and allowing it to drip into the hole (least desirable method due to presence of carbon resulting from the direct burning).

4) Let dry, scrape and sand smooth.

Note: It is recommended that a professional do this type of work.

4. Sharpening

Sharp edges are crucial for good control on hard pack conditions. To sharpen the edges of the board, secure the board firmly in some type of vice and follow these steps:

Note: The ideal edge-to-edge base profile should be flat or slightly bevelled. If your base varies considerably from this, have it base ground at your local snowboarding shop.

a) Base Edge Filing

- Place the file diagonally 3/4 distance across the board.
- Apply pressure directly above the edge and base with both hands.
- Use long, even strokes from one end to the other.
- Remove metal shards from the base AND the file after each pass
- Avoid stopping and starting in the same place each time.
- Continue until a smooth edge is obtained.
- Repeat on the other edge.

b) Side Edge Filing

To finally bring out that sharp edge and to maintain an 88-89-degree angle, use a short file attached to a holding device.

- Apply even pressure with your thumbs while using long even strokes from tip to tail.
- Remove metal shards from the base AND the file after each pass
- Avoid stopping and starting in the same place each time.
- Continue until a smooth, sharp edge is obtained.
- Repeat on the other side.

c) De-burring and Detuning

After the edges are sharp and the base is correct, the rough edge, or burr, left by filing should be removed with a honing stone. Also, on most boards, the last few centimetres of the contact edge should be dulled, since a sharp tip or tail can catch on the snow.

5. Structuring

A polished “smooth” surface can be slower than a surface that has been textured with many small grooves. The process of making these grooves is called structuring and is usually finer for cold weather or mid winter snow and is generally applied longitudinally, wetter spring or slushier snow requires deeper grooves and are generally applied in a V shape out towards the edges. A professional at a reputable shop should do structuring with appropriate equipment such as a diamond stone base grinder.

6. Waxing

To prevent the base from drying out (which makes it slower and more susceptible to damage) lubricate it with wax on a regular basis. To obtain optimal results, follow this sequence:

- Using the iron, melt the wax onto the base of the board dripping it onto one section.
- In a circular motion, further melt the wax into this section. (Never let the iron sit on one spot)
- Place your free hand on the top sheet as a temperature gage. When you feel warmth on the top sheet, the base has been successfully impregnated with the wax.
- Allow wax to cool slowly to room temperature. Scrape off the excess wax with a plastic scraper.
- Finish this process by brushing the base from tip to tail with a stiff nylon brush to clean the wax off of the structure of the base followed by brushing the base from tip to tail with a soft nylon brush to polish the base.

Note: Temperatures exceeding 140 degrees Celsius could damage the base. Avoid heating the wax until it begins to smoke.

TERMINOLOGY

Air to Fakie

Trick in the halfpipe, quarter pipe or wall ride feature. Riding up the “feature” and riding back down switch with no rotation involved.

Alley-Oop

Any manoeuvre in the halfpipe, with a rotation of 180 degrees or more in an uphill direction. Rotating backside on the frontside wall or rotating frontside on the backside wall.

Angulation

The lateral angle formed between joints of the body to achieve edging.

Backside Air

Any air performed on the backside (heel side) wall of the halfpipe.

Backside Rotation

Rotations performed where the back of the body faces the direction of travel during the first 180 degrees of rotation.

Backside Wall

The wall behind a rider in a halfpipe, the left wall for regular-footers and the right wall for goofy-footers.

Bevel

The degree of angle to which the edges of a snowboard can be tuned.

Biomechanics

The study of the body and how it produces motion.

Blindside

Any rotation where the snowboarder cannot see the path of travel on take-off or landing.

Boardslide

A manoeuvre performed on a rail or box with the snowboard oriented at 90 degrees (perpendicular) to the rail and sliding flat on the base.

Bonk

The act of hitting an object with the snowboard.

Base of Support (BOS)

Usually refers to the feet and/or what they are attached to i.e., the snowboard.

Cab

Refers to rotational manoeuvres performed in the switch (opposite to natural direction) – frontside direction. For example, a “cab 360” would be a 360 degree rotation where the rider takes off and lands “switch” and starts the rotation with his frontside leading the spin for the first 180 degrees.

Canting

A tilt of the binding in relation to the top surface of the board medially or laterally (inside/outside of foot) and/or from toe to heel.

Carving

Turns with no steering angle, riding a pure edge leaving a “pencil” line on the slope.

