snowboard 3rd edition

AUSTRALIAN PROFESSIONAL SNOWSPORT INSTRUCTORS

Teaching **Manual**

AUSTRALIAN PROFESSIONAL SNOWSPORT INSTRUCTORS

TEACHING MANUAL

Third Edition 2014

The Australian Professional Snowsport Instructors Inc. (APSI) is an incorporated, non-profit member organisation whose primary function is the education, training and certification of Australian snow sport instructors.
The APSI offers programs in Alpine, Snowboard, Nordic, Telemark, Adaptive and Coaching disciplines.

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PROFESSIONALISM

Introduction

ABOUT THIS CHAPTER

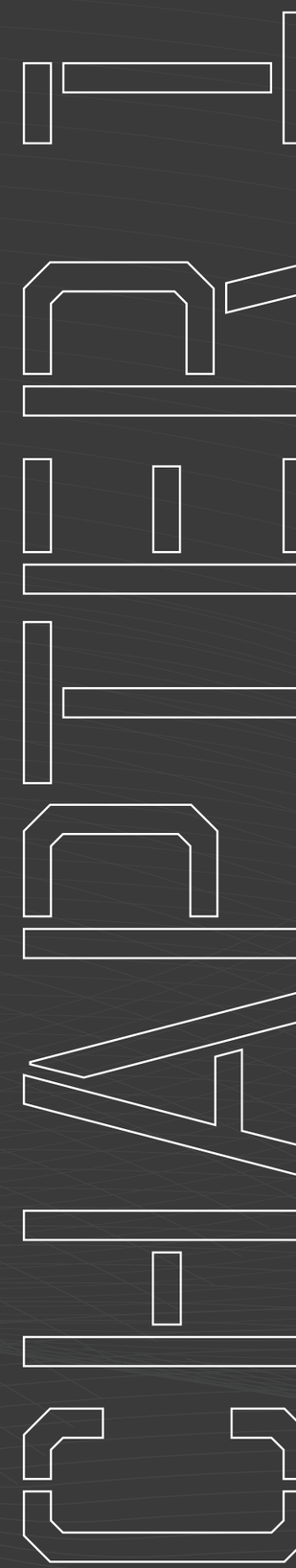
A holiday in the snow is without a doubt one of the more enjoyable leisure activities available, but is not the cheapest. Expenses such as accommodation, lift tickets, lessons, entertainment etc. quickly add up and guests expect good value for their money.

It should be the mission of every resort employee to create a memorable experience for every guest. If you do not, the guests may be lost to competitor snowsport resorts or other holiday destinations around Australia.

Instructors have the potential to impact favourably on guest holidays because they spend more time with guests than most other resort employees. Unfortunately, the converse is also true and the consequences of treating guests poorly are dire for you and the resort.

Chapter 1 (Sections 1-4) includes content that is relevant to all snowsports instructors irrespective of how many years' experience they have.

All four sections are the major components of professionalism and encompass everything instructors should excel at to ensure guests receive a professional alpine experience.



ACKNOWLEDGEMENTS

This manual is the result of many years of effort by numerous people.
As snowsport teaching evolves so does the presentation and content of this manual.

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To all the other people who contributed to the effort of making this manual and the past editions possible, we thank you.

Special thanks also goes to:

The 2012-15 APSI National Team.

FOREWORD

After almost 20 years working as an APSI trainer I have come across some exceptional instructors with a wealth of knowledge on how to help their guests enjoy all Snowsports. The years of experience that these great instructors have has given them time to hone their skills and try new teaching ideas. This would have to be a major factor as to why they are so 'great'.

In this fast paced world of ours newer instructors often do not have the time to wait for experience to catch up with them, it would suit our guests better if we could all be great instructors sooner.

This manual is a culmination of the knowledge gained from many of those experienced instructors broken down into easily digestible chunks to help increase your experience base in a shorter time. I have been involved in numerous editions of the manual over the years and this would have to be the most comprehensive, innovative and visually stimulating edition to date.

I hope you all enjoy it!

Andrew Rae

APSI General Manager

INTRODUCTION:

At first glance the APSI manual can seem daunting. With its size and the use of specific terminology and analogies. However, the more time you spend reviewing the information, the easier it will become to process and put to use. A lot of time and effort has gone into trying to design the manual to cater for new instructors all the way through to trainers and examiners.

The manual has been the backbone of information to help guide and develop an instructor's teaching and riding skills. Countless hours of work have gone into producing the manual with the aim of keeping up to date with current innovations and changes.

Over the past 10 years as Snowboard Technical Director, I have seen many changes and developments not just in snowboarding but also within the industry. One of the most reliable forms of information for instructors to refer to has always been their manual.

Using this manual, along with training and your own personal teaching experiences will help you become a great instructor. Referring back to the manual will not only help guide you in the snowsport industry but also along any other paths you may choose to follow.

The Snowboard Teaching Manual has seven specific chapters:

- **Professionalism**
- **Teaching Concepts**
- **Technical Concepts**
- **Teaching Children**
- **The Snowboard Progression**
- **Adaptive Snowsports**
- **General Knowledge**

Information within these chapters can easily be found in the 'table of contents' and on the side tab of each page, as a quick reference guide when flicking through the book. Some information within the text may also be cross referenced with other sections. For instance, a note in the children's chapter may have a longer description within the technical concepts chapter. In this case a reference will be noted (e.g. 3.1.7; phases of the turn), this way you can flick back and look it up for further reading.

Icons will also be used beside the text to highlight its importance or intended use.

- **A children's specific icon**
- **The important icon (not to be missed and will include safety, terrain and general important notes)**
- **The mountain icon (which means this is worth trying on hill during your lesson)**
- **Steering**
- **Carving**
- **Pure carving**
- **Freestyle**
- **Racing icons**

The journey of instructing can be brief or last a lifetime. Whether you travel the world or stay within Australia this manual will help you along the way. Spending time with fellow instructors and trainers from all disciplines and countries will help you evolve and develop your own qualities as an instructor.

The APSI team and I wish you the best of luck in your teaching, riding and career. We hope this manual helps evolve your knowledge and passion of snowsports for years to come.

Good luck with your journey.

Jason Clauscen

Snowboard Technical Director

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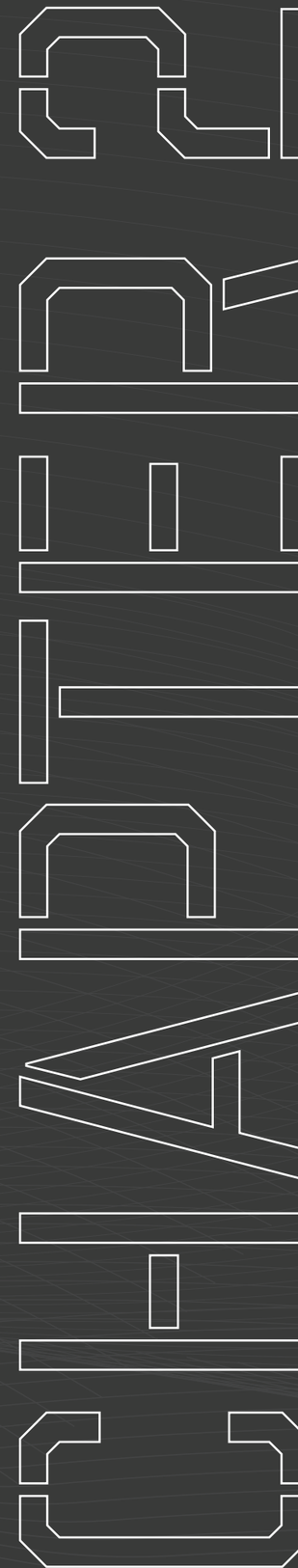
Introduction

ABOUT THIS CHAPTER

Chapter 2, teaching concepts, looks at our philosophy, and system for teaching as well as how you adjust your lesson to deal with different learners.



SECTION ONE:

THE TEACHING SYSTEM

2.1.1 THE AUSTRALIAN TEACHING PHILOSOPHY

Australian snowsports instructors should strive to create and sustain guests' passion for snowsports, turning beginner riders into long-term participants and, eventually, lifelong enthusiasts.

The core concept underpinning Australia's teaching philosophy involves connecting with the guest to provide a lesson where they walk away wanting more, and attain the tools and abilities they need to ride on their own after the lesson. In essence, the philosophy aims to ignite a lasting passion for snowsports.

Some significant teaching philosophies that have underpinned Australian snowsport's instruction over recent years include:

- **Teacher-centred:** The teacher is the boss, deciding what should be learnt and how it will be learnt. The teacher is the only one who knows anything about the subject.

- **Student-centred:** The focus of the lesson depends predominantly on the goals and wishes of the students. The instructor's role is to fulfil those goals in the best way possible.
- **Subject centred:** Means both teacher and students are involved in the learning process without pretence of superiority. The teacher has to find out everything there is to know about how the student learns and what works best for each student. Both teacher and student have to learn how to move into and within the learning segment by making it a shared learning experience. With great curiosity, the teacher continuously watches how the student learns and takes to the subject, and how the students are able to help each other with the learning process.
- **Experience centred:** Where the instructor strives to give the guest an exceptional experience of the alpine environment that is all-encompassing. It combines the safe class handling skills and useful exercises learnt from the teacher-centred years, and adds the relationship building qualities of great customer service taken from the student-centred years and combines these approaches with the professional and relaxed two-way learning atmosphere of the subject-centred years.

The more personalised the guests' experience the better the results, in terms of enjoyment and skill improvement, igniting the guests' passion for snowsports.

The effectiveness of classic teaching and learning theories will always be challenged. This is the nature of evolution and is why the national instructing body (APSI) sends representatives to attend international conferences such as 'Interski', a platform to improve teaching quality through challenging and sharing ideas.

To truly create personalised lessons for each guest demands highly developed instructor skills, for example highly developed analysis and interpersonal skills as well as knowledge of a large number of relevant progressions and/or exercises to apply within lessons.

The systems used in this teaching chapter combined with the other segments in this manual give you the building blocks to connect with each of your guests and, potentially, turn them into lifelong enthusiasts.

2.1.2 THE AUSTRALIAN SYSTEM FOR TEACHING –'THE NINE LESSON ESSENTIALS'

The nine lesson essentials comprise the teaching system that you use to conduct each lesson. It's a framework to help structure your lesson from start to finish, delivering a professional product with exceptional learning outcomes.

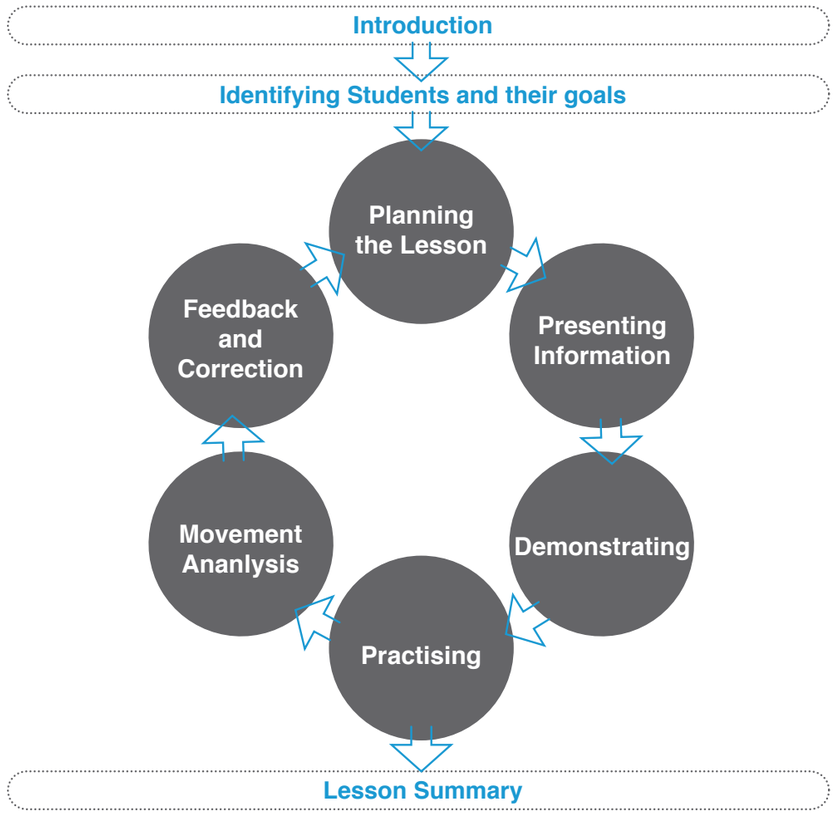
A lesson is simply not effective without proper application of the nine lesson essentials.

'LOOPING THROUGH' OR REPEATING THE 9 ESSENTIALS

It takes considerable expertise to understand how to apply the nine lesson essentials correctly. The 'introduction' and the 'summary' are the points that are only covered once during the lesson, while the others are repeated any number of times. You are constantly evaluating the lesson with your students to decide which point to revisit.

It could be point two, to confirm that the students are happy with the lesson so far, point three to re-plan the lesson, point four to present something new, point five to re-demonstrate, point six to give them more practise, or point seven to analyse their riding again. Keep looping back and repeating the appropriate points until the time has come to summarise the lesson.

THE NINE LESSON ESSENTIALS:



2.1.2-1 INTRODUCTION

At the start of a lesson students are often nervous or intimidated (especially if it is their first lesson). They may observe you intently to find out what sort of person you are. It is essential that you display the skills learnt in 'Professionalism' to elicit the students' trust. You must also come across in a manner that shows the students you are human (not some 'snowsports god' who is too cool for school and their students) so they are comfortable opening up to you. Without trust and a feeling of confidence in your abilities, a learning partnership cannot be formed and the lesson will not be set up for success.

The following points are covered in the introduction:

- **Introduce yourself in a welcoming manner.**
- **Learn the students' names.**
- **Involve the group by introducing your students to each other.**
- **Deal with the tickets (resort specific).**
- **For a first time lesson, give a lesson overview.**
- **For all other standards, ask the students what they would like to learn or get out of the lesson and, based on this, give a lesson overview.**
- **Generally make them feel welcome.**

2.1.2-2 IDENTIFYING THE STUDENTS AND THEIR GOALS

This point involves asking various open questions and using active listening skills to learn as much as possible about your students. You will need to utilise all of your communication skills.

A short list is included below to help you:

- **Actively listen to the client.**
- **Do not presume you know what they want.**
- **Be sympathetic to their goals but realistic.**
- **Check the conditions and clients' skill level before you commit.**
- **Discuss a time frame.**
- **Group lessons may require some compromise and therefore some extra planning for the week.**
- **Review the clients' goals throughout the lesson.**

Find out the students' goals

Finding out the students' goals is crucial to the success of the lesson. Every student has them, and if you fail to discover them, the chances of providing a successful, personalised, lesson are slim, as are the chances of convincing them to return for more lessons.

Here are some ways you can ask the students about their goals:

- **What do you want to develop or improve?**
- **What would you like to work on today?**
- **What are your goals for the lesson?**
- **What would you like to learn today?**
- **What are you expecting from our time together?**

Once the goals have been established decide on an appropriate lesson plan and propose this to the students. If the plan is generally accepted, then the lesson continues. If the plan is not accepted by all, you need to re-discuss the plan until all the students are satisfied. It could be that some of the students' goals are not realistic or that some of them can be met the next day or later in the week.

A student's goals may change throughout each lesson, which means you need to check constantly to ensure you are on the right track. Take opportunities such as lift rides (make a point of rotating lift rides with your students), standing in the lift queue and any other chance you get to ask questions about their goals.

A group lesson is often more challenging than a lesson with one person because you are dealing with ten different people and ten different goals.

Identifying the students

If every student were identical you would use the same teaching approach for all of them.

Even though this is obviously not the case, many instructors make the mistake of applying the same 'standard' lesson every time they teach, with little regard for each individual in the group.

On the other hand, the best teachers find out exactly what type of students they have and draw from their vast knowledge, understanding and experience to construct, together with the students, the most appropriate lesson.

Here is what you need to find out about your students throughout the lesson (it may take more than one lesson):

- **Where are they in the scale of athleticism?**
- **Do they take part in snowboard related sports such as skateboarding, wakeboarding or surfing?**
- **Where are they in the scale of aggressiveness?**
- **Are they confident or timid?**
- **Have they ever seen snow before?**
- **Have they ever skied before?**
- **How do they learn? You MUST ask each student how they learn the best. If they are unsure, help them become more aware of the learning styles (see 4.5.) This is essential for knowing how to focus on each student to help optimise their learning**
- **How motivated are they to learn? You may need to help motivate them to enjoy the sport.**
- **Have they had lessons before? How many?**
- **What did their last instructor teach them?**
- **What sort of personality are they? Do they like to be pushed? Do they prefer to be gently coaxed along? What is their fitness level?**

As you can see, all of these points will greatly influence how you teach and how the students learn. If you teach in an area of interest the likelihood of learning is much greater. As an instructor your task is to find what triggers the rider.

It is also important to find out the guest's previous experience to help determine where they are at when it comes to choosing a progression to suit their needs. For a children's lesson you will need to find out their age and adjust your teaching style to make it age specific. If you are teaching a snowboarder who has a disability you will need to determine the characteristics of their disability and what special needs they require.

2.1.2-3 PLANNING THE LESSON

Having received confirmation from the group that your snowboard lesson plan is satisfactory, you then go about planning the details of the lesson. The following points should be considered throughout the lesson:

- **What and where is the most suitable terrain?**
- **How are the snow conditions (icy, un-groomed, slushy, size of the moguls)?**
- **What is the weather like (temperature, wind direction, flat light)?**
- **Class handling (see 2.1.3)**
- **Professionalism (Ch. 1)**
- **Teaching tactics and teaching styles (see 2.2.1 and 2.2.2)**
- **Learning styles (see 2.3.1)**
- **Age and ability**
- **What progression and associated exercises to use to help improve the guest (Ch. 5).**

2.1.2-4 PRESENTING INFORMATION

It is somewhat of a challenge, even an art, to be able to explain riding in a clear and simple way.

An inexperienced instructor easily falls into the trap of making the explanations too complicated, confusing or long-winded. The following key points will help you to deliver good explanations.

You must remember that many snowboarding/skiing concepts may be completely foreign to your students. Before they can even hope to attempt a new task you have to give them a mental image or picture of the learning segment. A demonstration obviously serves this purpose extremely well.

It is always important to explain What, Why and How you teach a certain aspect of riding.

A survey showed that one of the biggest complaints in beginner lessons was that the students had no idea why they were being taught certain exercises or steps.

However, when explaining a task, the best way to create an image is to use clever analogies and the following concepts:

- **Try and come up with all sorts of analogies for all the concepts that will appeal to the different students in your group. For example, carving is like a formula one car that grips all the way around the corner or the way a bicycle corners; 'tail swishing' is like a rally car that throws the back out and skids around the corner**
- **Keep it short and simple (K.I.S.S.) - avoid talking too much**
- **You need a very thorough understanding of the mechanics of riding. The more knowledgeable you are, the more simply you can explain snowboarding to your students**
- **Use everyday words to express yourself.**
- **The explanation has to be appropriate for the age group that you are teaching, for example, a three-year-old, 14-year-old or an adult.**
- **Spend time rehearsing the explanations to yourself or fellow instructors to ensure they are clear and concise and they cover all the learning styles**
- **Practise explaining the same concept as many different ways as you can think of because not all students comprehend in the same manner**
- **Use your hands to draw diagrams in the snow to complement your explanations**
- **Technical terms are often convenient to use and fun for the students to learn. Only use technical terms when appropriate and remember to first explain to the class what they mean**
- **Check to see if your students have understood the explanation using open questions or by getting them to repeat the critical parts back to you. Be aware of students with a confused look.**

2.1.2-5 DEMONSTRATING

Demonstrating is as critical as presenting information because it is key for visual learners.

- **Demonstrate clearly and cleanly so that the students can easily see the task you are asking them to do.**
- **If possible demonstrate from different angles.**
- **Focus student attention on the important part of the demonstration. Observing other riders can also be beneficial to the learner.**
- **Exaggerate when appropriate (correctly and incorrectly), to emphasise a part of the technique. Exaggerating your demonstrations can also improve your personal skills when riding.**
- **When riding with your students, ride the correct speed and demonstrate the same turns your group are striving to make on that day.**
- **Keep practising the demos or exercises yourself, as the correct movements are a must for people to learn from.**
- **Demonstrate often - one demonstration for every fourth student is an appropriate amount in a first timer lesson.**

2.1.2-6 PRACTISING

There are many factors that influence the learning process (see 4.8). It may take numerous attempts before students gain an understanding for the task, depending on the difficulty. After each attempt the level of understanding and feeling improves until there is a breakthrough.

Research shows that the learning process is optimised when students are allowed lots of freedom to experiment (mileage) with the task and its related movements and feelings. The more ways you can show students to perform the task, the more success you will have targeting the different learning styles. Allow the group to share their learning experiences with you and the rest of the group as you move through the learning phases.

This is also the time to enhance practise and learning with different teaching styles and class handling methods. Ask students to try as many different formations as you can think of - have them pair up, behind each other, shadowing each other or riding by themselves.

Practise in varied conditions. Studies have shown that deeper learning occurs if a skill is practised in a wide range of conditions.

Keep confirming with the group that the balance of teaching and practising is correct. You might be enthralled with what you are teaching the group but in actual fact they would much rather be riding and practising more, or vice versa.

Movement analysis: [MA]

2.1.2-7 MOVEMENT ANALYSIS

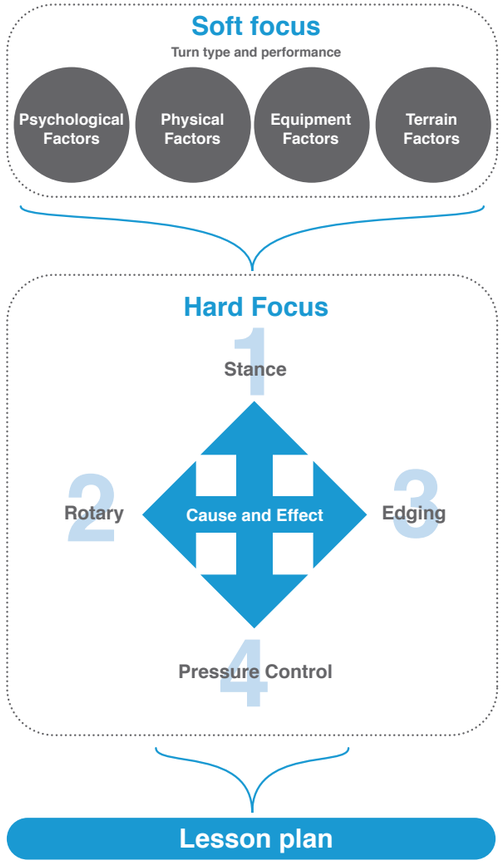
Riding, whether a falling leaf or a dynamic short turn, is made up of an appropriate blend of the four skills (see 3.1.2). Therefore, to analyse a rider you need to analyse how the individual skills are performed and how appropriately they are blended.

Successful analysis can only happen if you:

- **Have a good understanding of the riding skills and mechanics.**
- **Understand the movement analysis system.**
- **Possess a clear picture in your head of the correct movements of the turn.**
- **Understand where each turn fits into the performance model (3.2)**
- **Can distinguish the difference between the cause and result of a problem.**

There are several ways to position yourself when analysing students. You can watch from below, from above, from the side, ride behind the student or synchronise them. Each of these angles gives you a different perspective and can provide you with vital clues about their riding.

THE MOVEMENT ANALYSIS SYSTEM:



SOFT FOCUS

Watch the first four or so turns to:

- Determine what turns the student is making to both sides e.g. Skidded turns, Steered or Carving?
- Obtain a feeling for the overall attitude of the rider. Ask yourself if there is a non-skill related reason for the way they ride such as:

Psychological factors

- Fear: many reasons for comfort level
- Age
- Unrealistic goals

Physical factors

- Strength
- Fitness, fatigue
- Previous bad experiences (crashes or injuries)
- Disabilities

Equipment factors

- Boots and bindings: Size? Done up properly?