Centre of Mass (COM)

The three-dimensional balance point of an object. The point at which the upper body mass balances with the lower body mass.

Coping

The edge of the lip that runs the length of a halfpipe wall.

Counter-Rotation

The upper- and lower-body rotating against each other. The upper body rotates in the opposite direction to the lower body.

Down Un-Weighting

Un-weighting produced by a dynamic retraction of the legs.

Duck Stance

A term used to describe positive angles on the front foot and negative angles on the back foot.

Edge Angle

The lateral angle formed between the base of the board and the slope.

Effective Edge

The length of the metal edge of the snowboard that touches the ground. The part of the edge that is used to make a turn does not include the edge of the tip and tail.

Extension

Lengthening the body or limbs. Opposite of flexion.

External Forces

Natural physical influences exerted on the rider from an outside source, i.e. incline, terrain, snow conditions, etc.

Fall Line

An imaginary line following the general or greater slope. On any hill, there is at least one fall line.

Flexion

Bending of joints. Opposite of extension.

Freeriding

Snowboarding on all types of terrain.

Front Foot

The foot mounted closest to the nose, a regular-footer's left foot and a goofy-footer's right foot.

Frontside Air

Any air performed on the frontside wall (toe side) of the halfpipe.

Frontside Rotation

A spin where the rider's frontside of the body faces down the hill during the 180 of the rotation.

Frontside Wall

The halfpipe wall in front of the rider: the right wall for regular-footers and the left wall for goofy-footers.

Goofy Foot

Riding a snowboard with the right foot in the forward position.

Grab

To grab the edge of the snowboard with one or both hands.

Halfpipe

A snow structure built for freestyle snowboarding consisting of opposing radial transition walls of the same height and size. Used to perform tricks by travelling back and forth from wall to wall while moving down the fall line.

Heel Edge

The edge at which the heels rest (one of two edges).

Impulse

The product of force applied over time.

Inclination

The natural movement of the vertical axis toward the inside of a turn to counteract external forces.

Inertia

Property of remaining at rest or continuing in constant motion unless acted upon by outside forces. (Newton's First Law.)

Invert

A trick where the snowboard travels higher than the shoulders at some point in the manoeuvre.

Jib

A type of riding which closely resembles street skating. Sliding rails, bonking trees, and performing flat ground tricks.

Leash

A retention device used to attach the snowboard to the front foot so that it does not run away.

Lip

The top edge portion of a take off or halfpipe wall.

Momentum

The energy of a body in motion. The product of mass times velocity.

Nollie

Like an Ollie, only the spring is off the nose of the board instead of the tail. (See Ollie)

Nose

The front tip of the snowboard.

Nose Press

To ride on the nose of the snowboard with the tail of the board in the air.

Ollie

A method of becoming airborne from a rider's own efforts rather than using a jump. In one continuous motion.

Open Position

A body position in which the chest faces the direction of travel. In a turn it faces more toward the nose of the snowboard.

Passive Un-Weighting

A weighting or un-weighting produced by external forces. Produced when riding over terrain features such as bumps or rollers and allowing the lower joints to move passively.

Pedagogy

Science of education.

Pivot Point

The point along the length of the board around which the board turns can be altered by moving the weight forward or backward on the board.

Pivoting

Turning the board around the vertical axis of the rider.

Pressure Control

Controlling pressure on or against the board by use of flexion and extension of the legs. Upper body action may also modify pressure to the board.

Projection

A movement of the COM in the direction of travel to produce a turning impulse that is transferred to the board.

Quarterpipe

A halfpipe with only one wall.

Rear Hand

The hand closest to the tail of the snowboard.

Rear Foot

The foot mounted closest to the tail.

Regular Foot

Riding a snowboard with the left foot in the forward position.

Revert

To switch from riding fakie to forward, or from forward to fakie, usually while the snowboard is still touching the ground.

Rotation

The force applied by rotating the body in the direction of the turn.

Shifty

A trick without a grab where the upper torso and lower body are twisted in opposite directions then returned to normal.

Slipping / Skidding

A sideways movement of the board on the snow.

Snowboarding

The act of riding a plank down a snowy slope while looking good. May encounter fallen trees, metal pipes, slippery puck board and sweet jumps.

Stance

The position of the body on the snowboard.

Steering

The combination of pivoting the feet and edging the snowboard.

Steering Angle

The angle formed between the longitudinal axis of the board and the direction of travel of the rider. Present in sliding turns only – carved turns have no steering angle.