Width of stance

- Board length and width
- Age of equipment

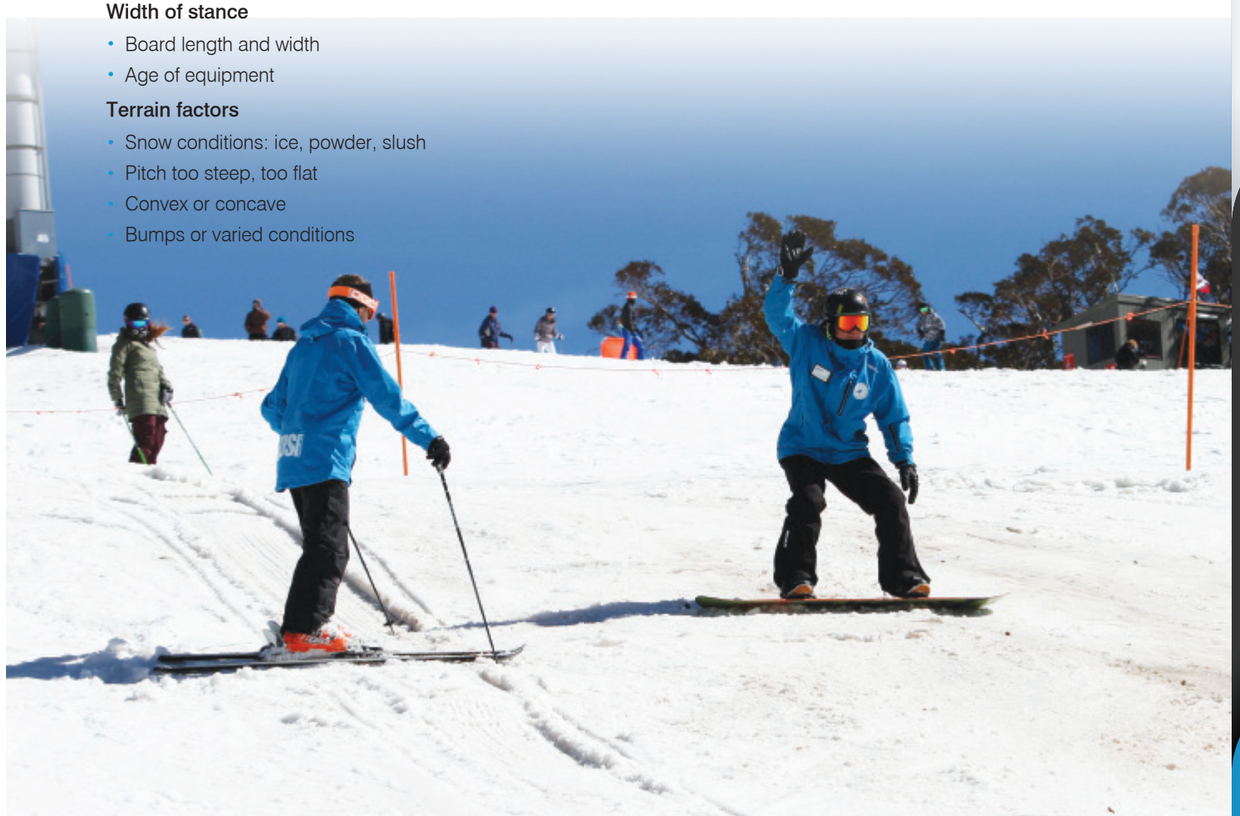
Terrain factors

- Snow conditions: ice, powder, slush
- Pitch too steep, too flat
- Convex or concave
- Bumps or varied conditions

HARD FOCUS

After determining the overall attitude of the rider or the 'Soft focus', you will then need to focus on the board performance, i.e. how the board moves in comparison to the 'Performance Model'. Watch the next few turns to determine how each of the four skills are being performed and how this may help or hinder the desired performance.

- **Stance:** Watch to see how the centre of mass (rider's weight) is positioned along the board.
- **Rotary:** Watch the legs and whole body to see where the turning force originates from and how it is performed (e.g. smooth or jerky).
- **Edging:** Watch the board's performance and angulation (ankle, knee, hips, spine and overall inclination).
- **Pressure control:** Remember that the rider needs to balance over the working edge so recheck the angulation or lack of. Watch for smooth or jerky movements and whether the rider is being thrown around.



A.T.M.L.

FINDING THE CAUSE VERSUS THE EFFECT BY PRIORITISING AREAS THAT NEED IMPROVEMENT

Work through the skills in order, asking yourself at each one "is the ineffectiveness of the skill enough to prevent the following skills"?

- **Work on stance first, if it is poor enough to prevent the other three skills from being performed properly. Remember that if it is stance, that the problem should occur on both sides.**
- Work on rotary skills first if the stance is okay but the turning force originates from either upper body or counter rotation (kicking of the back foot).
- Work on edging skills first if the stance is okay but the board is so flat that the rider has trouble changing direction or if the other skills are good but the rider is ready to go faster, (like in carving where edging should be earlier and stronger).
- Work on the pressure control skill first if there are too many jerky up and down movements or if balance is disrupted and the rider gets thrown around too much.
- Remember that the blending of the skills also needs to be addressed as the cause to their mistake may be due to the timing, amount or duration of movement made when producing the required performance.

For Terrain park features the **A.T.M.L** will need to be assessed, as follows:

A: **The Approach:** The speed and 'line' the rider takes into a feature. Also includes the body's position. An approach can determine which side of a rail feature can be taken or which edge or set up turn is best to take-off a feature.

T: **The Take-off:** The movements and timing used as the rider leaves the feature.

The take-off is used to project the rider in the desired direction. Taking-off from a flatter board for straight airs and features or an edge for specific manoeuvers and spinning.

M: **The Manoeuvre:** The movements of the rider in the air or on the feature. A solid approach and take-off will aid in the rider's ability to add style to their manoeuvers. Using core-strength will aid in all manoeuvres and stabilize the rider during their flight.

L: **The Landing:** How the rider touches down on the snow. This is the completion of the trick. Landing on top of your board and being centred is a good feeling.

BREAKING DOWN MOVEMENT ANALYSIS

There are four main ways of observing a rider to help try and to break down the movements.

Full body

Observe the whole rider's body, board, terrain and task. Keep it simple and relate the guest's goals to the movements and terrain at hand.

An overall picture will quickly appear and any major problems will stand out.

Head down

Watch the rider's head and torso position first. Focus on whether the rider's eyes and head are balanced, focused and rotating in the direction of travel. If they are unbalanced and not rotating in the correct direction, it will stand out.

Core Out

Observe the rider form the core of their body outwards. Focus on where and how their centre of mass is moving correctly in their tasks. If the mass is not positioned correctly or not transitioning through tasks, it will become clearer.

Board and feet up

Observe the performance of the board and relate this to the task and goals of the guest.

Watch the performance and movements of the board and legs to see if they are abrupt, inconsistent or not progressive throughout the tasks. Try to see if the lower body is moving correctly and with the upper body. There might be finer movements to look for so a developed eye will help.

2.1.2-8 FEEDBACK AND CORRECTION

FEEDBACK

Feedback is the information received about the performance of a skill, either while they are executing it or after the skill is completed.

Feedback can either be external, from an outside source (e.g. instructor or fellow student) or internal from the individual's sensory systems (See Page 72). The instructor's aim is to use external feedback to help train and develop the student's internal awareness. This is the only way true learning can occur. In other words, we are not teaching the students riding, we are teaching them how to learn (riding).

Remember, a true learning environment is one where the instructor is not the only 'teacher'. The students are learning but you are also learning how your students learn. Encourage students to share feelings and ideas with each other. Always explain what, why and how you want them to make a change to their riding.

E.g. "I need you to edge the board a little more (what). This will allow you to control the speed more easily (why)". By using your ankles and knees to roll into the turn (how).

Feedback will have more meaning if the guest understands what they did in the first place. We should constantly strive to help the student become aware of what they were doing and how to correct it. By giving in-depth feedback like this, the students can then reflect and compare what they felt to the instructor's feedback, which helps them to train and develop their own sense of internal feedback.

The manner in which we deliver the feedback has to be based on the following principles:

- **Positive**
- **Simple**
- **Accurate**

Positive

Always start by giving the students positive feedback about their riding, followed by advice on how to improve or progress to the next level.

Feedback is never meant to degrade or humiliate, but rather to help and encourage the students to improve so that they enjoy the sport even more. You will need to allow students time to practise and experiment using carefully selected feedback and lots of encouragement.

Simple

Feedback must be simple. Even the best world cup athletes, where change is imperative to success, must have the feedback given to them simply if a change is to occur.

(KISS-Keep It Short and Simple)

Accurate

Accurate feedback depends on how good your analysis is. If you see exactly what is incorrect you can give accurate feedback. If you are not sure, the feedback becomes vague, incorrect or counter-productive.

CORRECTION

The mistakes need to be prioritised and then worked on ONE at a time. Refer to point two of the nine lesson essentials (identifying the students) to help decide how to approach the correction. It is crucial that you consider these points (i.e. athleticism, attitude, personality, learning preference, etc.) carefully because they will greatly influence how you correct your students' riding. The tactics to consider include:

- **Use terrain that is easy for the student**
- **Use appropriate snow conditions**
- **Use a variety of appropriate exercises or mini-progressions to help correct the skills**
- **Use appropriate speed**
- **Demonstrate clearly**
- **Make sure their equipment is sound**
- **Check that they understand your feedback by showing and explaining what is required and how to physically do the correct movements.**

At this point in the lesson it is time to loop back to one of the nine essentials e.g. you may ask students to 'try it again' (lesson essential # 6 practise).

Next you need to do 7 and 8 again to see if they understood the task i.e. loop back through the lesson essentials by going back to any of the other steps (except the introduction) and following the system again. It is an ongoing process until students can do the task or lesson time is up, then you move on to the summary.

2.1.2-9 LESSON SUMMARY

If you give a good lesson but fail to include a summary, the lesson is far from successful. The following points have to be covered in the lesson summary:

- **Briefly go over everything you covered during the lesson.**
- **Confirm which goals were and were not met.**
- **Provide a plan for a future lesson to cover the goals that were not met.**
- **Discuss all the improvements made.**
- **Repeat the plan for tomorrow or the next lesson.**
- **Give them some things to work on after the lesson and suggest where they should practise.**
- **Invite them to come back for another lesson.**
- **Self-asses your lesson, a good question to ask the group is: "What will you tell your friends about your trip when you return home?"**

2.1.3 CLASS HANDLING

Class handling is the way you organise and manage the group throughout the lesson. It is a crucial component of the teaching system, vital to the success of the lesson and the safety of the group.

It is even more important if the group is larger, has mixed abilities, space is limited or you are teaching children. Poor class handling can result in any or all of the following: bored students, limited actual learning, or in the worst case scenario, an accident as safety may be compromised. Educating our students on the "Alpine Responsibility Code" (see 2.1) is also an important part of class handling.

The elements of class handling are:

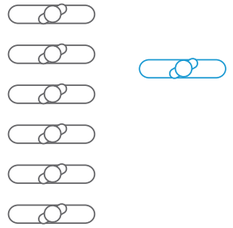
- **The way you line up your class**
- **The way you move the group down the hill**
- **The way you analyse, give feedback and correct the group's riding**
- **Where and how you stop**
- **Mixed abilities**

2.1.3A THE WAY YOU LINE UP YOUR CLASS

Always try to line the class up with their backs to the wind, snow and, if possible, sun.

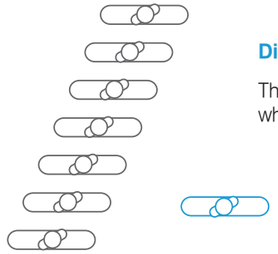
At times a well-structured and organised approach is necessary if the resort is busy and terrain limited. This is the best way to conserve space and to keep the area safe. You will rely on your customer service skills and personality to keep the atmosphere relaxed. If possible an informal approach is more desirable.

This informal, less rigid approach creates a relaxed atmosphere and students will feel more comfortable interacting with each other and communicating with you. The importance of this cannot be emphasised enough because it is one of the fundamentals of experience 'Centred' teaching.



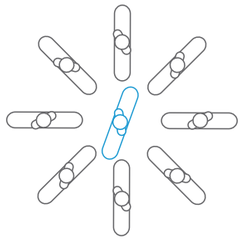
Line up:

This is well structured but is 'dictatorial' and can create a 'you vs. them' feeling. Good option for limited space situations.



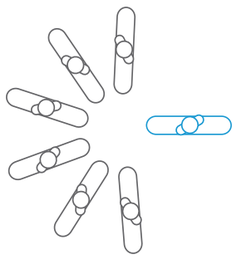
Diagonal Line up:

This helps everyone see when you are doing a demo.



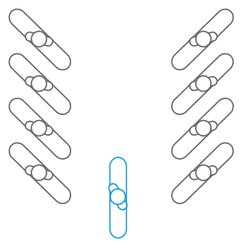
Instructor at the centre of the circle:

Good for beginner groups on the flat, although instructor must be careful to communicate with whole groups.



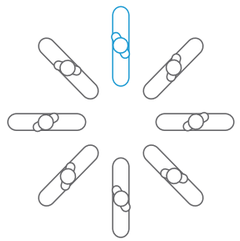
Semi-circle:

More informal. Students all feel like part of the group. Limits vision when moving off.



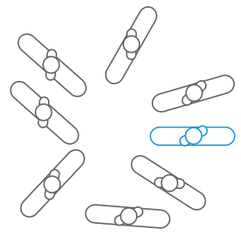
Corridor:

Good for large groups of beginners, especially for straight run exercises.



Instructor included circle:

Informal group feel but instructor is able to have visual and verbal communication with all students.



Huddle:

Informal. Good for advanced students or for a casual atmosphere.

2.1.3B THE WAY YOU MOVE THE GROUP DOWN THE HILL

Before riding off with the group, you must explain which method you are going to use.

The Snake

Following the instructor in a snake is useful for the following reasons:

- **To lead the group from one place to another.**
- **To choose the best path down a tricky piece of terrain.**
- **To show the students the correct turn shape for riding down a steeper run for the first time.**
- **To show the group where to turn on bumps.**
- **To give the students the chance to learn through watching and copying. Remember, only the first person behind you benefits so keep rotating the person following. Keep watching the students behind you so that you can give them feedback.**

Be careful to avoid taking up the whole slope when riding your group down in a snake. If there is nobody on the slope you can take up more room, however if it is busy, you should stay to the side of the run with your group.

Riding down as a group

The students ride down to concentrate on and practice their own skills. Designate a place where you meet again, this will need to be a clearly defined place on the hill when teaching children, not just by saying 'ride for 20 metres' as this doesn't make sense to them. To avoid collisions, have the students give each other enough space.

This is an excellent way to have students try out a new skill and start developing a feeling for it.

Remember, for correct learning to take place, the student has to develop an awareness of their performance and this is achieved through considerable guided practise. If the lesson is mostly analysing and standing around, actual practise is limited and learning will be greatly reduced.

Combination of the above two

You can also mix it up by having one or two students follow you and the rest ride down on their own. Take turns with this method.

Student leader

One of the students leads the group in a snake while you ride around the group to analyse and give them feedback.

2.1.3C THE WAY YOU ANALYSE, GIVE FEEDBACK AND CORRECT THE GROUP'S RIDING

The one at a time method, with lengthy feedback as they come down, is obviously very thorough but there are few reasons why you should not use this method:

- **It is very slow and the students stand around for most of the lesson.**
- **Often there are several students with the same or similar mistakes so you end up explaining the same thing over.**
- **The students who come down later miss out on hearing what you say to the earlier ones and miss learning from their mistakes.**

The only time this method can be used is with a first time rider group while still in the beginner area.

Although, with this group, the most productive learning happens if you allow the group to go up and down as many times as they can manage while you stand at the bottom offering appropriate feedback when necessary.

A better approach (for all other standards) is to have the students come down one at a time. To prevent the students from standing too much, have the next one start when the first one is about half way down, or even more frequently, but make sure you specify.

You analyse each student as they ride down and give them feedback after the whole group has arrived. You can either stand at the bottom, at the top (point out a place to ride to), or half way down.

This method will test your analysing skills but do not be overwhelmed, as you will become accomplished at it with practice. For larger groups, it is a good idea to give each student a word to remember as they ride to you. This can be used to remind you what feedback to give them when the whole group has gathered.

Riding in pairs

Students can give feedback to each other and become more involved in the lesson.

It is good for building rapport. You must make it very clear to the students what they are looking for and make the task simple.

Focus on one student at a time

You can send the group down to a specific spot to practise their own riding while you focus on one or two of them. Keep rotating the student(s) that you focus on. This is a very good way to give each student extra attention and will speed up the learning process markedly. Often that extra bit of individual attention will produce a breakthrough for the students.

If there is a short lift available, you can stay on one spot while the students circulate. Give them feedback each time they come by. This is one of the best ways to have the students get plenty of productive practice (be careful to use this method on a relatively empty lift). Also, make sure you go back up the lift to show more demonstrations when needed.

Throughout the week of lessons it is important that you make appropriate use of all of these methods to maximise the learning process and keep the group moving, interested and involved.

2.1.3D WHERE AND HOW YOU STOP

Educate the students to slow down to the side of the group and stop below the group to avoid collisions. Stopping slightly away from the class and then regrouping is a good way to maintain the informal atmosphere in your lesson.

2.1.3E ADDRESSING MIXED ABILITIES

More often than not your group lesson will be comprised of a mixture of abilities. You will have to manage these situations slightly differently as you come across them, but as a set of general rules, the following is important:

- **Continue to constantly check your student's goals and motivation for learning.**
- **Keep the whole group involved as this increases the likelihood of learning.**
- **Within a controlled environment you may have to adjust the way the group rides down, allow the more advanced to practise either more often or with slightly harder exercises.**
- **For a children's class, remember to keep it interesting/fun to avoid boredom.**
- **Most importantly of all, for the sake of safety, you must teach & ride at the ability of the slowest in the group, not the most advanced.**

CHAPTER TWO: Teaching Concepts

SECTION TWO:

TEACHING TOOLS

2.2.1 TEACHING TACTICS

Teaching tactics are crucial to successful learning. While they are mentioned throughout the nine lesson essentials and the progressions, some added information will assist in correct use of these tactics to help personalise the learning experience.

2.2.1A CHOICE OF TERRAIN

Choosing the correct terrain is one of the greatest teaching tools we have at our disposal. Terrain can determine whether a particular turn or exercise is even achievable. Resorts in Australia have many designated forms of terrain, for example:

Children's areas: which are often set aside for children's classes only and can be off-limits to the general public. These areas will often include a class specific lift and a theme or characters to help animate the space.

SLOW ZONE

First timers or beginner areas: are often near the meeting place for lessons with appropriately flat or gentle bowl shaped terrain for introducing the guests to sport. The most appropriate beginner terrain is also in a roped off area to limit traffic.

Green runs: Long, wide, open green runs are useful teaching tools. It is the most suitable terrain for progressing students quickly, from a side slipping to basic linked turns. Flatter terrain with more speed is the best way to work on closed turns and open turns, while green terrain is also extremely well suited to all the railing and carving exercises for advanced riders.

Blue Runs: This terrain is ideal for developing intermediate skills and exposing riders to more speed and varied terrain.

Black Runs: are steep runs designed for advanced/experienced riders only. Black runs can be groomed although un-groomed snow conditions are more common. Be careful not to progress student too quickly to steep terrain as it can create fear and bad habits.

Double Black Runs: are rare in Australia but do exist. These runs are for experts only and are extremely steep with variable snow quality.

Half-Pipe: resorts now cater for a variety of guest's ability levels, ranging from small introductory Freestyle parks and pipe to introduce riders to the basic fundamentals of freestyle. All the way through to world-class jumps and features that experienced and professional athletes can use.

Race Courses: are generally closed to the public and set up for race events and training sessions.

Cat Tracks: link the runs and mountain together. They are often flat and narrow which makes them dangerous to stop your classes on to teach. They can however, be useful for practising a movement while in transit to the next run. Cat Tracks can be difficult for new snowboarders to negotiate, therefore they require respect and time to master.

VARIATIONS IN TERRAIN AND TERRAIN BASED LEARNING

The mountain's terrain is constantly changing and evolving as the season progresses due to the snow pack. There are many areas of the mountain that aid in teaching and can even be artificially produced to help with different teaching outcomes.

Groomed: Perfect terrain for first timers through to advanced riders to work on skill development. When the trail is flat with no external obstacles to worry about the learner can focus 100% on the task at hand and changing their riding.

Off Piste: A European term for un-groomed runs, the snow conditions are often uneven and variable. Great for strengthening intermediate to advanced skills and exploring what the mountain has to offer.

Banks: Often to the side of runs, they offer a great opportunity for riders to work on skills that are difficult to feel on a flat groomed run. For example, riding a bank like a wave can be a fun sensation for riders vastly different to that of a flat groomed run.

Banks also work well for rider negotiating Cat Tracks as they can ride on the bank and avoid the traffic and fear of going over the edge of the track.

Concave: shaped like an empty bowl can give the rider a feeling of increased speed when riding down into the bowl.

New skill old terrain. Old skill new terrain.

Convex: Simply a high point, like a large bump, roll or knoll which allows the board to pivot easily on top helping the initiation phase.

Hitting a bump at speed (like a Snowboard-X course) can also make you feel light for a moment as you lose contact with the snow, effectively un-weighting the board (removing the force that is reacting between the board and the snow)

Knolls/Rollers: Can be used to reduce friction under the board, making it easier to turn, a first jump for beginners to learn on or timing for pressure control movements like absorption.

Moguls or undulating terrain: Speed is the determining factor when it comes to maintaining balance in a mogul field. At slower speeds, simply maintaining a good stance with subtle movements fore and aft will help. But as the speed increases the mechanics will need to be replaced with active retraction/extension movements.

Choosing the correct terrain for teaching has a huge impact on a guest's learning experience. Learning a new technique on terrain that is too steep is a disaster. Students will regress faster than you can ride down the run. However, taking students to steeper terrain and then back to easier terrain can help consolidate the technique but only if the particular turn is already reasonably strong. Be careful, as it's better to increase the steepness in small increments.

A simple way to remember the correct terrain is:

- **New skill old terrain**
- **Old skill new terrain**

2.2.1B SPEED

There is an optimum speed for every turn. For example, moving too slowly when teaching a steered turn (a very common mistake made by instructors) will result in loss of balance. Too fast and the board may rail causing the student to feel uncomfortable and want to slow down.

You must understand what the correct speed is for every turn. If you are struggling with the turn, when demonstrating or leading the class downhill, you could conclude that the speed is incorrect.

The steepness of the slope will determine how quickly or slowly your guests pick up speed. Too flat and catching the edge can occur, too steep and students will lose control and confidence.

2.2.1C SNOW CONDITIONS

Snow conditions have a huge impact on the way we snowboard on any given day. The guest's equipment is rarely in great condition and icy slopes tend to bring the students back a level or two.

If it is icy, remain on gentler terrain, alternatively moving to the edges of runs where the snow has been pushed can help.

On low light, days riding nearer to trees will help break the cloud and allow for definition.

If it is extremely slushy, choose slightly steeper terrain (regardless of the level) to make it easier to move and turn. Be careful that you choose the correct steepness for the ability.

Ideal snow conditions (groomed, dry, packed powder) are obviously the best and give students the most confidence to learn and progress. Slushy conditions affect the lower levels, as they do not have the ability to ride fast enough through the slush to make turning easier and these people tire easily. Riding slightly on the tail of the board and letting the snowboard surf the lush can aid in controlling the conditions better.

Perfect snow conditions are certainly great, but more difficult snow conditions can be an enjoyable challenge and bring about deeper learning. For example, even a group working on garlands can be taken through 10 centimetres of powder on or beside the groomed run. It's a lovely sensation, a thrill, and teaches them to turn strongly.

Leverage (fore/ aft) is also used to handle sudden pressure changes, such as riding from the groomed into powder or crud and vice versa. Riding from groomed into powder the board is driven ahead to avoid lurching forward when the board suddenly slows down as it hits the powder. 'Driving' the board forward is quite different to leaning back.

2.2.1D TEACHER ASSISTANCE

Teacher assistance is extremely helpful. It may be the only way for some, less athletic students, to learn and a faster way for others, especially if it is a one-on-one lesson. Certain types of equipment can be used to assist your guest such as a slalom pole for a rider who is visually impaired to hold onto.

2.2.1E FOLLOWING THE INSTRUCTOR

Following the instructor's track is very helpful to gain a feeling for making round turns and how much/little to finish the turn on any given steepness of slope.

INSTRUCTOR'S TIP

Have the student draw their board on the track you leave to indicate where the nose of the board is going

Shadowing the instructor is great for copying the instructor's movements and gaining a feeling for the rhythm and timing of a given turn. It is astounding how much students pick-up subconsciously from copying your movements.

Following the instructor can also be a good way of coaxing a student down a slope that frightens them because you are able to pick the easiest line. Keep them focusing on your body, not looking down the hill, and before they know it they are in their comfort zone again.

2.2.1F VIDEO

Video usage is one of the best learning tools for our students and is more readily available in recent times with the advent of camera phones. If you are serious about the profession it is an excellent idea to buy a mini digital camera, Go-pro or another recording device yourself.

The quality is superb and you can watch it straightaway on the hill or chairlift.

I-Phones and Smart phones also have effective video cameras and applications for aiding in movement analysis. They are great for correcting movements straightaway and you can send the guest their footage/ pictures instantly for an added professional experience from the lesson.

Here are some important points to remember when conducting video sessions:

- **Hold the video with both hands and as close to your body as possible to keep it steady.**
- **Keep the subject fairly large in the frame, about two thirds of the screen.**
- **If you are filming from far away, use maximum zoom until the subject has come much closer.**
- **Move the zoom in and out slowly.**
- **Be careful to refrain from making derogatory remarks while filming the students because the microphone picks up everything!**
- **If following the rider, keep a distance to ensure the rider is in frame and do not get too close to distract the guests.**

The student's first reaction (if they have never seen themselves riding) may be, "Yuk that looks horrible." Be careful to first reinforce all the positive points about their riding (if there are not too many positives, avoid the video for the moment) and then show them what can be improved.

Watch the video as soon as possible after the performance, and ride again as soon as possible after watching. Help the students associate feelings with the picture. We know ourselves how different it can look compared to what we feel and think we look like. The slow motion and frame-by-frame feature is very useful for analysing riding.

Where possible, change the viewing point by filming from behind (watch hips), in front and the side (fore/aft stance).

Watching the video on a bigger screen like TV or projector can have a much greater impact on change with the student. If you are watching on a TV, you can use a white board marker to draw angles to emphasise the position. Watching it at proper speed should always be a part of the feedback. This is how their brains will remember their performance of the task, instead of in segments/frames.

2.2.2 TEACHING STYLES

Instructors often make the mistake of using the one teaching style that they are most comfortable with. They fail to understand the need to vary this style to suit each student's learning preference and to keep the lesson interesting and exciting. This mistake can often manifest by teaching in a style that they were taught in themselves.

Try to vary the teaching style you use to help you personalise the learning experience by finding the teach style or mix of styles that each of your guests prefer.

The following are the five teaching styles frequently used in snow sport lessons:

1. **Command**
2. **Task**
3. **Guided Discovery**
4. **Reciprocal**
5. **Problem Solving**

2.2.2A COMMAND

Explaining a new learning segment to the group is often done in command style. This does not mean that you line students up and scream commands at them. It means that you are the main focus of the group while you explain and demonstrate the learning segment to the students. Command style is also necessary when safety is an issue e.g. when explaining the Alpine Responsibility Code or when you must decide if terrain and snow conditions are safe for your group or where to ski/snowboard if the visibility is terrible.

2.2.2B TASK

In the task style of teaching, you take more of a backseat approach and observe the students perform the task that you give them. The student will experiment to achieve the task as you might not tell them specifically 'How' to perform it. For example, you might say to either an individual or the group:

- **"Try to alternate five times between short radius and long radius turns on the way down this slope"**
- **"Make 15 short turns in the distance from here to the sign"**
- **"Practise your short turns all the way down the run"**
- **"Try to not lean against the high backs as you make turns to the bottom".**

2.2.2C GUIDED DISCOVERY

Students tend to learn fastest when they are given the freedom to experiment with all sorts of different feelings in snowboarding.

For example:

- **"Have several attempts at basic turns, keeping the board flat rather than on the turning edge. 'Tell me what you felt?'**
- **"I want you to try and get the board to grip early in the turn, rather than at the completion. Make turns all the way to the bottom of the slope and tell me if you felt you were able to achieve this"**
- **"What feels better a board that is gripping or sliding?"**
- **"Make some turns leaning back, leaning forward and then in the middle.**
- **Which feels better?"**

Guided discovery, when managed properly, is a great way to teach the students how to learn (i.e. teach themselves). Remember that learning only happens when the individual becomes aware of their movements; therefore guided discovery on its own is not enough.

2.2.2D RECIPROCAL

Reciprocal teaching involves pairing the students up, one as the performer and the other as the analyser, and then swapping roles.

Reciprocal teaching is great for:

- **Promoting group interaction**
- **Getting away from the "I'm the boss and I run the show" scenario**
- **Helping students become actively involved in the learning process**
- **Promoting a sharing of feelings and ideas to benefit everybody in the group.**

Having your explanations paraphrased by students may also give a student a clearer insight.

Make sure that the skill or exercise is simple and well understood by everybody. Carefully monitor the feedback they give each other to make sure it is accurate.

2.2.2E PROBLEM SOLVING

Problem solving is a style of teaching where the instructor gives the student an exercise, either with or without giving a reason to start with. The value in using this method comes from the experimentation and repetition that is needed to produce change.

2.2.3 TEACHING METHODS

How much information is put forward at once can be varied during your classes to keep the learner engaged. When teaching complex skills/tasks try varying your method to address different learners/thinkers.

- **Whole instruction method**
- **Part instruction method**

2.2.3A WHOLE INSTRUCTION METHOD

The 'whole instruction' method involves presenting the task all at once. In general, the student should first be given a chance to attempt the task as a whole. This will allow the student to display their perception of what needs to be learnt. The instructor should observe the learning process, noting the movement patterns, timing, coordination, attitude, terrain choice and speed before moving on.

2.2.3B PART INSTRUCTION METHOD

'Part instruction' is where the movement is broken down into smaller parts. These parts are taught individually then added into the whole turn e.g. Basic turns are taught by first teaching a skidded traverse, and then rising to release the edge with rotating the leading side of the body towards the fall line. Finally, the parts are added together to make a completed turn.

In most cases it is a combination of teaching styles and both part/whole methods that will best suit most learners, so the key is to experiment with different styles and note how your guest learns best. Try mixing it up by adding a little of each style to your descriptions. For example you can say:

"Watch this turn. Now what I did was rise up first, then turn with the leading side of my body. I felt light when I was tall and this allowed me to start guiding the board with ease because I just made a re-centring movement. Now Jim, I would like you to follow me. Come on, let's all have a go of that part and we will put it into the whole turn later."

CHAPTER TWO: Teaching Concepts

SECTION THREE:

TEACHING DIFFERENT LEARNERS

2.3.1 LEARNING STYLES

One of the most common and widely-used categorisations of learning styles is Fleming's **V.A.R.K.** model

1. **Visual learners**
2. **Auditory learners**
3. **Reading/writing-preference learners**
4. **Kinesthetic learners or tactile learners.**

FLEMING CLAIMED THAT

Visual learners have a preference for seeing -thinking in pictures and need visual aids.

- **Auditory learners best learn through listening- lectures, discussions.**
- **Reading and Writing learners prefer text based input/ output to learn the theory of new concepts: either reading about it or taking notes.**
- **Kinesthetic/Tactile learners prefer to learn via experience—moving, touching and doing.**
- **Not everybody receives and processes information the same way. To complicate things further, some have a preference for one of the four, while others a combination of two or all four. The trick is to find out from your students how they learn so you can decide how you will teach them.**

Why is it so important to be aware of your students' different learning styles?

If you do not understand the whole concept of learning styles, you will find yourself teaching your lessons in your own learning preference. This is all very well for the students who match your learning preference but what about all the others? They may eventually learn but not effectively from you.

Teaching a group lesson requires skilful teaching to ensure that everybody has the best chance of grasping the learning experience. At times you will need to address all the different learning preferences en masse. For example, as you present a new learning segment you target all the learning preferences by explaining, drawing in the snow, demonstrating and having a go.

Throughout the lesson you will need to devote time to each individual student. This is when you need to be aware of your students' preferred learning style so that you can maximise their learning.

How do you find out your students' preferred learning style?

Often the students are not aware of their preferred learning style. A good way is to ask them about a previous lesson (either in skiing/snowboarding or any other sport such as golf or tennis) that they found beneficial. Other times a trial and error approach will be needed and the learning styles sometimes show themselves through success at different points in your lesson.

"Why did they enjoy the lesson and why did they learn so much?"

Discussing this usually gives you a clue about their learning preference or at least a way they prefer not to learn. Another clue about student learning styles can be gained from observing how they react when you introduce a new learning segment. Some will be keen to see a demonstration so that they can copy it. Others will want to form a picture in their head from your explanations, while others will try to understand what it should feel like.

Sometimes you just have to ask them straight out, "How do you learn best - by listening to an explanation, watching a demonstration or by feeling the movement?" Confirm their assessment with your own observations.

2.3.2 TEACHING TO SPECIFIC POPULATIONS

CHILDREN

As children are often less aware of the consequences to their actions, safety should be the primary concern when teaching children's lessons.

To increase the prospect of learning your lessons should be fun and relevant to the child's interest, while an understanding of how children learn developmentally will allow you to adjust your lesson to meet their developmental level rather than chronological age. (to read further see ch. 4)

OLDER RIDERS

As people age gracefully they will generally experience physiological changes, including a reduction in work capacity, heart-lung efficiency, endurance, power, strength, agility and coordination.

This may mean that older guests could have less interest in hours of exercise or indeed the perfection of their riding skill. They may prefer to gain tactics and simple movement patterns to enable them to continue their riding career for as long as possible. In essence they want to minimize their output while maximizing their results.

All adults like to be included in the lesson process and have a wealth of experience that they can draw from (even if it is from other sports), however, there are some important concepts to consider when instructing older riders and include:

- **Remember to check if there are any medical, health or injury issues that can affect their ability to snowboard**
- **Include longer warm-up and cool-down periods**
- **Be aware that strength and endurance capabilities slowly decrease with age but can be improved with training**
- **Lower the intensity of lessons to suit and provide adequate alternatives.**

www.ausport.gov.au/coach 'Coaching older athletes'

Caption 1: The greater hip width of women gives them a slight X shape in the legs. This can have an effect setting up the equipment correctly to maintain the correct alignment of the lower body. Custom-made foot beds can be of benefit.

Caption 2: Males can tend to be less flexible in the pelvis area especially as they age and this can affect their ability to turn the legs independently from the pelvis. Dry land stretching can help to increase mobility in this area.

GENDER

In this part we explore some differences between male and females at an anatomical and cognitive level, remembering that these attributes can vary between individuals.

'Q' angle (see 3.3.9):

The width of the pelvis can change the appearance of the angle of the knees when viewing how the femur aligns with the lower leg.

Bone length and the calf muscle:

The bones of the average woman's leg tend to be shorter than a man's of the same height. A woman's calf muscles are also longer than and attach lower on the leg compared to men. This makes fitting boots a challenge as most boots will generally fit higher up on the lower leg. Female specific boots have a lower cuff length to assist in leverage and comfort.

Center of Mass (CoM) (see 3.4.5a):

The average difference between men and women's centre of mass (CoM) is approximately 2.5cm due to the shorter leg length and larger pelvis. More of a female's body mass is concentrated at the lower portion of their body making their CoM slightly lower.

Cognitive variations

Males are more inclined to want a general overview of a situation and will disengage if stress levels become too high. Often males would rather 'just have a go' and respond favourably to a competitive environment.

Females prefer to be given more detailed information. They are also more likely to remember every part of a stressful event. This can trigger an emotional response that is directly linked to a past experience. Therefore, women tend to appreciate more 'context' in their learning (why, where, how) and value participating in a non-critical and supportive environment.

2.3.3 INTRODUCTION TO COACHING

WHAT IS COACHING?

Recreation or FUN is the expenditure of time in a manner designed for therapeutic refreshment of one's body or mind. (Wikipedia)

Sport is an activity that is governed by a set of rules or customs and often engaged in competitively. (Wikipedia)

With this in mind the majority of instructors are helping guests have a fun experience on a recreational holiday. The moment that a guest wants to participate in an organised event or has a specific goal to meet, the instructor needs to start coaching...this includes coaching activities in Snowsports Schools such as

Interschools products, masters programs and seasonal programs.

Coaching an activity that has a set of rules governing it is not only rewarding for the instructor, it also adds to the overall experience for the guest.

Being a good coach takes experience and time; the same could be said about many experienced APSI trainers and top-level instructors at any of the resorts. This is because many top instructors not only help their guests have a fun experience on the snow; they also coach them, helping them reach goals and aspirations, both small and large.

Qualities and Skills of a coach

To keep it simple, a coach should strive to be an 'inclusive coach' and the qualities and skills they should portray are:

- **Patience, recognising that some participants will take longer to develop skills or make progress than others.**
- **Respect, acknowledging difference and treating all participants as equals.**
- **Adaptability, having a flexible approach to coaching and communication that recognises individual differences.**
- **Organisation, recognising the importance of preparation and planning.**
- **Safe practises, ensuring that every session, whether with groups or individuals, is carried out with the participants' safety in mind.**
- **Knowledge, utilising knowledge of training activities and how to modify them in order to maximise the potential of every participant.**

During a usual Snowsports lesson, the instructor teaches new skills to their guest, whereas a coach has to train an athlete in preparation for an upcoming event or goal.

This changes the format of the lesson to a 'training session'. All training sessions should include

- **Course inspection/slip (if being used in that training session).**
- **Warm-up and stretch.**
- **A Technical or tactical approach to improving performance practised in blocks or sections.**
- **Followed by combining these sections to simulate competition.**
- **Maintenance and closure of the course (if being used in that training session, the coach will also have to continually monitor and maintain the course set and safety).**
- **Cool-down.**

The length of time and multitude of training sessions can vary from a one-hour pre-booked Inter-schools private to season-long training programs. Either way, a simple strategy needs to be followed to ensure a positive training effect.

This strategy includes five equally important skills that a coach must include in every training session.

1. **Organising**
2. **Observing**
3. **Analysing**
4. **Communicating**
5. **Improving Performance**

1. Organising

Is the ability to organise efficient and effective sessions. Organising is based on knowledge and planning. (E.g. organising hill space, course equipment, correct athlete equipment and slope preparation)

2. Observing

The coach should be aware of what is happening at all times (e.g. the athlete's arousal level to meet peak performance).

3. Analysing

Coaches are continually evaluating performance. Do not act on just one observation; rather find out if there is a pattern of error. Coaches will also need to perform a self-evaluation as a part of their own personal growth.

4. Communicating

The coach's job depends to a large degree on their ability to communicate; not only verbally, but listening and using appropriate non-verbal communication. (With athletes, parents, other coaches and officials)

5. Improving performance

Improving performance is the major role of coaches. It can include either a technical or tactical approach both in and out of the course over a short or long period.

To further enhance your understanding of what it takes to be a 'good coach' it is strongly recommended that you participate in a coaching course which starts with the 'Beginning Coaching General Principles', an on-line course to help new coaches improve their understanding of generic principles of coaching and athlete performance that apply to all sports. Available through the Australian Sports Commission (ASC) website; **www.ausport.gov.au**

CHAPTER TWO: Teaching Concepts

SECTION FOUR:

TEACHING FOR THE INDIVIDUAL

2.4.1 INTRODUCTION TO SPORTS PSYCHOLOGY

The aim of sports psychology is to help athletes reach and maintain what is called "Ideal Performance State" (IPS). This is the optimal state of physiological and psychological arousal for performing at your peak and can be likened to the feeling of being 'unbeatable', 'in-the-zone', or 'on-a-roll', etc.

It is our responsibility to apply the techniques of the sports psychologists (people who work in partnership with athletes to help them attain IPS) and create an environment that will help our students and athletes reach IPS when learning to snowboard at all levels.

In striving to achieve IPS an understanding of the following four points is necessary.

- Goals
- Arousal control
- Mental imagery
- Concentration

2.4.1A GOALS

A goal is defined as attaining a specific standard of proficiency on a task; usually within a specified time limit.[16] Setting both short and long-term goals is important to maintain motivation and will facilitate the attainment of success.

Short-term goals help our students see immediate improvements, provide regular experiences of success and also assist in enhancing their motivation. Short-term goals also allow students to remain focused and keep moving towards achieving their long-term goals.[17]

Long-term goals, although distant, specify the achievement of some standard or outcome at some defined stage in time. [18]

A simple staircase or ladder analogy can be used to explain the relationship between short-term and long-term goals. The top of the staircase represents the long-term goal and the lowest stair the student's current ability level.

Each step on the staircase represents a series of progressive short-term goals that are increasingly more difficult.[19]

REALISTIC GOALS

Set goals that challenge but are achievable. Make it a rewarding and positive experience.

Set personal goals

The goals must belong to the student. The student is the person who needs to be motivated by the goals and as such they must set the goals and work/strive to achieve them. The instructor's role is to help initiate the goal setting process and assist the student to identify their goals (see Nine Lesson Essentials 4.2).

Goals should be positive

Help the student to focus on success by basing their performance goals on positive actions (e.g. "let's make 10 short turns") and refrain from setting goals based on what you should not do (e.g. "don't make the short turns too long").

Strategies to achieve goals

Identify where more effort should be placed. Areas to look at could include fitness, strength, technique, time frames, nutrition or mental skills. Encourage your students to partake in 'snowboard' training or fitness programs a few months (preferably all year round) before their snowboarding holiday. This will maximise progress and enjoyment on the slopes and also minimises the risk of injury.

Adjust and evaluate goals

Remain flexible with goal evaluation. There are many factors such as snow conditions, size of the group, fitness levels and athleticism of the students that contribute to the need to constantly evaluate and adjust the goals.

2.4.1B AROUSAL CONTROL

Arousal levels impact a rider's ability to perform. The inverted "U" theory shows the relationship between arousal and performance. As the diagram indicates, for peak performance there is an optimal arousal level.[20]

The Inverted U Relationship

Arousal levels that are too low (caused by boredom, fatigue, distractions, lack of interest, lack of challenge) result in a state of lethargy.

Arousal levels that are too high (caused by fear, nervousness, anxiety, frustration, etc.) result in slower reaction times, poor coordination, shaking, increased heart rate and tightening of the muscles.[21]

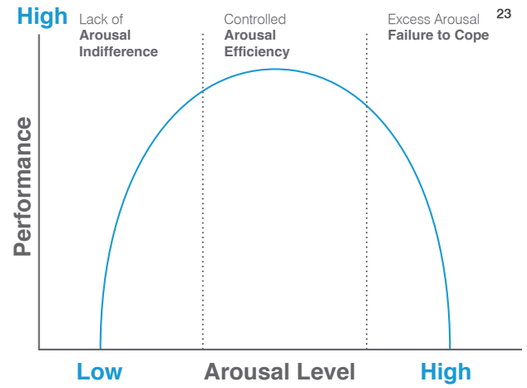
We have considerable control over the arousal levels of our students and it is our responsibility to ensure that they do not drop too low or rise too high. Our students also need to develop an awareness of their body's arousal levels and learn how to apply certain techniques to control these levels.

Techniques to help cope with excess arousal:

Positive Self-Talk: never think or say "I can't". It is easy to allow negative thoughts to take over but you need to force yourself to stay positive and see positive outcomes.[22]

Centring: take a few deep breaths; pause at the top and bottom of the exhaling. Concentrate on tensing then relaxing each muscle by starting at the head and working to the feet. Eventually, with practise, you should be able to gain control over your muscles, as well as slow your heart rate.

Key words: talk yourself through the 'technique' you need to succeed. Use key words that remind you of the actions needed e.g. edge then turn the board, instead of long-winded technical thoughts running through your head.



Acting: when negative emotions get the better of you it is easy to let them take control. Professional athletes learn to overpower negative emotions by acting out a positive and confident persona. Even in the face of extreme adversity, acting out a confident persona allows the positive emotions to bring arousal levels back to optimal levels. [24]

[16] *Gould in Williams, 1998 pg183* [17] *Gould in Williams, 1998 pg187* [18] *Pyke, 1991 pg168* [19] *Gould in Williams, 1998 pg187*

[20] *Pyke, 1991 pg188* [21] *Bond, AIS 1988* [22] *James E Loehr, 1984 pg154* [23] *Pyke, 1991 pg168* [24] *James E Loehr, 1984 pg154*

2.4.1C MENTAL IMAGERY

Mental imagery, also known as mental rehearsal or visualisation, involves using all the senses to recreate or create an experience in the mind. It is a mental technique that programs the mind and body to respond optimally.[25] It is used to help reach IPS by focusing on performance goals, competition simulation, familiarisation of new runs or race courses, arousal control, stress management and boosting confidence levels.

HOW DO YOU PERFORM MENTAL IMAGERY?

Low arousal levels are a prerequisite. Practise in a quiet environment, for example, before going to sleep or after waking in the morning. Once you are able to master the basic skills you can then practise on the hill. Other senses can be included in your imagery practice. There is research to suggest that playing music as you rehearse or imagine the sound of waves at the beach, if this is a pleasant image, can have a positive impact on motor performance and perception of movements. This type of rehearsal is known as a type of sonification.

- **Vary the perspective of the image and see yourself from different angles**
- **Imagine you are watching yourself - like being on a video. This is known as 'Outside-in', or 'Inside-out', from your eyes as you are in motion and you may switch these images throughout the visualisation**
- **Learn to control the speed of the image. Slow it, freeze it and replay it**
- **Repeat the image until you see yourself performing the task correctly. If you make a mistake, rewind it and play it over again until a positive image is developed**
- **Develop a zoom image. Focus in on the problem area in your run and adjust the image** [26]
- **The final image should be in "real time".**

Visual images are the prominent but not the only form of mental imagery. By involving our other senses - we have already included sound - we can enhance the vividness of the image. Imagine the smell, the feel, how long the pressure is held, how the wind tastes, etc.

2.4.1D CONCENTRATION

Concentration is about paying attention to what you are doing and what is going on.[27] It refers to the way you focus your thoughts on a given sport or activity and is crucial for achieving 'IPS'.

Focus

Successful concentration requires a person to control the width of their focus, which can range from a 'Broad' focus to a 'Narrow' focus.[28]

Narrow focus involves concentrating on the immediate, relevant aspects of a task and all other thoughts are closed out. Mistakes may occur if the concentration remains in narrow focus for the whole performance. For example, if you only focus on absorption in the moguls you may find yourself losing speed control at times.

Broad focus involves concentrating on all aspects of the task. You are seeing the big picture rather than just a smaller part. Mistakes are again made if your focus remains too broad for the whole performance.[29]

Some sport situations require a narrow focus, others broad and some both at the same time. Introverts tend to have a 'Narrow' focus and extroverts a 'Broad' focus.[30]

Body awareness

World-class athletes have a complete understanding of what their body is feeling, how it moves and the positions of the body parts. Our students may not be world-class athletes but we need to help them become aware of their body movements. When first learning a movement or skill, moving a small amount feels like you are moving a huge amount. Encourage the students to exaggerate because only then will they come close to making the correct movements.

Video is very helpful in this process.[31]

[25] *Vealey and Greenlead in Williams, 1998 pg238* [26] *Bond, AIS 1988* [27] *Harris & Harris, 1984* [28] *Nideffer & Sagal in Williams, 1998 pg297-8* [29] *Smart Sports, AIS* [30] *Bond, AIS 1988* [31] *Smart Sports, AIS*

LEARNING PHASES

Smart thought

This involves having a plan or strategy, as well as knowing which techniques to apply and when to apply them. Having an appropriate plan can facilitate concentration.

Psychologists agree that good concentration is also about:

- **Keeping it simple. The brain can only handle so much information before it becomes cluttered**
- **Performing in the now. This is probably the most important of all. Keep your focus on what needs to occur now.**

2.4.2 A DEEPER UNDERSTANDING OF HOW PEOPLE LEARN

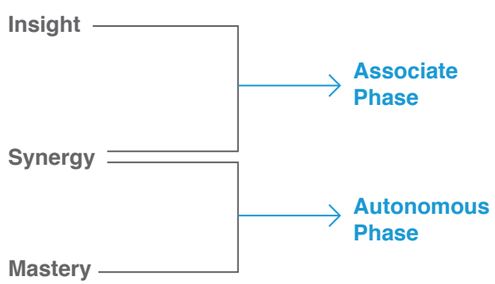
THE LEARNING CYCLE

Learning occurs when we become aware of a change in our experience while performing a skill. It is a simple statement but one that we need to keep referring back to. Awareness is the key. We need to not only teach the steps but also educate our guests how to learn and what to be aware of, which often starts by recognising what and how we are performing.

It is well documented that learning occurs in sequential steps. Each phase is as important as the next. Understanding these steps and, more importantly, recognising when they occur and when it is time to move on is in itself a skill that most instructors take years to develop. All too often we rattle through the progression without observing whether true learning has occurred or whether our guest has just achieved success by chance. By understanding the learning process, we will be better prepared to teach an effective lesson.

In this part of the chapter we will cover many concepts that all give insights into the learning process. It is an art, not a science, and it will be up to you to use what you understand and apply that to create a true learning experience. This part of the chapter in combination with the development chart in 'Teaching Children' (7.3) will help you observe at what phase a child's learning is at.

2.4.3 THE LEARNING PHASES



2.4.4 COGNITIVE PHASE

The cognitive phase of learning is concerned with the learner developing an idea, image or concept of the entire skill to be learned. This image is really a patchwork of existing movement experiences, all collected from previous motor programs. This phase of learning includes perception and experimentation.