Style

The visual impression of the movements.

Switchstance / Switch

Performing a trick while riding backwards, on the opposite direction of the natural stance. Specific term given to a manoeuvre performed exactly like riding forwards with the only difference that the rider is going backwards as if she were a goofy footer instead of a regular-footer, or viceversa. Any trick may be performed switch.

Tail

The rear tip of the snowboard.

Tail Grab

The rear hand grabs the tail of the snowboard.

Tail Press

To ride on the tail of the snowboard with the nose of the board in the air.

Technique

The selection and application of bio-mechanical principles to snowboarding. (Biomechanics is the application of the mechanical principles to human motion.)

Toe Edge

The toe side of the board. The edge on which the toes of the boots rest. (One of two edges.)

Transition

The radial curved section of a halfpipe wall between the flat bottom and the vertical or landing of a jump or rail feature. Used to gain speed, catch air, and to land.

Traverse

Sliding forward across a slope at an angle to the fall line. Riding perpendicular to the fall line. Traversing from wall to wall in the halfpipe.

Twin Tip

A type of snowboard with turned up tip and tail. The board may be ridden in either direction.

Un-weighting

A reduction in the pressure of the board on the snow.

Up Un-weighting

An un-weighting of the board produced by an extension of the legs.

Vert

The vertical top portion of a wall in a halfpipe that allows the snowboarder to fly straight up into the air as opposed to out of the pipe or into the pipe.

Wall

The wall of a halfpipe comprised of a transition and a vertical section.

Weight Change

A shift of some or all of the weight from one part of the board to another.

Weighting

Increasing board pressure against the snow.

CADS: FUN, INCLUSION, RESPECT

Canadian Adaptive Snowsports is the Canadian association of ski and snowboard instructors for persons living with a disability. CADS is also the umbrella organization of approximately 100 not-for-profit programs supporting persons living with disability who ski and snowboard across 11 divisions (or provinces) in Canada.



CADS operates in partnership with the Canadian Association of Snowboard Instructors (CASI), Canada~Snowboard (C~S), the Canadian Ski Instructor's alliance (CSIA) and with Alpine Canada Alpin (ACA). To aide instructors, CADS has developed an instructor certification system with 4 levels.

The CADS certification curriculum addresses the needs of persons living with Visual Impairment, with an Autism Spectrum Disorder or Cognitive Impairment, amputation or spinal cord injuries.

A CADS Certification Course will enable an instructor to:

1. Assess the abilities of a client living with a disability
2. Determine the needs for adaptive equipment
3. Determine the need for adaptive teaching techniques

2016 marks the start of an exciting new chapter in CADS as we roll out the CADS Level 1 Snowboard Certification. We welcome any interested program, instructor, or ski school to join us in providing exceptional experiences to all adaptive riders.

For more information or to find a clinic or program near you, please visit: www.cads.ski



CREDITS

Technical Coordinator

Jeff Chandler

Concept & Design

Jeff Chandler

Photography

Andrew Jay Photography

Allison Kennedy Davies

Gavin Crawford

Andrei Mortila

Working Group & Contributors

Luc Belanger, Alexandre Burr, Jeff Chandler, Jamie Forbes, Adam Gardner, Simon Holden, Paul Howard, Yukiko Kawada, Mellen Jay, John Smits, Breen Trott

And a special thanks to all previous National Technical Team and Technical & Educational Committee members who have contributed to this teaching manual over the years.

Demonstrators

Luc Belanger, Jeff Chandler, Kai Chandler, Jamie Forbes, Simon Holden, Mellen Jay, Laura Price, Jaron Pauls, Fernando Pomar, Laura Price, Reuben Schroeter, John Smits, Breen Trott, Dane Verity

Thanks to the following resorts...

**Big White Ski Resort, British Columbia
Blue Mountain, Ontario**

References

Canadian Ski Instructors Alliance: Canadian Ski Teaching, 2011

**Canada~Snowboard Coaching Program:
Competition Introduction Coaching Manual
Competition Development Coaching Manual**

**Snowboard Instruction New Zealand:
Teaching Manual, 2010**

**American Association Of Snowboard Instructors:
Snowboard Teaching Manual**

**Professional Mountain Bike Instructors Association:
Teaching Manual**

And a special thank you to those not included in this list.



**CASI
ACMS**

**CANADIAN ASSOCIATION OF
SNOWBOARD INSTRUCTORS**
WWW.CASI-ACMS.COM