2.4.4A PERCEPTION

Learning a new skill starts with an idea that inspires. We might see a skill being performed and picture ourself doing it. Likewise, imagine how that might feel, or at least perceive how we can benefit from performing it that way. That initial vision is very important, as it is this picture that starts the learning process. The student recognises the skills involved in parts and tries to associate them with what they already know.

In this part of the cognitive phase, the guest will need to understand what is new, why and how to do it.

INSTRUCTOR'S ROLE

At this phase we need to keep it simple. Give clear demonstrations and impart the least amount of technical information to achieve a result.

2.4.4B EXPERIMENTATION

In this part they will learn by playing and experimenting. It is their turn to test their perception of what has been presented. They need to exaggerate the movements. They should experiment with the degree of effort - do too much, do too little, notice how each differs and how these movements affect board performance. In order to try different skills they will be forced to move in ways that are not familiar so their comfort levels will be tested.

INSTRUCTOR'S ROLE

Our role turns into a facilitator. Set guidelines such as where to ride, the correct terrain, shape of turn, speed of turn or movements desired. Discuss how much or little to move while keeping feedback to a minimum. Motivate and reassure them to take a risk and discover new sensations. Ensure they understand that experimenting and exaggerating may feel 'funky' or less dynamic at first, before it feels better

They may lose balance or fall over before they find out how far they can go. We need to check for understanding, so let them discuss what they discovered and share this with the others in the group. This will engender a team psyche and they will be encouraged to help each other, redefine the focus and experiment again.

2.4.5 ASSOCIATE PHASE

This phase of learning is concerned with making the skill more fluent (though not yet automatic), as well as executing the correct hierarchical and sequential order of movements for the skill. This phase uses insight and starts to deal with synergy.

Errors of movement may involve such things as the wrong sequence to the parts of the movement (trying to turn the whole body before raising to re-centre), the occurrence of inappropriate movements in a sequence (leaning back at the end of the turn) or the wrong timing of the various movements in a sequence (up and down movement in a turn).

2.4.5A INSIGHT

Here the student starts to link or make connections. They will associate the movements made with how the board performs. You could say this is where the lights start to come on. Their skills are not refined so they will need to practise the skill in parts.

INSTRUCTOR'S ROLE

The key here is to loop back and forth from the experimental phase, discuss what has been discovered and give more accurate feedback. Set new parameters of what is desired.

Ride behind the guest and talk to them as they snowboard down.

e.g. "yes, good turn, no, yes, more edge", etc. Vary who leads and let them make the decisions as to the speed, radius, and terrain. They need to be more in control of the process. You are helping them to make informed decisions and increase their independence and confidence as snowboarders. Isolate a part of the movement and practise only that. Once that part can be performed then add that to the whole movement.

2.4.5B SYNERGY

This is where the movements become more natural and better coordination is shown. The skill can now be performed in differing snow conditions and steeper terrain. Although performance is not without thought, the skill is more comfortable.

Self-analysis also becomes a dominant form of feedback. Sadly, some riders will never progress past this stage.

INSTRUCTOR'S ROLE

And snow conditions. There should be repetition of similar movements working towards patterning. Lots of questioning can help the rider work towards an accurate self-analysis (i.e. how did that feel? etc)

2.4.6 AUTONOMOUS PHASE

The autonomous phase of learning is characterised by performance that becomes largely automatic and independent of the normal attention demands that accompany any motor performance. One problem that an instructor faces is when a student has reached this stage of learning but their technique is flawed. We have all seen students who have ridden with the same old mistakes for years.

To correct their technique, the rider will have to regress to the associate phase of learning and spend time feeling less comfortable before a change can be made, thus the autonomous phase includes some synergy and mastery.

2.4.6A MASTERY

Movements are now automatic i.e. they are performed instinctively. Once this level is achieved it is possible to concentrate on different tactics without concentrating on technique e.g. change a particular line through a mogul field.

INSTRUCTOR'S ROLE

Lots of mileage is needed. Push the speed, steepness and test out their comfort zone in varying snow conditions.

All the practice has been done and now it is time to perform.

Sports psychology comes into play. Teach your guest some tactics e.g. the student can perform good short turns so they can now learn to look for a good line in the bumps or trees. The skills have been so well trained that they can now concentrate on other things.

2.4.7 HOW LONG TO SPEND ON EACH PHASE?

To teach well, instructors need to have a good understanding of these learning phases. Utilising the information under 'instructor's role' outlined above will help. However, it is also important to note that there are other factors that the instructor needs to be aware of when moving through the learning phases, as these will greatly affect how much time is spent at each phase.

These factors include: arousal, mental practice, motivation, types of feedback, knowledge of performance (KP), knowledge of results (KR), plus the use of internal and external cues.

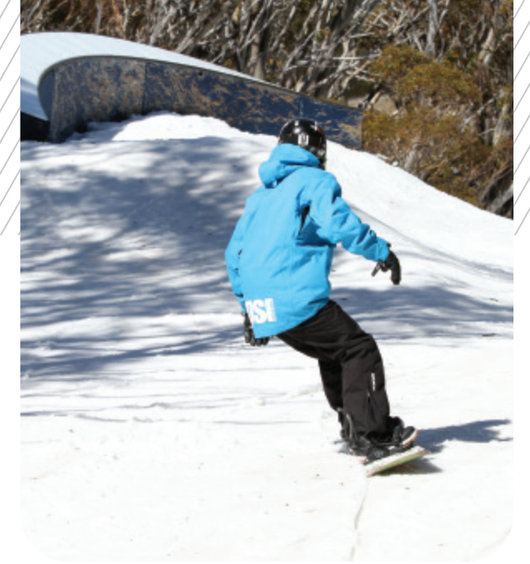
Remember, each individual learning experience will be influenced by these factors and people deal with each factor differently. This will greatly determine how much time is spent at each phase.

2.4.7A AROUSAL

Arousal refers to the state of the central nervous system as it receives and processes information. The arousal level of an individual varies from a very low point during deep sleep to very high levels associated with extreme excitement or anxiety.

For most activities, the optimal state of arousal needs to be of moderate intensity to guarantee maximum performance. The teaching segment, task or exercise that an instructor presents must be challenging enough to be interesting but not so difficult as to cause frustration (further readings see sport psychology 2.4.1.).

Research has shown that heightened arousal or stress levels can also have negative impacts on decision making which could lead to unsafe situations. The data shows that higher cortisol levels (stress) in males can lead to greater risk-taking behaviors resulting in a decrease in performance. Interestingly, a slightly elevated stress level for females resulted with an increase in performance, though a high level had the same decreased performance as men.



2.4.7B MENTAL PRACTISE

Mental practise can be defined as improvement brought about by thinking about a skill or watching someone else perform it. To study the effectiveness of mental practise, three subject groups are normally used. All three groups are first tested on the movement to be learned.

One group then physically practises the skill, the second group either watches someone else perform the skill or just thinks about it and the third group does nothing.

These three groups are then retested on the skill and scores are compared to their original test to see how much improvement took place. Although physical practise produces the best improvement, a combination of less physical practise and more mental practise produces improvements that are almost as great.

It is important to note that it is productive to have your students rehearse the movements before their turn. Mental practise is more effective if the learner has prior experience with the task. Research studies have also suggested that complex skill acquisition is enhanced if observation/imagery of the perfect task is performed just before going to sleep. (Popp, 2013).

2.4.7C MOTIVATION

Motivation refers to an inner drive, emotion or desire that causes a person to do something.

The primary force is a physical and psychological need to remain safe and healthy. The need to be accepted by others, especially their peers, is a great motivator. In particular, athletes are driven by the challenge to learn and display their new skills.

As a teacher, we can motivate through pep talks, rewards or punishments, but these techniques have little long-term success. To truly motivate we need to create a safe and fun environment where challenges not only excite but are also achievable. Here the student is not only rewarded by the praise of others but motivation is derived from within.

2.4.7D FEEDBACK

Feedback refers to the information a performer receives about the performance of a skill, either while they are performing it or after the skill is completed. Feedback can come from an external source (instructor or fellow student) or from an internal source (being Visual, Auditory Reading or Kinesthetic (V.A.R.K)).

Kinesthetic feedback is information that arises from sensory receptors other than the visual and auditory systems. It represents information that arises from a wide variety of sources such as the receptors of touch, stretch, pressure, balance (the inner ear), joints (detect how straight or bent a joint is) and muscle spindles (detect how quickly and how much the muscle is moved).

2.4.7E AWARENESS OF FEEDBACK

Every individual's sensory system is unique. This means that a certain explanation, demonstration or feeling that works for one student may not work for another. The process of developing the student's awareness requires you to give them several ways to feel and perform the skill or movement.

For example, if the board is too flat in steered turns, there are many ways to explain how to edge the board more. Ideas include roll the ankles and knees, feel the board bite or grip, using garlands, feel pressure in the muscles of the ankle joint to hold the board on edge or listen to the snow.

Ask probing questions to narrow in on the area that the student should be aware of e.g. which body parts do you use to edge the board? Which side is your best turn? What did you do differently to that side that made it feel better? Remember though that some students are just poor learners and it is our job to help them to learn.

2.4.7F KNOWLEDGE OF PERFORMANCE (KP)

Knowledge of Performance is the feedback that an individual receives about the actual performance or execution of movement.

KP is based upon feedback received during the performance of a skill and aids the individual to assess the correctness of their movements.

This type of feedback is stored in memory so that it can be used at a later time for movement evaluation. For example, a student attempts their first direction change, consciously rolls the board on edge while turning, but ends up railing and not turning. Next time they try a turn, they may remember that this amount of edging prevents turning.

2.4.7G KNOWLEDGE OF RESULTS (KR)

Knowledge of Results is the feedback information that an individual uses to assess whether the objective of the movement was successful. For example, linking more than two basic turns or an intermediate rider controlling the speed in short turns.

Successful KR (I.e. achieving the goal or objective of linking two turns or controlling the speed in short turns) is not necessarily related to successful KP .

(I.e. the goal may have been reached but that does not mean the turns were good quality turns).

2.4.8 USING INTERNAL AND EXTERNAL CUES

When a snowboarder is focusing on a new skill or reinforcing an old one, they have two ways of doing this. Internal focus and external focus.

Internal Focus is to concentrate on a specific body part in movement. “Rotate your leg in the hip socket,” “flex your hip,” “move your hips laterally at the top of the turn.”

External focus is to concentrate on the outcome of the movement. “Unscrew a jar lid with the soles of your foot,” “leave a 30cm track in the snow,” “feel like a rope around your waist is pulling your hips back,” “spray snow back up the hill.”

Can you relate to these two types of cues? Which one do you use most for clients? Do you use internal or external cues for yourself in training?

This highlights that focusing on the relationship your body has with the environment is very important in learning a skill. Focus on the outcome rather than the movement itself.

We can do our own test with a jump using an internal and external cue. First, think of flexing all your joints getting ready to jump. Then, think about extending through the ankles, knees and hips to Jump. Second, get a friend to hold a $50 note up high and try and jump as high as you can to reach it. Note the difference in height between the two.

Second test. Hold your arm out in front of you. Keeping your arm muscles strong and engaged, get a friend to try and push your arm down. Now hold you arm up again but this time think of a beam of energy coming out of your arm and extending far beyond your hand to a point in the distance. Get your friend to push down again while you focus on the beam of energy.

These tests highlight that focusing on the relationship your body has with the environment is very important in learning a skill. Focus on the outcome rather than the movement itself.

There have been many tests done on skills involving precision, efficiency, endurance, and strength. They all point to the conclusion that external cues outperform internal cues. There is even research that shows that internal cues can be detrimental in performace.

‘The Choke’. When we focus on the movement itself, it disrupts autonomic motor control processes that regulate coordinated movements. We interupt processes in our body that are designed to do this automatically.

So does this mean we should only be using external cues when teaching?

Snowboarding is an open sport meaning that there are many ways to achieve the same outcome. Therefore, focusing on the outcome is very important. However, riding is also something that does not come naturally to us. Throwing, jumping, running are all built into our system and have been programmed over thousands of years. Carving a turn isn’t. You can’t just tell a new rider to spray snow out to the side as they may not even realise a snowboard can do that. So when learning a new movement or in the early stages of snowboarding internal cues are very helpful in becoming aware of what we are doing. An external cue can then be used later to help increase the performance, efficiency and accuracy of the task.

Example for trying to teach the guest to edge earlier.

INTERNAL: Roll your ankles over to gain more edge grip at the start of the turn.

EXTERNAL: At the start of each turn show the base of your snowboard to somebody back up the hill.

SUMMARY

Helping our guests become better learners is really what our job is all about. Knowing whether a guest is truly aware of a change in their performance takes years of practice. To become proficient at doing this you will need to understand the different phases of learning and be aware of the individual factors that affect how long a guest will need to stay at each phase. You will need to facilitate all of this before true learning can occur.

CHAPTER 2 REVIEW

Teaching concepts

1. **Explain what is meant by experience centred teaching!**
2. **List the nine essentials?**
3. **Explain how you loop through or repeat the nine essentials?**
4. **Write two clever analogies to explain a basic turn.**
5. **Why is it always important to explain to your guests what, how and why you are doing something?**
6. **What are the three points of the movement analysis system?**
7. **List four ways to try and help break down analysis of the rider?**
8. **What are some none-skill related reasons for poor board performance?**
9. **Feedback needs to be based on which three principles.**
10. **Give a few reasons why you should not use the one at a time feedback method!**
11. **What is class handling?**
12. **What does V.A.R.K. stand for?**
13. **How do you find out your students preferred learning style?**
14. **What are the five teaching styles?**
15. **What are the five skills that can help with coaching and give an example of when these skills would come in handy while working in your school?**
16. **What are the three phases of learning?**
17. **These three phases of learning have five subsections, briefly describe the instructor’s role for each of them.**
18. **Explain what is Ideal Performance State (IPS)?**
19. **What is the difference between Whole and Part instruction?**

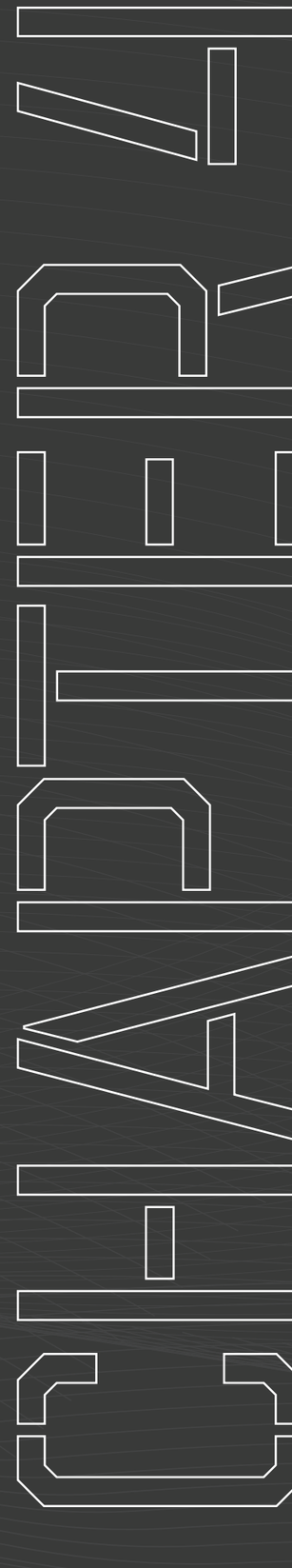
2.4.8

TEACHING CHILDREN

About this chapter

Teaching children to snowboard can be an incredibly rewarding experience. Kids can be very impressionable and their snowsports instructors can have a dramatic impact on how they enjoy their experience in the mountains. Giving them a fun, memorable experience can have a lasting effect and inspire them to become lifelong snowsport enthusiasts.

This chapter should be used in conjunction with the others in this manual to provide the information on how and what to teach. Use the information contained in this section to adjust your lesson to suit the specific needs of children.



CHAPTER THREE: Technical Concepts

SECTION 1

THE SKILLS OF SNOWBOARDING

3.1.1. A BASIC OVERVIEW OF THE SNOWBOARDING SKILLS:

1) **Stance - the way you stand on your board.**
2) **Rotary - the way you turn your body and board.**
3) **Edging - the way you tip the snowboard on edge.**
4) **Pressure Control - the ability to manage pressure to make turns and deal with changes in terrain and snow conditions to maintain balance.**

Snowboarding includes a collection of complex movements that must be coordinated to produce well-executed turns. It is crucial to be able to break riding down into easy-to-understand building blocks, known as the skills of snowboarding.

The body's central nervous system cannot take in and process all the information necessary to perform a complex skill on the first attempt. For example, in order for a person to learn how to do a somersault or hit a golf ball, the task must be broken down into parts. It takes time for the body to learn the skills that make up a sport.

Breaking riding down into the skills allows us to better:

- **Understand riding**
- **Learn riding**
- **Teach riding**
- **Analyse riding**
- **Change our riding**
- **Keep it simple for our guests to understand**

3.1.2. BLENDING THE SKILLS

Every turn or task in our progression requires an appropriate blend of these skills. If the skills are blended appropriately and performed well, balance is maintained. If the blend is incorrect, or if any of the individual skills are not performed effectively, riding becomes inefficient and maintaining balance is more difficult.

Achieving the appropriate amount of skill blending for a certain task will enable the rider to:

- **Turn across the hill (finish the turn) to control speed.**
- **Be more stable and balanced through turns.**
- **Ride more efficiently, creating a smoother and effortless motion.**
- **Perform more dynamic riding in different terrain and snow conditions with greater success.**

The blend of skills that a rider uses changes as they progress and improve.

Beginner riders must first focus on stance and being able to balance on an edge as the board slides. When they start turning, both rotary and edging skills are required. As they move to steeper slopes and higher speeds, developed edging skills and pressure control becomes more important.

When teaching snowboarding you will find yourself focusing on a variety of different body movements to achieve success in the individual skills. It is not until these skills are trained into the body and blended together, that true realisation of success can be recognized.

To help blend the skills, attention needs to be made to three key areas:

T.A.D.

- **Timing (when to initiate and complete the movements)**
- **Amount (the amount of movement made)**
- **Duration (how long the movements are made for)**

3.1.3. STANCE

Stance is the position in which a rider can most efficiently and effectively make all the movements that are needed to direct and control the board. The stance provides an ergonomic riding position, utilising both a skeletal and muscular structure. This anatomically correct stance reduces fatigue and allows for more efficient use of the other skills.

Stance can be heavily influenced by how the rider has set up their equipment.

(See equipment Chap. 7.2).

We look at stance in four planes of movement:

1) **Vertical - Up and down**
2) **Centred, Fore and Aft - Middle, nose and tail**
3) **Lateral - Heel edge/toe edge**
4) **Rotational - Anticipation**

It is important to understand that stance is not a static position, but rather, constantly changes to adapt to varying forces and terrain. This allows the rider to make movements to maintain and recover balance.

3.1.3A VERTICAL

- **A correct and efficient stance should be centred and the joints remain flexed so the muscles are able to extend and flex.**
- **Not so tall that all the joints are straight and stiff. Having the joints too straight or rigid can disrupt balance and make it harder to respond to variations in the snow.**
- **Not so flexed that the muscles work too hard to hold the rider up.**

3.1.3B CENTRED/ FORE AND AFT

- **When weight is distributed evenly on both feet the rider should be centred.**
- **Fore is when the pressure is applied on the front foot and/or nose of the board.**
- **Aft is when pressure is applied to the back foot and/ or tail of the board.**

3.1.3C LATERAL

- **From heel side to toe side, stance is inseparable from balance as there is nothing to hold the rider up if they lean too far.**
- **Balance is mainly towards the inside edge when turning.**
- **Hands are kept around the muscular core height and relaxed, resulting in better stability and balance. Front hand over the heel edge on the nose of the board and back hand over the toe edge on the tail of the board.**

3.1.3D ROTATIONAL

- Turning of the upper body to an anticipated position, facing the direction of travel assists with balancing the rider. This can also be described as having the sternum facing in a similar direction to the front foot.
- It allows the upper body to align with the lower body with the rider's stance angles (which are the angles their bindings are set to). Anticipation will naturally occur in line with these angles.
- Having the upper body anticipated in the direction of travel will help the rider easily see ahead and maintain a more 'ready' position for the upcoming terrain.
- Anticipation allows for alignment and natural flexion through the joints and helps in finishing the turns.

3.1.3E KEYS TO A CORRECT STANCE

Some important features that should generally be maintained:

Balance

- The eyes staying level and focused on the terrain ahead.
- Staying in balance requires constant adjustments. Flexing, extending, moving the shoulders and arms, shifting pressure from foot to foot as well as heel side to toe side.
- Keeping the upper body and mass over and between the feet. (Known as the base of support.)
- The reason for adopting an athletic body position with these features is so that we are ready for action.
- For effective balancing on a snowboard the rider also needs to be aware of the terrain and snow conditions ahead, as well as foresee the effects this will have on the board and body.

Lower back natural

- By gently pulling in with the stomach and tightening the gluteus muscles, the lower back and spine become rounded. This can also be described as tightening the 'muscular core' or slightly rolling the lower pelvis forward.
- This allows the spine and legs to absorb bumps and create stronger edge angles.
- If you stand with a stiff or arched lower back, you will inhibit the action of the large muscle groups that connect the legs to the pelvis. This restricts the body's ability to move and ride.

Horizontal eye line

- By keeping the eyes and head level, the rider can more accurately read the terrain ahead.
- The balancing organs in the inner ear can function more effectively when the head is kept stable and level with the horizon (equilibrium).
- Movements of the head both downward and side-to-side can disrupt balance, especially in poor visibility.

Arms away from body

- Balance is aided by having the front hand over the heel side edge on the nose of the board and the backhand over the toe side edge on the tail of the board.
- If the arms are in an unnatural or uncomfortable position, it can lead to the muscles in the upper body being tense and out of line with the lower body and board.
- Positioning of the arms also aids in the use of shoulder and upper body angulation when riding at higher levels and racing.

3.1.4. ROTARY

Rotary is the act of applying a turning or rotational force (torque) to the board using muscles in our body. This rotational force can be used to affect the direction we point our board or align our body to execute the other skills. The 'pivot point' is the point on the board around which it turns.

Rotational movements are movements around a central axis of the body.

Rotation allows us to initiate, control or finish a turn and vary the radius. Without rotation, the only way to change direction is to use the side cut of the board like a railed turn, which is far too limiting.

There are many ways we can apply a turning or rotational force to the board and at various stages in our riding we may be compelled to use all of these. There are pros and cons to each rotary

Each method has its pros and cons and these rotary movements include;

3.1.4A FULL BODY ROTATION

Full body rotation is the desired method of turning as it maintains a strong athletic position which aids balance and complements the use of other skills. It allows alignment and stacking of the joints and muscles in the body, reducing fatigue.

3.1.4B UPPER BODY ROTATION

The head, shoulders and torso initiate rotation. This helps the rider commit and move towards the turn but can result in longer response time for the lower body and board. It is important that the upper body also completes turns to enable the rider to move in the direction of travel. This optimises the lower body's performance.

3.1.4C LOWER BODY ROTATION

The lower body refers to the muscular core region, hips and legs. This aids in lower body steering and separation of the upper and lower body, with the upper body remaining static while the lower body turns from the core down. By rotating the lower body, the hips and legs will turn.

3.1.4D LEG ROTATION

To rotate the legs, the femur rotates in the hip socket. The movement is not powerful but can aid in steering and shaping of the turns.

3.1.4E COUNTER ROTATION

The upper body and lower body move in the opposite direction around the central axis. A twisting force known as 'torque', is built up in the core when this occurs. This can aid in quick direction changes of the board but can become tiring over time.

3.1.5. EDGING

Edging is the movement of the board from a flat base onto an edge. An increase in edge angle results in better grip on the snow. Over-edging or edging the board too abruptly will cause the board to chatter on the snow.

With no edging, turning is impossible. If the board is flat it does not matter how vigorously you rotate your body, the board will remain sliding straight down the fall line. The board has to be on edge for the snow to provide a force to push the rider through a turn.

Achieving the desired edge angle in snowboarding comes from an appropriate combination of the following areas:

3.1.5A INCLINATION

- **Inclination is when a rider leans their body or centre of mass (CoM) to the inside of a turn, or over the working edge.**
- **A degree of inclination is necessary for maintaining balance in any turn.**
- **The faster the turn, the more inclination is necessary to balance out the forces.**
- **A purely inclined turn is possible and will create a strong structure through skeletal stacking. Adjusting the edge angle and absorbing terrain, however, will be difficult as the rider will be in an extended position which limits flexion of the joints.**
- **A purely inclined turn can also be referred to as 'banking'. This takes the rider's CoM further away from their base of support (the board) to create the edge angle. Balance is also affected due to the movement of the CoM to the inside of the turn, reducing the ability to make recoveries. The body should maintain a more vertical and angulated position in order to make adjustments and recoveries.**
- **It is still possible to incline in an angulated position. This often happens when a rider rushes into a flexed position early in the initiation phase of the turn and is not progressive with their edging skills.**

3.1.5B ANGULATION

Angulation is the creation of angles through flexion of the ankle, knees, hips and spine to fine tune the edge angle without affecting the inclination of the CoM.

The body will flex in a different way on the heel side compared to the toe side, to create and use angulation correctly.

Ankles

The ankles will flex to control and fine tune the edge angle. When on the heel edge, lifting up the balls of the feet, toe edge or toe strap will flex the ankle and thus increase the edge angle; this is known as 'dorsi' flexion. This is limited with the resistance of the boots and straps.

When on the toe edge, lifting up the heels, heel edge and levering on the ankle strap can increase the edge angle, this is known as 'planter' flexion. In steered or carved turns it is important that the ankle is kept strong so fine planter flexion movements can create and adjust the edge angle. When the terrain is bumpy or variable the ankles can be flexed to enable greater absorption.

Knees

By flexing the knee joints we can complement ankle movements and achieve a greater edge angle while still remaining balanced.

On the toe side, the knees can be flexed forward, rolling into the turn and slope, gaining more leverage on the ankle straps and assisting in a stronger edge. When the terrain is bumpy or variable, the knees, in conjunction with the ankles can be flexed to enable greater absorption.

On the heel side, flexing the knees with the hips and spine, can aid in moving the rider's CoM correctly to the inside of the turn.

Hips

Hip angulation is powerful but does not allow for quick fine tuning of the edge angle.

On the heel side, hip angulation is achieved by moving the hips to the inside of the turn. As our knees do not flex backwards, we do not have the flexion of the knee available to us on the heel side edge to aid angulation. For this reason, the hips move further inside the turn as compared to the toe side edge.

On the toe side, the hips flex to accommodate the amount of lower body edging and upper body movement into the turn. It is important not to push the hips too far forward on the toe side edge as this will create arching of the lower back resulting in increased difficulty of absorbing terrain.

In bumpy terrain there is greater flex in the hips to balance and stabilise the upper body.

Spine

Angulation of the spine involves keeping the upper body over the board and balanced throughout each turn. The spine can also help in moving the upper body through the turn. The spine can aid in separation and projection, while the lower body angulates to the inside of the turn.

On the heel side, the lower and mid spine are rolled to keep the head and shoulders forward.

The lower back and spine should remain rounded. This will enable angulation and pressure control.

On the toe side, it is important not to arch the spine and stick the belly out, as this will inhibit edging, rotation and pressure control.

3.1.5
SECTION 1 The Skills of Snowboarding
CHAPTER 3 Technical Concepts

3.1.5C PROGRESSIVE EDGING

Progressive edging is when the angle between the base of the board and the snow surface increases gradually throughout the turn. This is an essential component of shaped turns at all speeds.

The rider needs to blend appropriate amounts of inclination and angulation to match the desired turn shape, speed and slope of the terrain. If the board is over-edged early in the turn, the rider will have difficulty completing the turn and controlling their speed.

The greatest edge angle will be as the turn reaches its completion. This is when the forces (centripetal, centrifugal) are greatest.

Long/ carved turns use more inclination and angulation from larger joints (knees, hips and spine) progressively building the edge.

During a short turn, the ankles and knees are more active in order to edge the board quicker.

3.1.5D TORSIONAL FLEX

There are two techniques for performing torsional flex:

1) **Twist**
2) **Foot pedalling**

Torsional flex facilitates edging, by twisting the snowboard along its length. It works by maintaining or increasing the friction/edge angle at one end of the snowboard and decreasing the edge angle and friction at the other end. For example; if a rider was on their heel side and lifted the toe edge of their back foot up and pressed down on the ball of the leading foot, dropping the toe edge, the edge on the nose of the board would lose grip and slip down the hill, as the edge on the back of the board would increase its grip and hold. This is 'twist.'

This form of torsional flex can work well with beginner riders and equipment designed to aid these movements such as rocker and dual camber boards. Also, with riders that are using rotation but the snowboard is not responding to their movements.

Another subtle form of torsional flex is known as 'foot pedalling' where the leading foot drops or lifts the edge and is closely followed by the back foot. This form of torsional flex allows for more fluent movements on and off the edges of the board.

3.1.6 PRESSURE CONTROL

Pressure control is an umbrella term describing the movements made to manage, control and manipulate the changing pressures involved in snowboarding so as to avoid the disruption of balance.

Pressure changes in snowboarding can come from two sources:

1) **Movements made by the rider (3.1.6-1)**
2) **Variations in terrain and snow conditions (3.1.6-2)**

3.1.6-1. MOVEMENTS MADE BY THE RIDER

A snowboarder can adjust their CoM in relation to their board, or use muscular effort to move toward the snow to obtain a desired reaction.

These movements include:

- **Up un-weighting**
- **Down un-weighting**
- **Extension/retraction**
- **Leverage**
- **Weight transfer**
- **Dynamic skill blending**
- **Controlled muscle flexion/absorption**

3.1.6-1A UP UN-WEIGHTING (VERTICAL)

Refers to the movement made by the rider as they extend from the completion of a turn and move to the initiation phase of the next turn. There will be a sensation of feeling light between the turns. This occurs when they reduce the snow contact and thus lessen the force between the snow and board. This coincides with a decrease in edge angle and a flattening of the board thus making the turn initiation easier.

3.1.6-1B DOWN UN-WEIGHTING (VERTICAL)

Refers to the movement a rider makes to quickly lower their CoM by flexing the ankles, knees, hips and spine to get the same desired reaction of reducing the edge angle and pressure between the board and the snow. The rider's muscular core is the primary muscle group used to lower the CoM during the transition phase of the turn. The rider's CoM will rise slightly through the execution phase of the turn as the lower body is extended to steer the board and rider in the desired direction.

3.1.6-1C EXTENSION/RETRACTION

Refers to the rider lowering their CoM and maintaining a constant height above the snow. The rider's muscular core is key to enable separation of the upper and lower body during the turns. The muscular core and legs are used to extend and build pressure on the board and edge during the execution and completion phases of the turn and the retraction is used to release or control the pressure during the transition and initiation phases ofthe turn.

3.1.6-1D LEVERAGE (FORE AND AFT)

Refers to the fore and aft movements a rider makes to control pressure along the base of their board to gain the best benefit from the board's design. If you shift weight fore (to the front of the board), the tip will engage (creating more pressure) and the board will bend more. This causes the board to turn more quickly. If you shift body weight aft (to the back of the board) the tail of the board will grip, creating more pressure and will aid in completing the turn. If pressure is shifted too far back on the board, the turn will straighten and the board will pick up speed down the hill.

3.1.6-1E WEIGHT TRANSFER (LATERAL)

Even when a guest first learns to turn, they transfer weight from edge to edge. Most riders do this to maintain balance whilst turning. The movements made to adjust the CoM in relation to the working edge are considered as controlling pressure, even though angulation also relates to edging.

You need inclination in all turns to keep the CoM inside the turn and balanced over the working edge. Angulation is then required to maintain balance through the turns.

3.1.6-1F DYNAMIC SKILL BLENDING

If a rider blends together the four skills making a direction change, pressure will build up under the board. Through a combination of 'dynamic skill blending' and higher speeds the pressure can be built up to a point where the rider will need to control it towards the completion phase of each turn.

A simple look at the forces at play in a snowboard turn can help us understand this.

In a round shaped turn, the pressure increases automatically as you travel through the turn.

How does this happen? The centripetal force is the force from the snow that pushes the rider around a turn.

As a result of the centripetal force pushing against the bottom of the board, the rider has the feeling of being forced to the outside of the turn and off the inside edge of the board (we call this feeling centrifugal force even though it is not a proper force).

As the snowboard travels through the turn, both gravity (which pulls you down the hill) and the centrifugal force begin to line up. Then, at the bottom of the turn they line up perfectly to produce the most pressure against the board (for more detail refer to The Skier's Edge, LeMaster, 1999, p 37-38).

The pressure naturally increases through a steered or carved turn. Assuming carving is maintained, the two factors that can change the magnitude of this pressure during a turn are speed and turn radius (see physics).

- **If you go faster the amount of pressure will be greater.**
- **If you make a shorter radius turn at the same speed the amount of pressure also increases.**

3.1.6-1G CONTROLLED MUSCLE FLEXION/ABSORPTION

Controlled muscle flexion is a way of controlling the changes you feel between the snow and your board during a turn.

As the board travels into and out of the fall line, the rider flexes a little and uses controlled muscle contractions to ensure the pressure on the edge of the board increases smoothly, not abruptly. This enables the rider to maintain edge control and steer the board.

Building pressure under the board in a pure carved turn is vital to make the board bend. Resisting the centrifugal force by using isometric contractions of the leg muscles as well as not allowing the legs to collapse with the increased pressure of the turn, will further increase the pressure under the board.

Absorption

Passive or active are movements made when riders need to control an increase or a decrease in pressure.

Passive - is where the rider simply relaxes the muscles in the legs and muscular core. The body and legs will flex a little as a result of the external forces, such as a bump or a turn.

E.g. In bumps the CoM and rider may rise and sink with the contour of the terrain.

Active - is controlled eccentric and concentric muscle contractions, where the muscular core and legs flex and extend to control an increase or a decrease in pressure when riding.

E.g. In bumps the rider's CoM and upper body will remain at the same height from the snow as the lower body flexes and extends to maintain surface contact and pressure control.

3.1.6-2 VARIATIONS IN TERRAIN AND SNOW CONDITIONS

There are considerable pressure changes acting on a snowboarder when riding in moguls or undulating terrain beyond a certain speed. A large range of active retraction and extension as well as subtle fore/ aft movements are required to absorb the bumps and maintain balance. Absorption is a controlled eccentric contraction as the muscles lengthen and the joint flexes.

Hitting a roller at speed (like in a snowboard-cross course) is another example of controlling pressures from variations in terrain. As you roll over the feature, it can make you feel light for a moment as you lose contact with the snow, effectively un-weighting the board (i.e. removing the force that is reacting between the board and the snow).

Leverage (fore/ aft) is also used to handle sudden pressure changes, such as riding from the groomed into powder or crud and vice versa. Riding from groomed into powder, the board is pushed ahead to avoid falling forward when the board suddenly slows down as it hits the powder. This is quite different to leaning back.

SUMMARY

It is important to understand the individual skills and how they are blended appropriately for different turns, terrain and snow conditions.

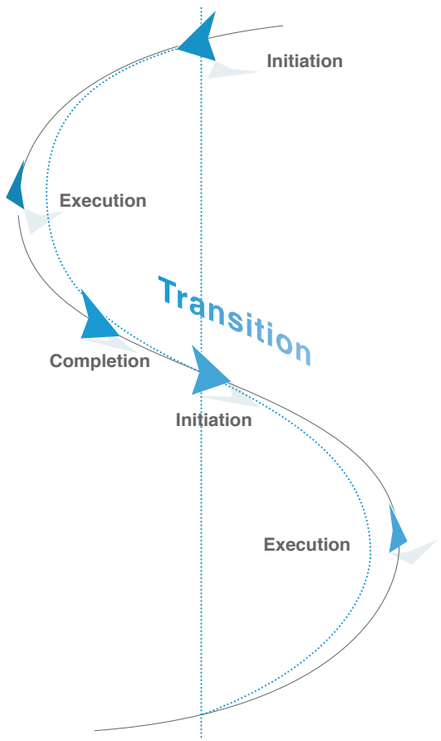
Within the whole range of turns there are examples where one of the skills is emphasised less or even removed all together. For example:

- **In deep powder, the skill of edging plays a lesser role.**
- **Riding slowly requires less pressure control, as the subtle changes in the force between the board and the snow throughout the turn is less.**
- **Railing is performed without applying a rotational force to the board, though the muscles in the core need to work harder to help stabilise the body and therefore maintain balance.**

3.1.7 PHASES OF A TURN

It is vital to have an intricate knowledge of all four skills and how the body moves to attain them. To piece these individual movements together into round flowing turns however, we must understand what movements are required at each 'phase' of the turn. These movements can be slightly altered to adjust the blend of the skills, therefore changing the desired performance of the board on the snow.

In this section of the chapter we will study linked turns by breaking them down into easy to understand sections or 'phases'. Linked turns are arcs made on the snow in the rough shape of two semi circles or the letter 'S'. Turns are made to control speed while descending down a slope and to change direction of travel. Each individual turn has an initiation or starting point, execution (middle) and completion to the turn. To link the arcs together, these individual turns need to be connected. Joining the completion of one turn with the initiation of the next is called the transition or preparation.



3.1.7A INITIATION

In this phase we begin with CoM inclining towards the inside of the turn and on to the working edge. The snowboard is put on its edge and must be edged first to perform its function. The articulation of our lower joints begins in the initiation phase. The initiation establishes the 'steering angle' (see 3.4.5d).

3.1.7B EXECUTION/ MIDDLE

In the execution phase or middle of the turn, the snowboard is guided in the direction you choose. This is achieved through flexion of the ankles, knees, hips and spine to varying degrees and rotation of the body. Being as centred as possible will allow for maximum control. Gradual edging and pressure control before the fall line will help the board perform more effectively through to the end of the turn.

3.1.7C COMPLETION

In the completion phase turn, shape is the important factor. All our joints are flexed and we have the maximum build-up of pressure that is achieved by edging and flexing gradually throughout the turn. Our body is structurally aligned, our lower joints are flexed and our upper body is balanced.

3.1.7D TRANSITION / PREPARATION

At the beginner level, the skills of the rider and tasks are not yet blended. This will result in the rider being more static before attempting the movements. This is known as the 'preparation' phase.

As the rider develops and progresses there is no time to be static between turns and movements and thus the preparation phase becomes the 'transition' phase.

In this phase we rise up allowing all the joints to align. We move the CoM forward and over the board to re-centre for the new turn.

We re-centre in this phase and between each turn to give the rider a strong platform to work from. The CoM should be moved over the top of the board. If the stance is not aligned in this phase it will weaken during the other phases of the turn.

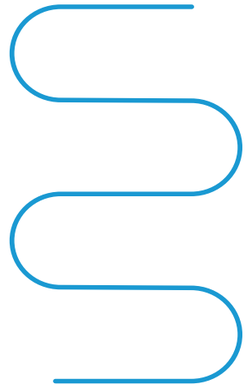
Re-centring is key to a powerful and successful turn as is a continuous flexion of the joints throughout the whole turn to build pressure.

FINISHING TURNS

There are two main styles of turn shape a rider can use to finish their turns for speed control and balance. Finishing turns are important for all snowboarders as it keeps the rider in control and allows for rhythm and flow down the mountain.

Closed turns

Closed turns are made when the rider completes the turn with the snowboard across or perpendicular to the fall line. For beginner riders, finishing the turn across the fall line allows for maximum speed control and maintenance of grip on the edge on the snow. Closed turns also work well on steep slopes.



Open turns

Open turns are when the nose of the board still maintains an angle down the fall line. It is still possible to finish the turns and maintain constant speed and control if the rider uses the skill correctly. By edging the board earlier and steering throughout the turn, the turn can be shaped and the speed controlled. Linking the turns together with a smooth transition will aid in rhythm and allow the rider to make turns more quickly, thus helping in speed control.

CHAPTER THREE: Technical Concepts

SECTION TWO:

THE PERFORMANCE MODEL

Student types (beginner, new rider, intermediate and advanced) can be separated into five distinct performance expectations when turning. These performance expectations are aligned with the APSI progression.

Board Performance

- **Skidded turns**
- **Railed turns**
- **Steered turns**
- **Carved turns**
- **Pure Carved turns**

The 'Performance Model' is used to explain what movements are needed at each phase of the turn and for each student type. There are five distinct performances a rider uses to change their direction as outlined above. Although the performances of skidding and railing can be useful in certain situations, they are not the most desirable outcome of a student in the Australian Teaching System. Therefore, below we have given descriptions of the skidded and railed turns but would like you to focus more on the desirable performances of steering, carving and pure carving.

3.2.1. SKIDDED TURNS

Performed by a lot of inexperienced riders with too little edge angle, skidding, is sometimes considered and referred to as a negative term. Skidding is the snowboard sliding sideways rather than in an arc in the direction of the desired turn as compared with the expected board performance for that particular turn. As the snowboard slides sideways, the tail of the board will take a different path than the nose.

Skidding may also be used as a tactical performance in certain riding situations, for example; skidding may be taught to riders wanting to navigate a bump field or the steeps. Riders can adjust their line by skidding down to a more appropriate place to turn. In the terrain-park, riders can use skidding to re-adjust their line or speed in order to better set up for a trick.

3.2.2. RAILED TURNS

In a railed turn the board is tilted and locked onto the edge for the duration of the turn, with zero skidding. The tail of the board follows the exact path of the nose while the board cuts a narrow groove in the snow. The side-cut and angle of the edge determines the radius of the turn. Railing is used as an exercise that precedes pure carving; it is a useful tool to teach guests about using the board's side-cut and design.

Railing can also be used to explain over-edging the board at slower speeds or turns used by inexperienced riders trying to pure carve.

3.2.3. STEERED TURNS

Steering: is the ability to guide the snowboard through smooth, round turns.

The turn is created by appropriately blending all four skills together, but there is a strong emphasis on rotation with angulation. Steered turns are not the same as skidded due to the tail of the board following the same path as the nose of the board. The turn has symmetry and the track left in the snow is often no wider than the board itself.

Transition (Rise to re-centre)

Seamlessly connecting the completion of one turn to the initiation of the next is called the transition. At slower speeds the transition is longer due to the completion of the turn being finished across the hill to aid in speed control. Re-centring is also predominantly an extension movement (up and over) which takes a longer period of time. The extension of the body causes the edge to fatten; by raising their CoM the rider can re-centre their balance which enables them to move forward and towards the centre of the next turn. The angle of travel between the CoM and the path of the board is only slight.

Initiation

- **The rider has risen to a taller stance.**
- **An earlier edge change occurs by a definite flattening stage between turns.**
- **The steering angle is created by full body rotation towards the fall line.**

Execution

- **Constant rotational effort is needed.**
- **Gradual tipping of the board creates good edge hold and continues to give the board direction throughout the turn. This is done by progressively angulating through the turns.**
- **The edging creates a platform on which to balance against.**
- **Blending these skills will create a balanced position where the CoM is slightly to the inside of the turn.**

Completion

- **Turns are finished in a lower (flexed) position that is balanced over the board.**
- **Once the rider has controlled their speed and completed the turn, the edge is then used to create a platform to grip the snow and move into the next phase.**

3.2.4. CARVED TURNS

Carving: involves more speed, more edge angle and therefore, a stronger edge hold. Carving taps into the side cut and snowboard design to help with direction change but also relies on a strong edging and rotational effort from the core and legs to guide the board. The tail of the board follows the path of the nose and the track will be no wider than 10cm from beginning to end.

Transition (Extend and cross-over)

The CoM will move forward and cross-over the board in the transition phase as opposed to a vertical extension resulting in moving the rider forward and towards the centre of the next turn. This directional movement forward and across the board achieves a higher edge angle early in the turn and sets the body up for the appropriate amount of inclination through the middle of the turn. The angle of travel between the CoM and the path of the board is more direct.

Initiation

- **The rider extends their ankles, knees, hips and spine while projecting their CoM forward and across their board.**
- **The edge is engaged cleanly and early in the turn as a result of this cross-over movement.**
- **Steering angle is created by using full body rotation as well as tapping into the board's local steering angle. Full body rotation will twist the board towards the fall line; creating an early edge will allow the board to bend thus tapping into the board's local steering angle.**

Execution

- **Constant rotational effort along with strong progressive angulation is needed. The turning effort is slightly more strenuous due to a higher edge angle.**
- **Earlier tipping of the board and an increased speed creates a stronger platform on which to balance.**
- **Both of these factors come together allowing a greater inclination of the rider where the CoM is further to the inside of the turn in comparison to steering.**

Completion

- **Turns are finished in a low (flexed) position that is balanced.**
- **Once the rider has controlled their speed, rotation stops as the edge is used to create a platform to grip the snow and move into the next phase.**

3.2.5. PURE CARVED TURNS

Pure Carving: is where the tail of the board follows the exact path as the nose, allowing the board to leave a narrow groove in the snow with zero skidding. The rider obtains the desired turn size through using the side cut of the board and by manipulating the external forces to get the board to bend i.e. 'working the board'.

Transition (Active cross-over)

The transition utilises an active cross-over movement, muscular effort is used to control the path of the CoM as it moves forward and towards the centre of the next turn. A lower and more direct movement across the board is used for controlling high pressures built from the previous turn. It also sets up the body for higher edge angles and increased inclination through both the initiation and execution of the next turn. The angle of travel between the CoM and the path of the board is most direct.

Initiation

- **The rider actively crosses-over their board in a direct path more towards the execution of the next turn.**
- **The edge is instantly engaged early in the turn as a result of this cross-over movement.**
- **The steering angle is created through the side cut of the board and some early fore pressure.**

Execution

- **Some degree of separation is needed to enable the upper body to face in the direction of travel. This separation is created via the board's design as well as working the lower body and legs against a stable upper body.**
- **Earlier and greater tipping of the board due to increased speed, creates a very strong platform on which to balance against, which also needs increased inclination.**
- **These factors come together allowing a greater inclination of the rider where the CoM is farthest to the inside of the turn in comparison to steering and carving.**

Completion

- **Turns are finished in a balanced position.**

  Strong edging is used to create a platform to grip the snow and move into the next phase.
- **The turn completion occurs higher or earlier in the turn than previous performance levels as speed control is less of a priority.**

CHAPTER THREE: Technical Concepts

SECTION THREE:

BASIC ANATOMY, PHYSIOLOGY AND SNOWBOARDING BIOMECHANICS

This section of the manual will help provide background information on the human body as well as how the muscles and skeleton function as a system to create balanced movement in snowboarding. To both teach and ride effectively, it is important to understand the capabilities of the human body relative to movement.

To help you gain a better grasp on the human body we will look at 3 distinct areas:

1) **Anatomy – takes a look at the structures of the human body and what it is made up of.**
2) **Physiology - is the study of how the body works and what it can do.**
3) **Snowboarding Biomechanics - is the study of how to move your body into the best position to make and deal with the forces that we encounter in snowboarding.**

3.3.1. ANATOMICAL DIRECTIONAL TERMS

Medial: toward the midline of the body

Lateral: toward the outside of the body

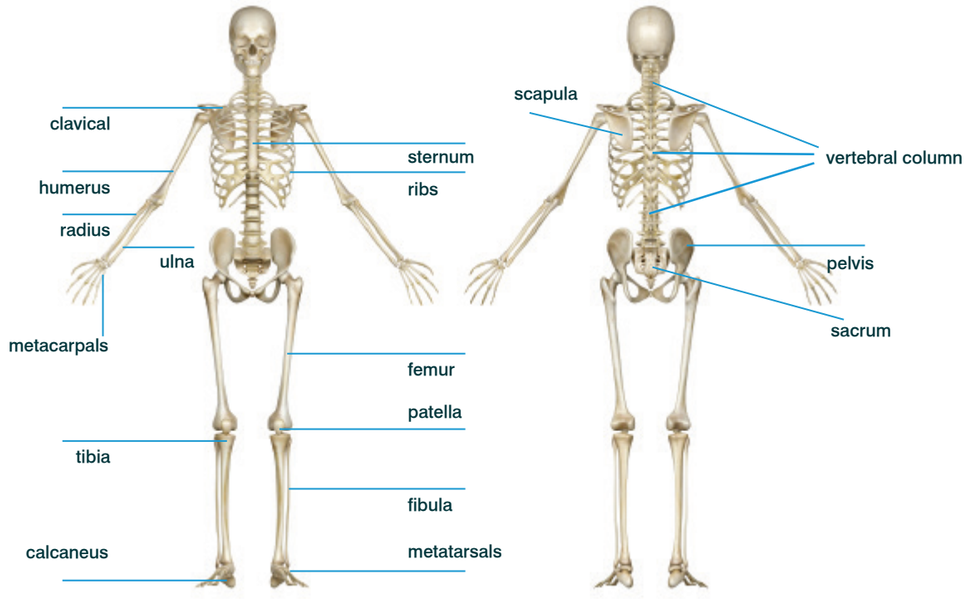
Anterior: to the front of the body

Posterior: to the back of the body.

3.3.2. THE MUSCULOSKELETAL SYSTEM

The musculoskeletal system consists of the bones, muscles and their tendons, joints and ligaments.

- **Bones:** the rigid structures that constitute the human skeleton.
- **Muscles:** connective tissue structures with the ability to contract, thereby creating movement and generating the force required to move bones and do work.
- **Joints:** where two (or more) bones come together, also called an articulation.
- **Tendons:** the non-contracting part of the muscle that connects muscle to bone.
- **Ligaments:** connective tissue that connects bone to bone.



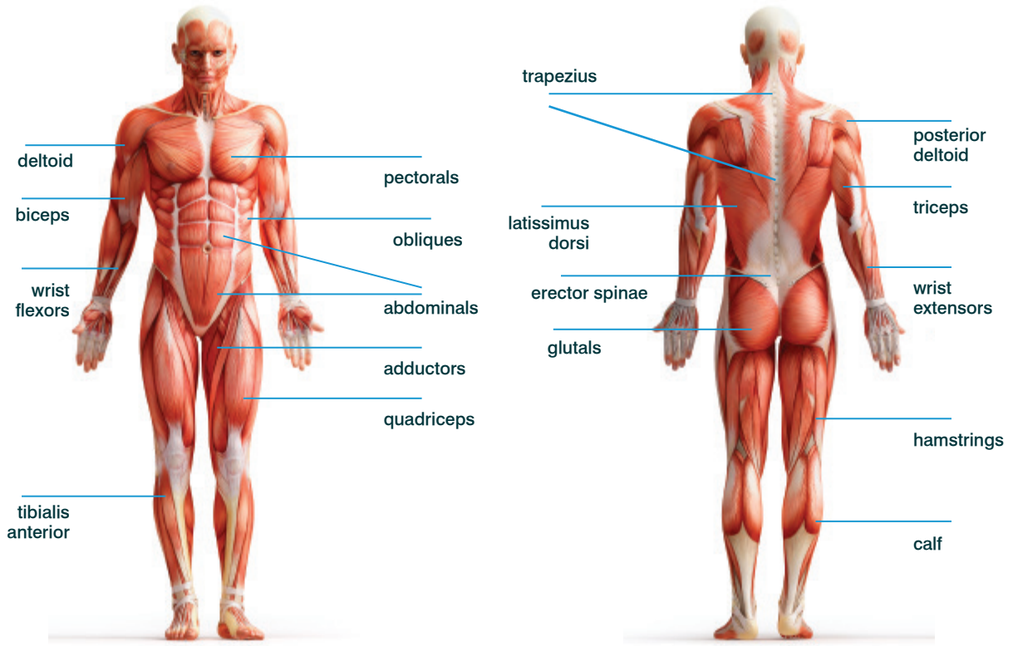
3.3.3. THE HUMAN SKELETON

The skeleton acts as a scaffold by providing support and protection for the soft tissues that make up the rest of the body. The skeletal system also provides attachment points for muscles to allow movements at the joints.

The main bones in the skeleton are shown in the diagrams above from both the anterior and posterior aspects.

3.3.4. MUSCLES

The function of muscles is to produce force and cause motion. The main muscles/muscle groups of the body are outlined in the following diagrams:



Most muscles function in pairs to produce movement. Muscles can only pull, they cannot push. Having a joint controlled by just one muscle would cause movement issues. If this were the case, as soon as the muscle was to contract and pull on a bone, there would be no way to move that bone back again. By having muscles function in pairs, we alleviate this problem. We refer to these muscles as antagonistic pairs.

A good example of this is in our upper leg. The hamstring contracts to flex the knee joint while the Quadriceps (its antagonistic pair) relaxes. To extend the leg back again the Quadriceps contracts while the Hamstring relaxes.

Hamstrings in Action

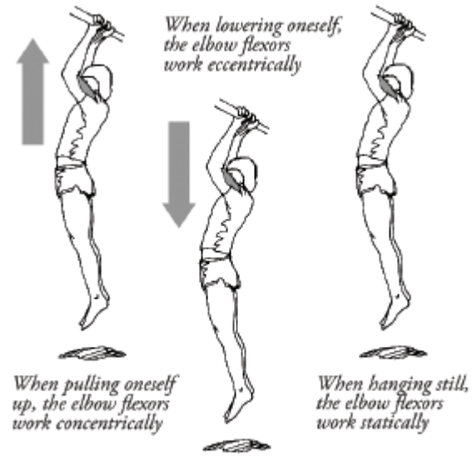
3.3.4A. TYPES OF MUSCULAR CONTRACTIONS

Muscles do the physical work of the human body. They work with the skeletal system to produce movement, just as a car's engine combines with the axles and wheels to produce movement. Muscles can either contract or relax.

Contractions of the muscle do not always produce a movement. Sometimes they are used to soften or control a movement in the opposite direction to which the muscle usually tightens. Here are three different types of contractions and the movement they produce:

- **Concentric contraction – when a muscle performs work by getting shorter (e.g. using the biceps to lift a weight by bending the elbow).**
- **Eccentric contraction – when a muscle performs work while getting longer (e.g. using the biceps to slowly lower an object by extending the elbow).**
- **Isometric (static) contraction – when a muscle performs work while staying the same length. There is no movement produced at the joint (e.g. when body builders tense their muscles while holding a pose).**

We unconsciously use isometric contractions to stabilise the joints and maintain balance in riding. This is one reason why most new riders are so tired on their first day and complain of "muscles they didn't even know they had".



3.3.4B. MUSCULAR CORE

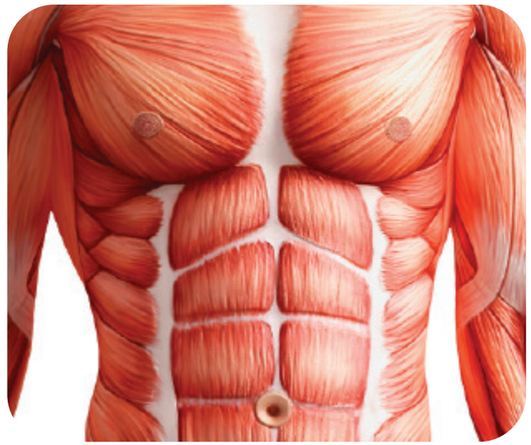
Core strength originates form a large variety of muscles.

The three main muscle groups are:

1) **Abdominals region**
2) **Lower spinal muscular regions**
3) **Hip muscles**

A strong muscular core helps to support the spine and stabilise the upper body. It helps improve leg strength and the ability for the rider to balance and perform throughout their riding. It is the main muscle group used in maintaining and anticipating in the upper body and is critical in separation of the upper and lower body. Core strength allows the ankles, knees, hips and spine to flex and extend and is vital for riding variable terrain.

The muscular core is used throughout riding and has a content role to play especially in freestyle with manoeuvres such as board slides and spins.



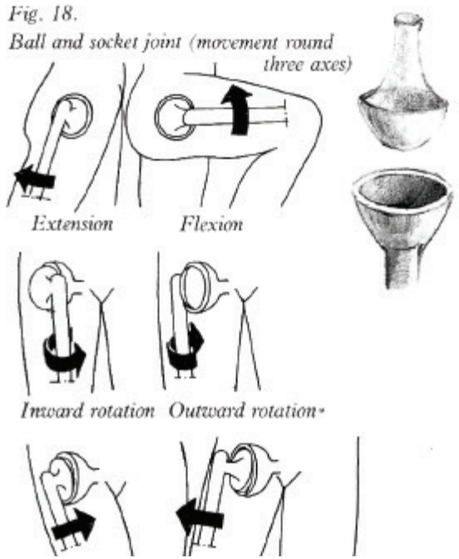
3.3.5. JOINTS

Every bone-to-bone connection on the body occurs at a joint. These bones are held together and in place at the joint by fibrous tissues called ligaments. There are several types of joints in the human skeleton that enable different ranges and planes of movement:

3.3.5A. TYPES OF JOINTS

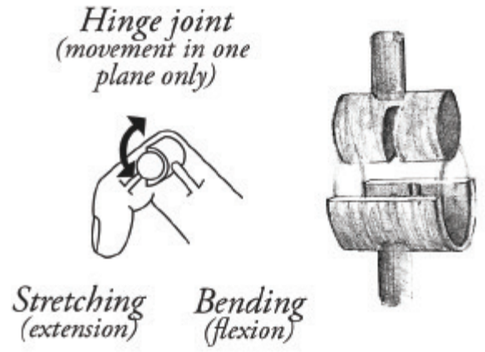
Ball and socket joint (pelvis, shoulder)

The ball-and-socket joint allows the most movement of all the joints. One bone (such as the femur) has a ball-like knob at the end of it. This knob fits into a cup-like space on the other side.



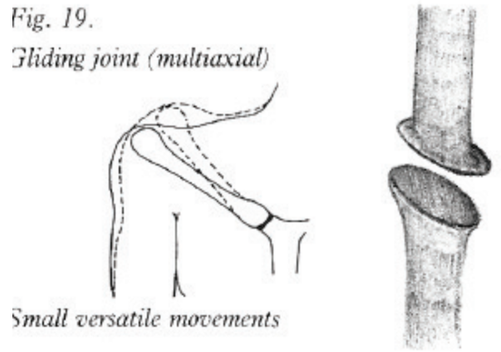
Hinge joint (elbow, knee, ankle)

Hinge joints allow bones to move back and forth (such as in the elbow and knee). It allows the bones to move like a hinge in a door.



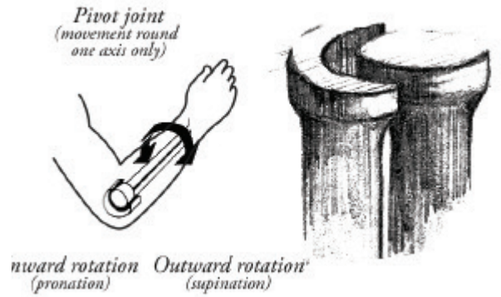
Sliding joint (vertebrae, tarsals, carpals)

The sliding joint is found in the vertebral column and allows small sliding movements. The vertebrae have pads of cartilage between them and the bones slide over these pads. This is what makes the spine so flexible.



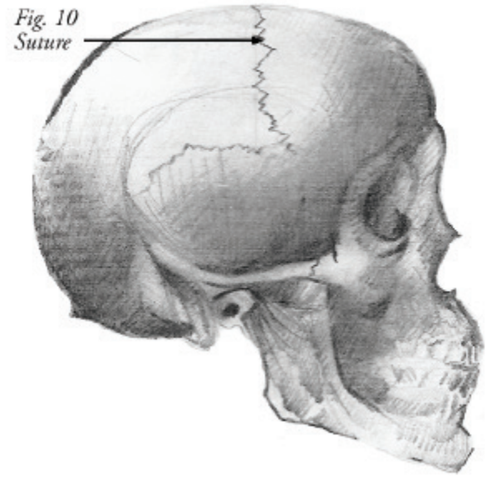
Pivot joint (forearm/radius head)

The pivot joint allows movement from side to side. Your forearm can move at the elbow to lift objects via the hinge. It can also rotate by using the pivot joint between the radius and ulnar heads.



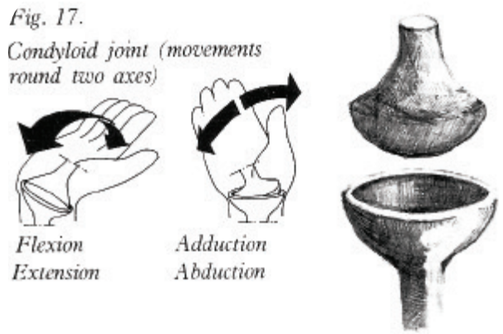
Fixed joint or suture (joints in skull)

This is the one joint that does not allow any movement at all. Interestingly, when babies are born their skull bones are not joined together yet and this soft spot (fontanel) is actually a gap. The bones quickly grow together to protect the brain.



Condyloid Joint

Joint allowing movement around two axis such as the wrist joint.



3.3.5B. TYPES OF JOINT MOVEMENTS:

Flexion: Bending parts at a joint so that the angle between them decreases and the parts come closer together (bending the leg at the knee). Similar to lowering your skiing stance.

Extension: Straightening parts at a joint so that the angle between them increases and the parts move farther apart (straightening the leg at the knee). Similar to when your skiing stance gets taller.

Abduction: Moving a part away from the midline (lifting the leg away from the body to form an angle with the side of the body). This is a movement that helps contribute to hip angulation.

Adduction: Moving a part toward the midline (returning the leg from being away from the body to align with the body). When we roll our flexed leg inwards to gain knee angulation we are adducting the upper leg.

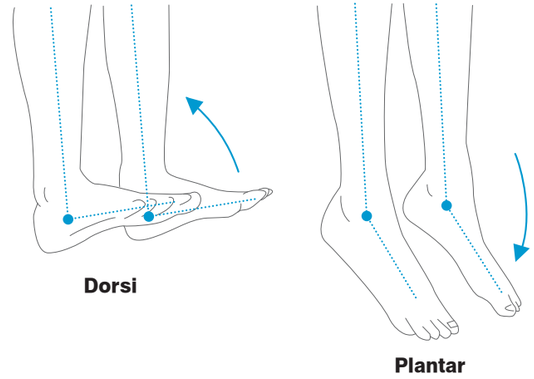
Rotation: Moving a part around an axis of a bone (twisting the head from side to side, turning the whole leg from the hip joint). When we turn our legs in skiing the femur rotates inside the hip joint.

Circumduction: Moving a limb in a circular manner, this requires a combination of flexion, extension, abduction and adduction. The ball and socket joints of the hip and the shoulder are two of only a few joints that are capable of circumduction.

3.3.6. FREQUENTLY USED JOINTS IN SNOWBOARDING

The ankle joint

This is an important joint in snowboarding because it joins the two bones of the lower leg (tibia and fibula) to the talus bone of the foot. It is a hinge joint, which can move the foot down (plantar flexion), and up (dorsi flexion). When the lower leg is moved onto the boot tongue while snowboarding we are dorsi flexing our ankle.



The foot

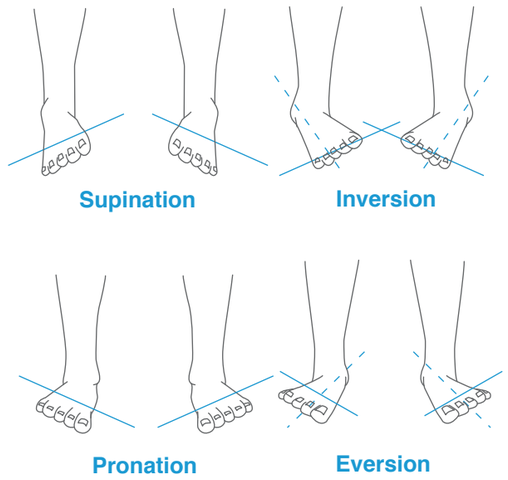
The rest of the movements of the ankle and foot – twisting, tipping and side-to-side motion, occur in the complex system of 26 bones in the foot and in the subtalar joint, in combination with the muscles, tendons and ligaments in the ankle.

This allows the movements of:

Supination: Weight bearing tends to be more on the lateral (outside) aspect of the foot, or inversion – involves turning the sole inward combines medial rotation (toeing in) and supination (rotating the big toe side of the foot upward).

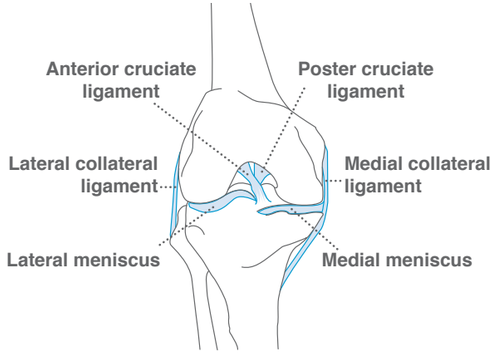
Pronation: Weight bearing tends to be on the medial (inside) aspect of the foot, or eversion – involves turning the sole of the foot outward. It combines lateral rotation (toeing out) with pronation (rotating the little toes side of the foot upward).

These ankle and foot movements are critical to good snowboarding, however, our boots and bindings can restrict the movements but also offer support and leverage. Most edge control movements in snowboarding should begin in the ankles through ankle tension which is essential to making the edge hold.



The knee joint

As a hinge, the knee joint has normal ranges of movement for flexion and extension, although a very small amount of rotation and lateral movement is also possible. Flexing and extending our knees are vital when performing edging, pressure control movements and even adjusting the height of our basic stance. Sometimes we feel like we are rotating our knee joint when making turns but the hinge nature of this joint proves this to be incorrect. It is more likely that you are feeling the knee point out the direction of the turn by rotating the whole knee structure using the femur at the hip joint.



Hip joint

The hip joint has normal ranges of movement of flexion, extension, abduction, adduction, medial rotation and lateral rotation. The hip joint offers us a vast degree of movement in all different directions. We use the hip joint from turning our legs in a short turn to helping with hip angulation for edging and balancing on the inside of a dynamic long turn.

- **Rotary: Leg turning range is minimised and weakened.**
- **Edging: Hip angulation is more difficult and can lead to spinal angulation.**
- **Pressure Control: The joint will not collapse/flex as easily when managing pressure from terrain etc.**
- **It can place added stress on the riders's lower back.**

Spinal column

The vertebral column has normal ranges of movement of flexion, extension, lateral flexion and rotation. It's important to note that we try not to use our spine for gross, powerful movements in snowboarding. But it does allow a degree of movement that helps in corrective movements such as stability and balance in our riding.

3.3.7. BODY SHAPES

There are three main body types. Every person will have a unique blend of all three, usually there is a dominance of one type or closeness between two but one cannot be highly rated on all three. Fitness, training, and nutrition can alter and improve body shape and musculature to some degree however, body type is determined genetically.

The structure of a person's body influences function. Understanding how and why, allows us to teach and train within realistic and safe limits.

Below is a diagram and descriptions of these three body types including how that type may affect performance on the snowboard:

Mesomorph: wide shoulders and narrow hips, with a muscular athletic frame and minimal body fat.

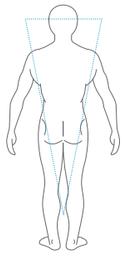
- **Generally athletic and progress fast when learning new skills. These riders benefit by using their power and strength.**
- **Can lack flexibility which affects fluidity of movement**
- **May have a tendency to over-power their equipment. Timing and blending of movements needs to be emphasised**

Endomorph: -wide hips and shoulders with short limbs, with a large amount of mass on their frame.

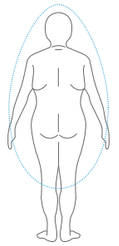
- **Often has good body alignment in their basic stance (the large client who side slips well but needs help to get up)**
- **Stance will often become compromised when dynamic movements are introduced due to limited fitness and agility**
- **Lack of fitness and agility often causes problems with flexion and extension.**
- **Lack of flexion in the joints can lead to bad positions such as breaking at the waist, over inclining and leaning on equipment.**
- **Can use their body weight and force to aid in turning the board**

Ectomorph: narrow hips and shoulders with long arms and legs retaining minimal muscle and fat.

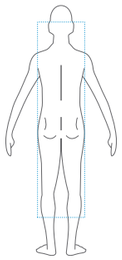
- **Increased flexibility, lesser muscle mass and a higher CoM means ectomorph's can experience decreased stability and lose balance easily. Emphasis on a strong stance and alignment is important.**
- **Need to use the correct blending of skills to generate optimal power and efficiency.**



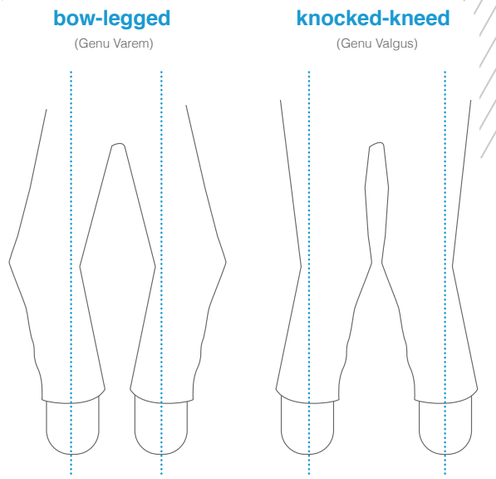
Mesomorph



Endomorph



Ectomorph



3.3.8. BODY ALIGNMENT

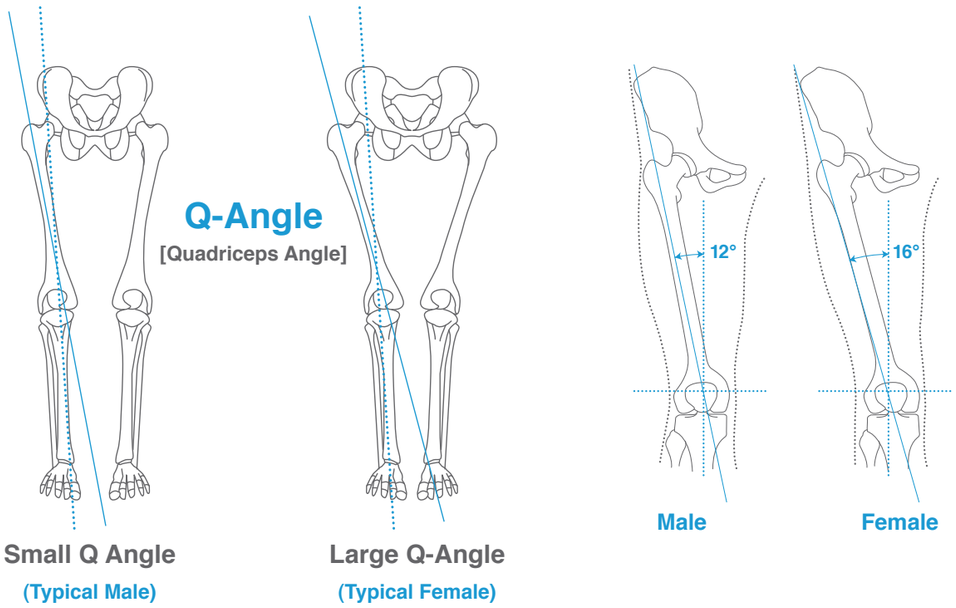
The shape of the bones, hip, thigh, shin and ankle all affect how people stand (and therefore ride).

Their posture and core muscle strength may also determine the way a rider's body aligns to a natural position.

This can also be referred to as 'Stacking' the joints to maintain alignment.

3.3.9. Q-ANGLE

Q-angle is an abbreviation for 'quadriceps femoris muscle angle'. In simple terms it is the angle between an imaginary midline drawn down the thigh crossing the patella and the actual midline of the femur. The average angle for men is about 13 degrees and 18 degrees in females. This angle increases in women mostly due to them having a wider pelvis. In riders with a larger Q angle, you may see the knees come closer together (A-frame position) causing pronation at the ankle joint. Weight will therefore be on the medial part (along the big toe side) of the foot and hence to the middle of the snowboard instead of being evenly distributed along the sole of the foot and ultimately along the length of the snowboard. This position can result in difficulty performing the skills efficiently, in particular stance and lower body rotation. Equipment modification would be the ideal solution however; if this is not possible, encouraging the rider to roll more to the lateral (little toe) side of the foot can assist with even weight distribution.



CHAPTER THREE: Technical Concepts

SECTION FOUR:

SNOWBOARD PHYSICS

Snowboard physics is the study of the forces that we encounter when riding. Understanding the forces helps us understand the mechanics of riding, which in turn helps us teach the sport simply and clearly. Think of snowboard physics as 'the why'. It is the reason why we have to do what we do when we ride.

3.4.1. NEWTON'S LAWS

Understanding these three basic laws of physics can help you predict and even manage the actions of your board on the snow. Sir Isaac Newton described these laws, which affect any type of motion, as:

1) **An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion continues in motion with the same speed and in the same direction unless acted upon by an unbalanced force. This law is often called the law of 'Inertia'.**
2 **Force equals mass times acceleration (F = ma). The net force on an object is equal to the mass of the object multiplied by its acceleration.**
3 **For every action there is an equal and opposite reaction.**

Although it was Professor Richard Feynman who said "Newton's laws…say pay attention to the forces. If an object is changing speed or direction, some agency is at work; find it" [32]

This is really what is important to us as snowboarders as we need to look at the 'agency' or forces that affect us when we are riding.

3.4.2. WHAT IS A FORCE?

A force is simply something that pushes or pulls on an object.

First, we must divide the forces in snowboarding into two categories: Internal and External forces.

- **Internal forces are those the rider generates with their muscles, as in biomechanics;**
- **External forces are those that act on the rider from outside the body. These are the forces we will look at in the physics section as they are the only forces that can change the rider's motion.[34]**

These forces include gravity, normal force, centripetal force (while turning), wind resistance and snow friction.

3.4.3. THE THREE MAIN FORCES THAT AFFECT US ARE:

3.4.3A. GRAVITY

This is the rider's engine. Because gravity pulls us toward the earth's centre we have a tendency to slide downhill. The steeper the hill the faster we go.

[32] *Lemaster, R. The Skiers Edge 1999* [33] *Le Master, R. The Skiers Edge 1999*

3.4.3B. NORMAL FORCE

This is the force directly opposing gravity.

This force comes from the snow resisting against the bases of our board to stop us being pulled towards the centre of the earth. In powder we sink into the snow until it packs hard enough to directly oppose gravity.

3.4.3C. CENTRIPETAL FORCE

When a rider wants to turn, a force needs to push on the base of their edged board to change their direction. When this force is constantly changing direction we achieve an arc or turn. This constantly changing force is called centripetal force. Centripetal force always pushes at 90 degrees to the base of the edged board; it is a centre-seeking force meaning it is always directed to the centre of the turn.

3.4.4. FORCES THAT HAVE LESS EFFECT ARE:

3.4.4A. SNOW FRICTION

this is the friction between the snow surface and the base of the board. Different types of snow produce different amounts of friction. When we stand on a slope, we will not start to slide until the steepness of the slope allows gravity to overcome the snow friction. In general this resistance is fairly negligible if our board is waxed and maintained properly (See snowboard tuning page 7.2.3).

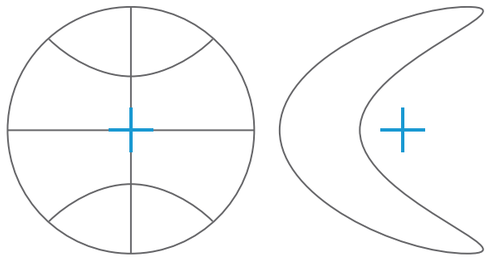
3.4.4B. WIND RESISTANCE

This is the property of the air to resist or slow us as we pass through it. The faster we go the greater the resistance. This becomes important when racing but fairly negligible when dealing with recreational snowboarding.

3.4.5. OTHER USEFUL CONCEPTS/ TERMS IN SNOWBOARDING PHYSICS INCLUDE:

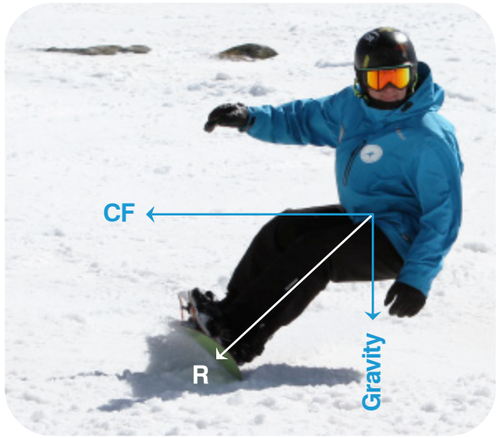
3.4.5A. CENTRE OF MASS – (COM)

The CoM is the point at which all the mass of a body can be considered located. If you throw an object into the air, it is the point about which it spins. The CoM can either be inside the body like in a basketball, or outside the body like on a boomerang. Remember that children have a larger head in proportion to their bodies, which means their CoM will be located higher than that of an adult. Think of balancing a broom horizontally on your finger somewhere along the handle. The balance point is closer to the broom head if the head is larger.



3.4.5B. COMBINING FORCES

When two or more forces act on a person's CoM, we can combine the two forces to result in one force which makes it easier to understand and draw. It is called the 'resultant force'.



3.4.5C. ANGULAR MOMENTUM

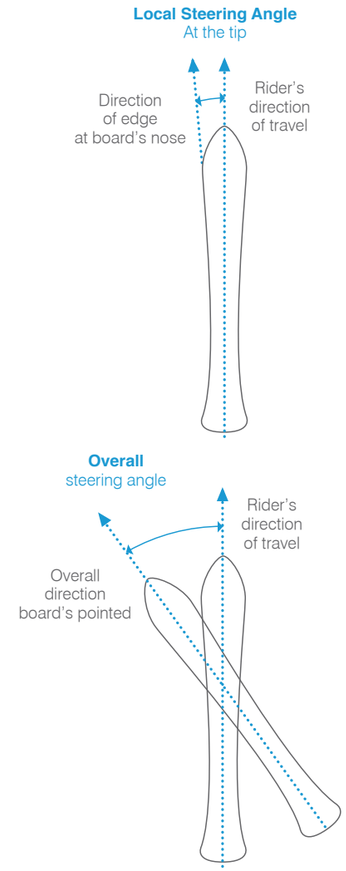
A term used to explain the speed at which someone spins when flying through the air, for example, a freestyler executing a '1080' spin. All of the angular momentum is created before take-off.

3.4.5D. STEERING ANGLE

The 'steering angle' is a physics term that relates to the ability to start the turning process. Before you will turn, your board must turn. It must have a steering angle and edge for a force to act upon it and thus for you to travel around a corner (i.e. make a turn).

All snowboards have a 'local steering angle' which will depend on the board's side-cut and the overall length.

The rider can also create a 'steering angle' by applying a rotational force to the mid-body of the board to allow turning to occur. Once the turn has begun, external forces build against the board increasing the force felt by the rider.



3.4.5E. TOPPLING

Toppling is caused by an unbalanced force. When we turn, a force (centripetal) pushes against the base of our board towards the centre of the turn. In order to keep from falling, we must balance the centripetal force by leaning into the turn. This leaning in is called inclination. When we talk about inclination we refer to the inclination of the CoM. In other words, the more we incline, the more the CoM moves into the turn.

The faster we travel and/or the tighter our turn radius, the more we have to incline. The reason for this is explained by the equation that determines how much centripetal force is created during a turn. Force is proportional to mass times velocity (squared) divided by radius.

By understanding this equation we can see that if we halve our radius we double the force. If we double the speed (velocity) we quadruple the force. As the centripetal force increases we have to incline more to remain in balance.

In order to topple or move into a new turn by crossing the board, a rider must unbalance the equation by either making the centripetal force greater or allow the centrifugal force to win.

Centrifugal force is the force you feel pulling you out of a turn. Playing corners in a car is an example of this force. It is not a true force in a physics term and therefore cannot be increased alone, but we do talk about it due to the fact that you can feel its result.

The ways to topple into a new turn include:

1) Slowing the board down will cause the CoM to cross-over the board. This can be achieved by turning the board in a tighter arc (e.g. a pre-turn), increasing the edge angle (e.g. an edge set), or by hitting a bump.

2) Absorbing or relaxing the muscular core and leg muscles, whether it is active or passive, will stop the effect of centripetal force. This will effectively allow gravity and centrifugal force to win. As a result, your CoM will follow a straight line and cross-over the path of the board.

$$F \propto \frac{m v^2}{r}$$

3.4.5F REBOUND

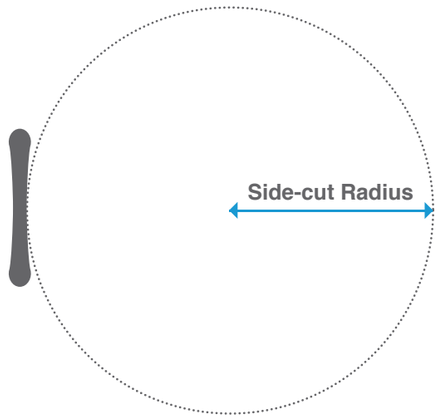
Snowboards have the ability to flex or bend. When a force is applied to it, the board's tendency to go back to its original shape can be thought of as a 'stored energy'. This stored energy can help to propel the rider from one turn to the next.

3.4.5G SIDE-CUT RADIUS

The side-cut radius relates to the arc shape on the sides of the snowboard. If you were to draw a line along this arc beginning at the nose of the snowboard down to the tail, then continuing the arc around, it would complete a full circle back to the nose of the snowboard.

From the centre of this circle to the outer line is the side-cut radius. This can be seen on the snowboard by the nose and tail being wider than the waist. All snowboards have a side-cut which is necessary to make a turn.

The rider, using the edge angle, rotation, pressure distribution and twisting of the board, can manipulate the 'turning radius'.



3.4.5H. SNOWBOARD PLATFORM ANGLE

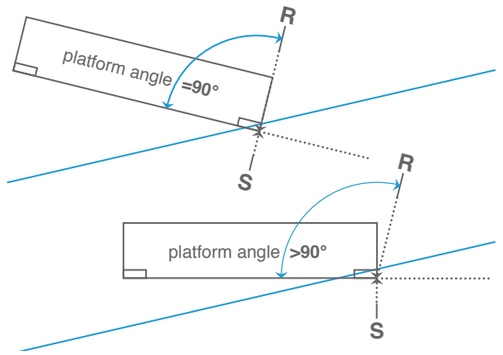
For the snow to push back against us, enough to make us go around the corner, it also needs something to push against i.e. the base of your board. We also need to determine how much is enough angle for the board to be able to efficiently penetrate the snow i.e. cut a step and gain enough push back to get the rider around the desired arc.

The correct angle is called critical edge angle. It is the angle between the rider's resultant line of force and the base edge of the board. If this angle (underfoot) is less than 90 degrees then the board will slip. When this angle is 90 degrees or greater the board will rail.

(no sideways slipping).

This angle is important to understand when teaching because with too much edge angle it is impossible for a new rider to make a steered turn. Conversely, if an advanced rider has an overly bevelled board they may appear to have sufficient edge yet will still be slipping while trying to carve.

Thank you to Ron Le Master for his help on this section over the years.



SUMMARY

A deep understanding of all the separate parts in Chapter three will help you understand, feel, explain and analyse snowboarding.

Remember though, the guest does not need to know all the physics and biomechanics of snowboarding to have fun. Even if you use small parts to aid your explanations and a simple breakdown of the four skills and how they relate to the desired performance, this is all our guests need to help them improve.

Your skill of putting it all into easy to understand segments is the secret to teaching the mechanics of snowboarding.

CHAPTER 3: REVIEW

Technical Concepts

1. **List and explain the four snowboarding skills in your own words.**
2. **Write two analogies to explain the correct stance.**
3. **What does full body rotation allow us to achieve?**
4. **What would happen to a turn if we did not edge?**
5. **What is pressure control?**
6. **What two sources can change pressure in snowboarding?**
7. **What are the four phases of the turn?**
8. **Why do we angulate our body to help with Edging?**
9. **What is basic anatomy and what does physiology look at?**
10. **Explain in your own words the three basic body shapes.**
11. **What is Rebound? How is it created?**
12. **What is a force and what are the three main forces that affect us in snowboarding?**
13. **What are the two types of steering angle? Briefly describe each one.**
14. **List the two ways to topple into a turn.**
15. **List the three ways muscles in the body can contract. Give one example for each that we use in snowboarding.**
16. **In blending the skills, what do the letters T.A.D stand for?**
17. **List the main muscle groups of the muscular core.**

THE PROGRESSION

Introduction

ABOUT THIS CHAPTER

Irrespective of what snow sports discipline you teach, the progression is the backbone of your lesson. This is the step-by-step process of giving information to guests, allowing them to gain improvement. Without it, the experience would be disjointed and confusing.

On its own, the progression is not enough. You will still have to guide your guests through these steps. It will take a combination of professional attitude (section 1) and a solid understanding of technical and teaching concepts (section 2) to be able to present these steps as more than just a list of exercises from easiest to hardest.

The progression is intended as a guideline. Some steps will need more time spent on them than others, even taking a step forward or back to aid in your guests experience and goals.

The progression is broken into four sections:

- Beginner Riders
- New Riders
- Intermediate Riders
- Advanced Riders

This chapter has been divided into separate sections so that you can study the part you are training for.

It is important to take a look at all the progressions, as they will be of great benefit to your knowledge and understanding. The mechanical descriptions in the advanced levels can also help your own personal development.

CHAPTER FOUR: Teaching Children

When teaching a children's specific lesson there are 'three fundamentals' that must be followed.
These fundamentals are:

- Safety
- Fun
- Learning

A successful children's instructor is one who runs a lesson that is safe (with a set of fair clearly laid out rules), fun (including a theme or analogy that relates to the child's interest) and where the learning process is adjusted to suit their developmental level.

4.1. SAFETY

As children can be less aware of the consequences of their actions, safety should be the primary concern. The wellbeing of the students in your lesson is your responsibility as their instructor. For children to learn effectively they must feel safe and secure in their environment.

In the following safety section we will provide you with some useful tips to help with class handling and behavior management when it comes to a children's lesson.

4.1A CLASS HANDLING

A well-organised children's class will not only be a safe class, it will also be a successful class.

Following are some useful hints designed to help develop the way you handle a children's class.

1. Establish class rules.

If you set out a clear plan of what you expect early in the class you will often avoid behavioural issues.

Below is an example of such a plan:

- **Determine a set of rules, consequences and check for understanding.**
- **Praise appropriate behavior.**
- **Include the group when discussing inappropriate behavior and decide on an alternative that is acceptable to everyone.**
- **Always re-establish group rapport.**

2. Practise effective communication.

Establish a caring/trusting relationship with all the children in your class and make sure they remember your name.

- **Talk with children, not at them**
- **Listen actively, try to understand their perspective.**
- **Be fair and consistent**
- **Be positive and encouraging**

3. Make eye contact with each child frequently.

- **Get down to the child's level, kneel or bend down if necessary.**
- **Position yourself below the group on a slope, so the children can look down at you.**

4. Establish team bonding.

- **Create a fun environment and encourage group culture.**
- **Make up a team name, let the children help you do this.**
- **Develop trust and respect.**
- **Alternate partners on the chair lifts.**

5. Instructor should go first.

- **Follow the leader until children are familiar with the trail and surroundings. This depends on the age, instructor's knowledge and your confidence in the class.**
- **When children go first, have clear directions as to the stopping location or "landing pad". Use repetition when stopping on the hill**

  I.e. the same place each time.
- **When possible, use large/ colourful/ obvious landmarks because abstract instructions can be difficult to follow, avoid distance measures.**

  e.g. 50 metres.

6. Have a plan when someone falls.

- **Use a 'wipe-out' rule.**
- **Have a 'ski patroller' (attach 'prestige' to this position).**

7. Have a plan if someone gets lost.

- **Establish the ground rules early.**
- **Tell your group where you are heading.**
- **Establish a meeting place if someone gets lost.**
- **Know your resort policy and procedure for the event of a lost child and follow it.**

8. Teach children to stop below the group when re-gathering.

- **Park your car in the garage**
- **Explain the domino effect**

9. Always be in line of sight of your class.

- **Ride at the correct speed.**
- **Ride terrain that allows the children to follow easily.**

10. Always count your children.

- **Assign each child a 'buddy' they are responsible for.**
- **Give each child a number and have them 'number off' every time you stop.**
- **Rotate the children through the line so that every child has a turn in every position of the line. i.e. first, second... last.**

11. Encourage spatial awareness.

- **"Casper the Friendly Ghost". Imagine there is a ghost between each student. You can also use "elephants" or "tickling monkeys."**
- **Use "magic bubbles" and take care not to pop them.**
- **Encourage the children to be aware of their 'riding space' when riding in a class line.**

12. Teach your children how to recognise you in a crowd.

- **Identify what you look like and how the group can identify you from other instructors.**

  e.g. Boot colour, helmet colour, goggle colour, hair style or anything obvious.

13. Basic end of day questions.

Use repetition to ensure children know the what, where, when, why and how.

- **What's my name?**
- **What did we learn today?**
- **What are we going to do tomorrow?**
- **Where are we meeting?**
- **Who's coming back?**
- **Who had fun today?**

4.1B BEHAVIOUR MANAGEMENT

During a children's lesson there are times when the instructor may need to manage the behaviour of their students. Children's behaviour can sometimes have a negative effect on the learning environment or even become a safety hazard.

Behaviour management is one of the more challenging aspects of teaching children but it is important to remember that it is the behaviour that is inappropriate, not the child.

In most cases, if the lesson is catered to the correct developmental stage and is interesting and fun, then you will not have behavioural issues. However, if an issue does arise here are some steps for problem solving:

1ST: UNDERSTAND WHY

2ND: DEVELOP APPROPRIATE BEHAVIOR

The first step towards solving an issue is gaining an understanding of why the behavior is occurring.

Some reasons for inappropriate behavior may include:

- **Hungry, thirsty, cold, tired, ill, poorly fitting equipment or the need for a toilet break.**
- **Stress from this new situation/ environment.**
- **Stress from performance expectations.**
- **Developmental issues, physical problems/ frustrations due to a hormonal imbalance or disability.**
- **Cultural differences.**
- **YOU….Were your instructions clear? Have you set ground rules? Are you favouring others? Is your behavior contributing to the child's behavior?**

The only true way to answer 'why' there may be an issue is to get to know the child and care about solving the problem.

After finding out why, you will need to work on a plan for developing appropriate behavior. There are many techniques for altering the behavior of children, following are a few examples:

Talking it out: Let the child tell, describe or shout about what it is that is disturbing them. Listen but don't interrupt or pass judgment. When possible summarise the problem and discuss a solution.

Rationalise: Explain to the child why the behaviour is not appropriate.

Re-iteration: Have patience, state and re-state what you want the child to do in a calm voice.

Becoming annoyed can cause frustration and a battle of the minds, which you may not win.

Planned ignorance: Some behaviour is designed to get your attention be it positive or negative.

Give no response to the child so that they have to choose a new behaviour.

Positive role model: Lead by example.

Distraction: Take the attention of the group away from the behaviour.

Interpretation: Let the child know you understand.

Humour: Make the group laugh to ease the tension, but not at the child or their behaviour.

Non-verbal disapproval: Make a gesture or facial expression to indicate to the child your disapproval or as a sign to stop. The 'zip it' gesture is a good one.

Re-structure: Remove the child from the class and from the attention, not as a punishment, but as a quiet time to think about why their behaviour is not appropriate.

Sitting with the child: Adult presence can be re-assuring and sometimes enough to correct and restore the situation.

Permission: Sometimes when you say it is OK, the bad behaviour becomes less attractive.

Follow-up: Share the incident with their parents at the end of the day/lesson. By involving the parent when problem solving you will often find that you will have greater success.

Remember when dealing with children be fair, calm and consistent. Think of why the behavior occurred then how to best encourage more appropriate behavior.

KNOW AND OBSERVE THE CODE
- IT IS YOUR RESONSIILITY

4.1C THE ALPINE RESPONSIBILITY CODE

By getting children to explain the rules of 'the alpine responsibility code' in their words you will allow them to gain ownership of the process and increase the chance of your class remembering them.

4.2. FUN

The predominant reason our guests come to the snow is to have fun. Snowboarding the same slope in exactly the same way repeatedly becomes monotonous. Enhancing the way you present a new or repeated task will increase the interest of the children doing it.

By discovering your student's interests you can add variety and personalise the lesson for your students. This allows you to create a fun experience by tailoring the content to each child. Imagination is needed to expand on students' interests and create analogies or themes to excite them.

Relating interests to a theme or set of analogies allows you to turn ordinary exercises into FUN games. The tool we use to help turn the child's interest into an exciting adventure of learning is called 'spider webbing'.

4.2A. 'SPIDER WEBBING'

is an imaginative way of connecting words via association and evolves over the lesson time through input from the group. The first step is to find out what the children are interested in.

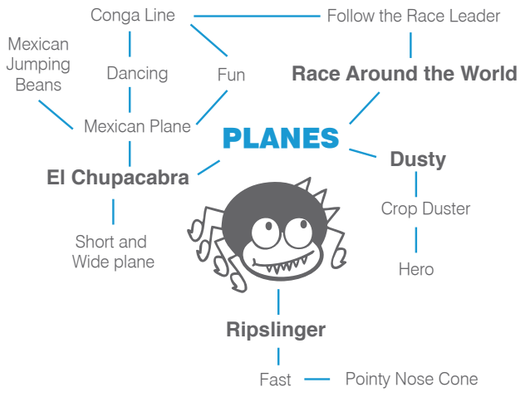
Some examples of questions which you can use to spark the children's interest are:

- **Who is your favourite super hero? Do they have a trusty sidekick? Where do they live?**
- **What is the last movie you saw? Which character did you like best?**
- **Has anyone ever imagined that they could fly? Where would you fly to right now if you could?**
- **Do you think we might find some fairies up on the mountain? How big are fairies? What do fairies look like?**
- **What kinds of animals live in the ocean? Has anyone ever looked under water? What did you see? If you could breathe under water where would you go exploring?**
- **When you came to the snow did you travel by car? What did you see along the way?**

By actively listening to the responses your students give, you can then start to build a library of words in your mind that relate to their interests. These words can be drawn upon during your lesson and connected to the exercises or progressions you present.

An example for the movie 'Planes' is included below:

Using as many of these words as you like the instructor can create an adventure or theme to help make your lesson presentation more exciting and more suited to the group's interests.



4.2B. THREE EXAMPLES

Below are three examples of teaching a falling leaf, applied to three different age groups, showing how you can present the standard lesson in three different ways using the child's interests:

Name: Ava

Age: 5

Observation: Likes stories, own personal needs are a priority and head is larger in proportion to body.

Interests: Fairies and snow angels.

Spider web: Fairies-sparkles-stars, Angel wings

Mechanics: Full body rotation with their board into the fall line and re-centring.

Lesson Plan: Explain to Ava how to make angel wings, you need to keep both arms over the nose and tail of the board as she flaps her wings down the hill to the left and then to the right with her board.

This Angel wing maker is to help us slow down and fly form side to side. Once Ava has the concept she needs lots of practise before learning the next step.

Name: Rose

Age: 14

Observation: Well balanced, eager and likes friendly competition.

Interests: Basketball and rowing.

Spider web: Basketball

Mechanics: Full body rotation with their board into the fall line and re-centring.

Lesson plan: Explain to Rose to turn her body down the hill with her board and act like bouncing a basketball in the downhill hand. Then even up and bounce a ball in both hands before changing direction.

This falling leaf will help in balance and enable her to move down the slope just like moving down the basketball court.

Name: Joe

Age: 10

Observation: Enjoys teamwork, dislikes being singled out and likes to practise.

Interests: Television and video games.

Spider web: Video games and holding the remote control.

Mechanics: Full body rotation with their board into the fall line and re-centring.

Lesson plan: Explain to Joe that turning his body and legs with his arm will help him control the snowboard better and move him from side to side, just like moving to the next level in his video games.

Turning his whole body with his arm will keep him strong and give him more control for the next level.

4.3. LEARNING

In order for children to learn a new skill there are some basic needs that must be met or the child's motivation will diminish and inhibit the learning process (as outlined by Maslow in his Hierarchy of Needs). In simple form these include:

- **Being hungry, thirsty, cold, tired or need a toilet break (it is impossible to concentrate if this is on their mind).**
- **The need to feel safe in their environment (class handling).**
- **The need to feel as though they belong (remember to introduce everyone and create a team atmosphere).**
- **The need to be given recognition for a job well done (set realistic goals).**

When all these needs are met, a child will view learning as an adventure, no longer being afraid to ask for assistance and enthusiastically tackling the challenge of learning a new skill.

4.3A CHILDREN'S DEVELOPMENT

Children view their world differently to adults because of their developmental level rather than their chronological age, all children develop through three key areas:

1) **Cognitive**
2) **Affective**
3) **Physical.**

(C.A.P.)

To help you adjust your presentation in a manner that is appropriate to their developmental level. The stages are described below:

COGNITIVE development refers to understanding how children think and process information. Some examples include: following directions, spatial and visual awareness, logical and mathematical abilities, understanding of specific concepts and verbal/linguistic abilities. Cognitive development will ultimately decide the learning preferences of each student.

AFFECTIVE development refers to understanding how children develop emotionally and how this dictates their overall emotional state. For a child to learn most effectively it is important for an instructor to satisfy their emotional needs as it will enhance their desire and motivation level. Some examples include understanding internal beliefs and values, teamwork and sportsmanship, identity and self-esteem, humour, play, rules, competition and moral values.

PHYSICAL development refers to understanding how children move based on the stages of their physical growth. An instructor must be able to provide skiing experiences that will assist the child to improve and develop skills in relation to their physical ability. They must also understand the limitations arising from ability levels. Some examples include: fundamental movement patterns, body development and proportions, general and sport-specific strengths, overall fitness level, centre of mass, motor control (fine and gross) and sensory development (visual, auditory and kinaesthetic).

The following C.A.P. table outlines the differences between the developmental stages of children and highlights some of their characteristics. The chart gives age brackets as a guide, though it is important to remember that all children develop at different rates.

Teaching children is very similar to teaching adults, except some aspects of the 'Nine Essentials' need either emphasising or adapting to include the additional safety, a fun theme and the students' development level.

Below is a copy of that system with some highlighted points to implement in your children's classes.

	3–6 years	7–10 years	11–14 Years	15–17 Years
COGNITIVE	Like to use symbols	Uses symbols exensively	Abstract reasoning and visualisation still developing	Still Developing abstract reasoning and visualisation
	Learning to read and write	Alble to read and write extensively	Enjoys being challenged	Uses problem-solving and can understand their effect
	Likes to make-up stories	Understands the diference between apperance and reality	Able to take responsibility for actions	Gaining confidence as strength and co-ordination increases
	Learing how to follow rules	Learn through concrete experience and interaction i.e. teamwork	Want to formulate their own rules	Likes to test limits
	Learn by watching and doing	Language used more than extensively to plan and remember	Self-motivated	
	Learning how to revserve direction and thoughts	Able to judge space and distance		
	Learning to judge space and distance	Able to reserve direction and thoughts		
	Egocentric	Able to sequence three-or-more tasks		
	Learning to share	Able to understand rules and consequences		
	Developing attention span	Often over-estimate ability		
	Things are as they seem	Able to understand things that cannot be seen		

	3–6 years	7–10 years	11–14 Years	15–17 Years
AFFECTIVE	Devloping a sense of self i.e. likes to please	Strong sense of self-worth	Self-esteem is fragile	Self-esteem is fragile
	Starting to be independent	Developing positive ways of dealing with emotions	Self-concious, easily embarrassed	Worry about what others think
	Use words to express needs and emotions	Developing an awareness of others	Highly influenced by peers	Self-concious, easily embarrassed
	Personal needs take priority i.e. fatigue	Likes to fit into a group and please others	May be overtly sensitive and emotional	Does not like to be singled out
	Not aware of others' needs or wants	Easily influenced by peers	Interested in the perfection of movements	Overtly sensitive and can be emotional due to hormonal changes
	Learning to share and enjoy social interaction	Group priase motivates me	Influenced by models	Apprciated being treated like a young adult and may identify well with other teens
	Non-competitive —playing together is winning	Self-worth tied to accomplishment Becoming self-motivated Adult rules are a challenge to their own cleverness		

	3–6 years	7–10 years	11–14 Years	15–17 Years
PHYSICAL	Head larger than body reulting in higher centre of mass	Head becoming more in proportion to body, resulting in a similar centre of mass	May have grown into an adult body by age 13	Body changing rapidly
	Arms and legs short but trunk is long (may effect balance)	Upper body is more able to move seperately from lower body	Girls may be taller	Growth almost finished
	Boys and girls are the same size and strength	Fine motor movements still developing	Fine motor movements developed allowing the ability to do up bindings	Girls broadening in hips
	Have not learned left-from-right	Growth spurts begin and may affect co-ordination	Co-ordination usually refined by age 11	Boys broadening in the shoulders
	Tire easily	Like to practise in order to reach perfection	Growth-spurts common resulting in co-ordination changes	Capable of fine motor-skills
	Upper and lower body move together - no separation	Increasing strength and energy levels	Body changing rapidly due to puberty	
	Large muscles overpower smaller ones	Vision still developing (not complete until the age of ten)		
	Gross motor movements still developing			
	Arm and leg on the same side move together			
	Often balance by having hips behind ankles due to lack-of strength			
	Dominant side: left or right side much stronger or more co-ordinated			

4.3B THE NINE ESSENTIALS FOR CHILDREN

1. INTRODUCTION

Names are important: THEIRS and YOURS. Use them, as it will get their attention more quickly than anything else will. Make sure they know your name, nicknames can be a fun way for them to remember your name. Do not forget to smile -something even the youngest child understands.

2. IDENTIFYING THE CHILDREN

and their GOALS Children need to be asked their goals as much as an adult. This is a good time to start asking the right questions to find out what interests the child has as well as begin to determine their development level.

It is important to remember that sometimes children's (and their parents') goals may be unrealistic and it is up to you to educate them on what is safe and within their ability while making sure they are continuing to have fun. For example, a parent may want their heel side only son to ride black runs all day, while working on trying to turn. We know that children learn new skills on easier terrain so, in the case of a heel side only student, this means green terrain.

3. PLANNING THE LESSON

What developmental stage are they at?

What are they interested in?

Learning through play can be categorised into the three developmental areas, having a good mix of these will also increase the chances of learning:

1) **Cognitive play: the problem solving process.**
2) **Effective (social) play: the interaction between children.**
3) **Physical play: the development of motor skills.**

(C.E.P.)

1. **Cognitive Play (problem solving)**

Lesson should provide a range of choices offering the child opportunities to make decisions and test out their consequences in a controlled situation i.e. how many turns in a given area. Do not just tell children how to do an exercise; let them have a choice of going over, around, through or jumping objects, allowing them to utilise the terrain.

2. **Social Play (role playing)**

Through role-playing, children test personality constructs with which they are most comfortable and carry them, as well as the ability to work and play with other children, into the real world. Allowing children to act like monsters, kangaroos or superman while learning a snowsport will stimulate the child's imagination.

3. **Physical Play (challenge and testing)**

Children are constantly testing their physical powers and discovering their limitations. If your lesson doesn't provide sufficient challenge, the child will be bored, whine and maybe seek challenges elsewhere e.g. wander from the class. At the same time the instructor must be aware that although children are a bundle of energy, they tend to use this to its limits, then drop. So be aware that they have limited strength. Physically demanding exercises cannot be done repetitively without rest i.e. skating or walking uphill.

INSTRUCTOR'S NOTE:

A children's group lesson is a common place to have snowboarders with a disability join your group, adults tend, more often, to take a private lesson. To most effectively include children with additional needs, some important planning is required:

1. **Talk to the child first and endeavour to understand their specific needs;**
2. **Talk to parents, carers and significant others;**
3. **Talk with other instructors to gain information from experience;**
4. **Research information about the impairment;**
5. **Try to understand what skills the child possesses;**
6. **Use the tools laid out in chapter 8 to help teach a successful lesson.**

STRAIGHT-RUNNING	SIDE-SLIP
Head, shoulders, knees and toes	Spread butter
Robot	Red light green light
Bow and arrow	Smooth the snow
Touch the ground, reach for the sky	Copy cat
Copy Cat	Car breaks
Be your favourite animal	Ice Cream smoother
Flying / Jumbo Jets	Rub out lines
Kangaroo Hops	Power brakes
Driving a car straight	Sitting back in a chair on the heel side
	Wearing high-heels on the toe side

4. PRESENTING INFORMATION

Communicate with the children at their level of understanding. Be aware of the age group you are teaching and do not be afraid to 'get down' to their level cognitively, effectively and physically. Crouching down to achieve eye contact at their level will show the children you are approachable and interested in them. Choosing the correct language (their slang) and not just using "baby talk" will let them know you are talking to them and interested in communicating with them.

As with adults, it is just as important to tell children:

What you will be teaching? E.g. first timer, today we will learn how to stop.

Why you are teaching this? E.g. because we want to avoid hurting ourselves and we want to explore more of the mountain.

How they are going to attempt it? E.g. we are going to spend some time here on the flatter area and practise a side-slip.

5. DEMONSTRATING

Correct demonstrations and plenty of repetition are both important factors as children 'copy' what they see.

Children learn predominantly by watching, so often what you say will be lost. Keep in mind you are taller, heavier and have longer snowboards so your radius and turn shape will be different from the children. You need to modify the way you ride to match the children at all times.

6. PRACTISING

Mileage and the chance to practise newly learnt skills are important for children. Vary the images, games or exercises as you consolidate a skill. While some students are consolidating, others may be learning more so keep exercises new, varied and challenging for all students.

We would suggest writing down all the ideas and exercises you invent out on the hill on a note pad, keep a record of these ideas and any that you 'hijack' from other instructors, in your jacket for quick references.

Here are also some suggestions on how to explain straight running exercises and the side-slip position to children:

4.3

7. MOVEMENT ANALYSIS

Avoid lengthy one by one runs and too much talking, as the children will become bored.

Younger children, due to the size of their head and muscle strength, will have a slightly more braced stance with less bend in the ankles and knees than an adult. Their rotary skills are less developed and they are more likely to use their whole body.

The skills of snowboarding

Snowboarding skills are performed differently by children than adults. This is mainly due to the physiological differences in strength, size, weight and body proportions.

The chart below will help you understand these differences and can be used as a quick reference guide when setting realistic goals, teaching the skills and undertaking movement analysis.

	Movement	Reason
STANCE	Break at waist or hip with minimal flex at ankle and knee 3-6 years	Lack of muscular strength, gains strength from skeletal structure. Support from bindings and boots
	Weight on back foot.	Lack of strength. Lack of rotation of the upper body.
ROTARY	Upper body move first (3-6 years)	Lack of muscular core and lower body strength.
	Arms make the same movement as legs (3-6 years)	Lack of upper and lower body separation (particularly in the under 7 age group).
EDGING	Inclination- static	As strength and balance improves edging will be easier.
		Especially for children under 6 years old
		Bindings and boots incorrectly fitted.
PRESSURE	Pushing the snowboard.	Strength gained by using large muscle groups and skeletal structure.
	Pushing the back foot.	Uneven weight/ Poor rotation.

8. CORRECTION AND FEEDBACK

Children are easily discouraged. Don't forget to always use the happy sandwich (positive, constructive, positive) principal. Correction of technical errors can be done in the form of games, exercises and images, thereby reducing the need to verbally correct a task or skill.

In fact, throughout your whole career you will be doing this to help expand your repertoire of teaching exercises. To get you started an example of some of the more common corrective exercises with fun analogies is included:

BALANCE/STANCE – Beginner

1. **Ride very low, then very tall (tall as a house, small as a mouse)**
2. **Ride with – hands high, behind back, on knees, arms folded (heads, shoulders knees and toes)**
3. **Tap nose and tail throughout end of the turn (like crushing snowballs)**
4. **Hop on the snowboard (like a Mexican jumping bean)**
5. **Tea pot turns (great variation on the aeroplane turn)**

ROTARY - Beginner

1. **Brush out the back foot in a straight run (spread the peanut butter leg)**
2. **Falling leaf (like a plane)**
3. **Use whole body to turn board (robot turns)**
4. **Use lower body only to turn board (twist body)**
5. **Board off, pivot on spot (make a donut shape with your foot)**
6. **Box turns (who can ride this shape?)**
7. **Specified number of turns in a specified distance (count your turns)**

EDGING - Beginner

1. **Traverse (speedy highways)**
2. **Button under the ball of foot (feeling) (squash the bug)**
3. **Lift toes of foot (feeling/ hot spot) (magic button- can be used also for rotary)**
4. **Edge sets toe side (Michael Jackson)**
5. **Listen to edges (what sound does your board make?)**
6. **Spray snow (chicken out turns - garlands)**

PRESSURE CONTROL - Beginner

1. **Counting throughout turns (can you move as slow as me? Let's count it out)**
2. **Rise up/down quickly (make an adventure through different sized tunnels)**
3. **Funnel turns (slow turns to faster turns)**
4. **Hop in between turns or in traverses. (slow hops, quicker hops)**

9. LESSON SUMMARY

Remember to reinforce your name, where you are meeting the next day and at what time! Make sure all children have returned with you and are with the appropriate person before you leave the meeting place (please refer to your resort policy.)

It is important that all children leave the lesson having had a positive, fun and happy experience. If they go away with a smile on their face, you have been successful. It is also worth noting that often two customers need to be served throughout children's lessons. First, 'the child' as they acquire new skills, second, 'the parents' who take great satisfaction in observing the achievements of their children.

Often parents who observe positive experiences with their children will decide to take a lesson themselves.

Sometimes it is good to include two summaries at the conclusion of your lesson. One with the group well away from the meeting area to ensure the kids remember what was learnt and where they ridden. The second will be with the individual child and their parents, to discuss how their child is progressing.

As it is important to include both the child and parent during the summary it would be good to talk with the parent about the skills the child has been working on using adult language (stance, rotary, edging, pressure control), but also relate this back to the actual lesson content by telling the parent which analogies and games seem to work best for their child. This will make it easier and safer for the parent to ride with the child afterwards, if they know what prompts and language their instructor has been successfully using during the day.

CHAPTER 4 REVIEW

1. Remember that no two children are alike and there will be always exceptions to the rule.

   In general, however, describe the coordination differences between a 3–5 year old and a 14 year-old.
2. Every lesson should include the following three important elements. Place these in the order of importance. FUN, SAFETY, LEARNING.
3. List and describe two exercises (or games) for:
   - Balance
   - Rotary
   - Edging
   - Pressure Control
4. What are the three key areas related to children's development?
5. Review the child development chart.
   - List two characteristics specific to the cognitive development of a 3 -6 year old.
   - List two characteristics specific to the effective development of a 7 -10 year old.
   - List two examples of an 11 -14 year old's physical development.
   - List two effective traits of a 15 -17 year old.
6. Suggest some other ways that you could present the Alpine Responsibility Code to children.
7. What are three key procedures that should be followed when using a lift with any child (all ages and all levels)?
8. List four points that will assist your class handling.
9. Suggest two games to help teach a group of 6 and 7 year-olds to stop below the group.
10. What is spider webbing? Give an example using the word 'chocolate'. Use your spider web to create a learning experience for a 12-year-old learning a falling leaf in a private lesson.
11. Why do 3-6 year old children often break at the waist or hip with minimal flex at the ankle and knee?
12. Learning through play can be broken into three key areas, C.E.P. What do the three letters stand for and briefly describe each one.

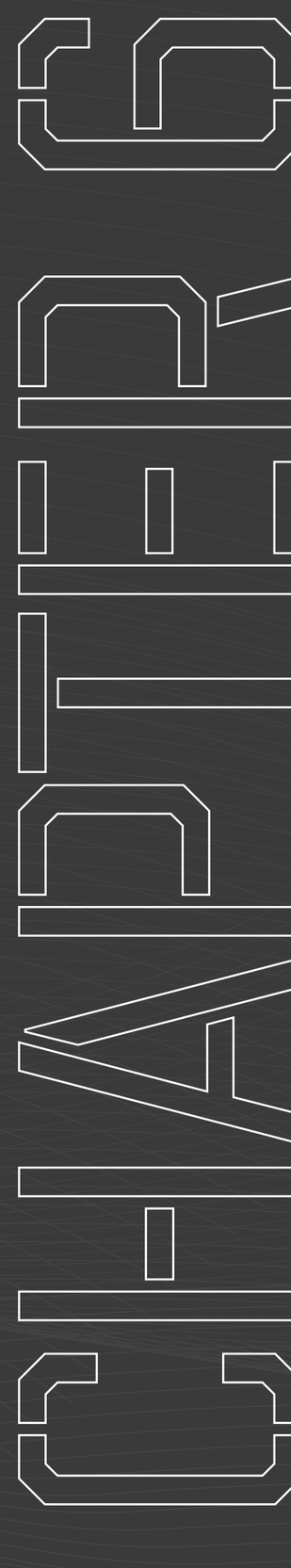
Notes

ADAPTIVE SNOWSPORTS

About this chapter

Not all guests are the same and, as a result, certain components of this manual may need adjusting to best suit their individual needs. Adaptations may be small or large depending on the individual.

Chapter six gives instructors the tools needed to adapt their teaching to suit the needs of riders with disabilities.



CHAPTER FIVE: The Progression

SECTION 1

THE SNOWBOARD PROGRESSION

5.1 WHAT IS THE PROGRESSION?

The progression is a collection of exercises used by instructors to teach snowboarders to move from a beginner level through to an advanced level.

In snowboarding there are literally hundreds of exercises that an instructor can use to help their guests become an expert rider. The ones you choose will depend on the guests' ability and goals.

You may spend more time in one area and even create your own mini-progressions to maximise learning. It is important not to make too big a jump, as your guests will find it hard to improve and may even go backwards.

The progressions in this manual are some of the more commonly used exercises when developing a snowboarder's skills and understanding.

5.2 HOW TO USE THE PROGRESSIONS

As an introduction to your lesson the guests simply want to know WHAT they are doing that day. To give them a little more insight into the process you will take to achieve their goals, we also share with them a brief WHY and HOW they are doing each step.

Instructors need lots of 'underpinning knowledge' to teach safe, well-informed lessons. Some of this knowledge includes: the mechanics, key points on how to teach the lesson, as well as suggested progressions and solutions to fixing common problems.

This section looks at how each task in this chapter is spaced out on the page, making it easier to find and use the information you need.

HERE IS AN EXAMPLE:

The name of the lesson progression (and short description)

E.g. Basic Linked Turns

This is a simple way to introduce what you are going to teach your guests, it also includes a symbol used to clearly define what the performance expectation is for that task.

Previous experience

A description of what the guest should be able to do prior to learning this step in the progression.

Terrain

This includes a description of the suggested terrain to teach this lesson and appropriate practice terrain.

Why

This is an integral component that the guest has to be provided with, as it gives them a reason for doing the tasks they are about to learn. It is vital for creating awareness in our students, so they can monitor themselves after the lesson.

MECHANICS

These are the movements you need to learn as an instructor to help your understanding, teaching ability, eye for analysis and demonstration of the task. Where possible, photos will be used to help explain the mechanics and how they relate to each phase of the turn.

FUNDAMENTAL MECHANICS TO BE TAUGHT

This is a quick reference of the key mechanics that need to be taught in this particular lesson.

PROGRESSIONS

Method/s for teaching the...

Next you are given the steps that you, as the instructor, will need to follow to help the guest to experience, and hopefully pick up and perform, that particular turn or task. Often the task may have more than one method of steps to use; your choice will be determined by factors such as terrain, amount of guests in the group, their age and athleticism.

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions

Here you are given a choice of common problems, a description of the possible cause and an explanation of how to improve the weakness with some additional exercises or analogies to use.

Once you have successfully found a possible cause to your guest's riding inefficiency, you will need to fix it through the use of these explanations and exercises. Remember, it is important to spend enough time to further consolidate the movements and skills needed for the correct performance before moving onto the next step. Other exercise options are included in the back of this chapter.

KEY POINTS WHEN TEACHING A _____?

These are important points on how to teach the lesson and include:

- **Key movements and skills.**
- **Progressions.**
- **Teaching aids.**

Safety considerations

These are important factors for any lesson and include:

- **Any important safety factors for the lesson.**
- **Any important notes for planning the lesson.**
- **Adaptations to terrain choice and snow conditions.**

5.3 BEGINNER PROGRESSIONS

(FOR LEVEL 1 & LEVEL 2)

Introduction

Our objective as instructors is to introduce our guests to the mountain environment and the sport of snowboarding. We also need the ability to teach our guests how to balance over their board, control their speed and direction and know how to ride the necessary lifts. The equipment and safety aspects of the sport, including snowboarding etiquette, should also be ingrained in our guests.

When teaching beginners, the best approach to offer the guest is the most effective and efficient way to develop the skills required. This must take into account the variables that will affect your progression choice.

Terrain is a significant factor when choosing your approach. A beginner teaching area that has a steeper pitch would best suit progressions like side-slipping, falling leaf and traversing on your way to teaching turning progressions and exercises. A beginner teaching area that has a very gentle pitch would best suit a progression like straight gliding, direction changes and teacher assisted exercises and drills. Snowboarding on flat, slow terrain can be unsafe and very difficult for any new rider because they can catch an edge.

Be sure to use the terrain to maximise the success of your guest and progress them safely towards their first turns.

It is important with the progression not to expect perfection, but allow your guests to develop skills and become comfortable.

With mileage they will become more proficient and develop their skills and style.

BEGINNER PROGRESSION SUMMARY

- **Equipment Familiarisation**
- **Stance**
- **Straight Gliding**
- **Riding Lifts**
- **Side Slipping**
- **Skidded Traverse**
- **Single Basic Turns**
- **Becoming Mobile**
- **Direction Change**
- **Getting Up**
- **Falling Leaf**
- **Garlands**
- **Basic Linked Turns**

EQUIPMENT FAMILIARISATION

Show them how to carry and place the snowboard on the snow. Explain the equipment so they have an understanding of their boots, bindings and board. Provide a brief orientation to the resort area.

Previous experience

No previous experience is required. Through renting the equipment or through friends, some guests might have basic knowledge.

Terrain

Introduce the equipment on wide, open flat area allowing easy movement. Use an area where you can check and adjust the equipment if needed, out of the way of other lessons and guests.

Why

Equipment Familiarisation allows you to:

- Increase the guest's understanding of snowboard equipment and terminologies.
- Inspect guest's equipment and adjust any issues.
- Begin mountain environment familiarity including issues such as mountain safety and etiquette.

MECHANICS OF EQUIPMENT FAMILIARISATION

Boots

- Explain to the guest that the boots should be done up firmly around the foot, ankle and shin. The guest and instructor can feel the boot to help check for the correct fit. If the heel of the guest can easily be lifted in the boots then they are too loose.
- Children's boots and new boots can be done up a little less at the top to aid with flexing the knees and ankles.

Board

- Have the guests flex the board. Identify the nose and tail, top and base of the board plus the toe and heel side.

Bindings

- Have guest hold and move the high-backs and explain how they are used for support on the heel side. Explain the binding functions and how to strap in and un-strap. Identify the safety leash and its purpose.
- All lessons should include a friendly introduction, but none are more important than the first time lesson. It should be stressed that the building of rapport between the instructor and guests is essential in alleviating many fears the guest may have and help them participate in the lesson.
- Guests' introduction to a foreign environment, combined with bulky clothing and unfamiliar equipment can cause guests to become disorientated and uncomfortable. Many guests may also come to a lesson with preconceived ideas of fear and risk of injury in what many consider a high-risk sport. Try to focus on the safety aspects at this stage, helping each guest to set aside any inhibitions they may have about their first time snowboarding. Feelings of frustration and incompetence are the principle causes of high drop-out rates among people taking the first time lesson.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Ensure the guests have an understanding of how the boots should fit and feel.
- Identify the nose/tail, edges, base and top of the snowboard.
- How to use the bindings to strap-in and un-strap.

Progressions Methods

Have students flex ankles and raise heels to check for loose boots.

Feel the top of the boot and inspect the boots for tightness.

Place the snowboard on the snow with bindings down and inform guests about board control.

Hold board upright and identify top, base and edges.

Place hand in the middle of the board and flex.

Identify bindings and have students tighten and loosen straps without feet in.

KEY POINTS WITH EQUIPMENT FAMILIARISATION

- In large groups if there are differences between guest equipment, briefly describe to them the possible advantages and disadvantages of each particular type.
- Possessing a positive attitude to having fun will help.
- How to carry and place the snowboard on the snow.
- Time spent adjusting guest's equipment correctly can have a huge impact on the success of the lesson. Not only will it aid in the guest's learning experience but also it will save energy and time for both the guest and instructor(s) down the track.
- The body is centred and aligned over the board with the ankles, knees, hips flexed. The upper body is anticipated in the direction of travel while the eyes are looking ahead.
- Explain the difference between the toe side and heel side positions and use some warm-up exercises to prepare guests.

Safety considerations:

- Safety considerations (leash).
- Adequate clothing, skin and eye protection.
- Ensure equipment fits correctly.
- De-tune new equipment.

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Equipment not suited.	Rental equipment. Not set up correctly.	Replace after lesson. Adjust if possible.
No safety protection.	Not aware.	Educate students on safety.
Inappropriate clothing.	Not aware. Do not own the correct clothing.	Watch them if the weather turns bad. Advise them for the future.

5.3
Beginner Progressions/Equipment Familiarisation
CHAPTER 5 The Progression

STANCE

The body is centred and aligned over the board with the ankles, knees, hips flexed. The upper body is anticipated in the direction of travel with the eyes looking ahead.

Previous experience

From equipment familiarisation the guest should have an understanding how far apart their feet will be on the board.

Terrain

Use flat terrain to introduce the positions. With the snowboard off, the use of a gentle slope will aid guests in balancing on the heel and toe side to feel the positions required.

MECHANICS OF STANCE

The rider can stand stationary on the snow or on a flat board feeling balance and flexion of the joints. Weight should remain even on both feet. Have the rider look ahead to promote anticipation in the stance. Anticipation should naturally occur as the upper body aligns itself with the lower body and stance angles. Move the centre of mass from the heel side to toe side feeling the ankles, knees, hips and spine flex and help roll the feet and/or board up on edge, while looking ahead.

Explain the difference between the positions of the body for heel side and toe side.

Centred

- **The centred (neutral) position is used to re-centre and transition the rider over the board allowing alignment of the joints and the ability to move in the direction of travel. Remaining centred also helps with riding surface lifts and exiting chair lifts.**

Toe side

- **The toe side position will not have as much flexion in the hips, allowing the rider to use their ankles and knees more affectively. It is important to remember not to arch the lower back and spine, as this will affect the rider's ability to edge and pressure the snowboard. Balance should be on the balls of the feet and not up on the toes.**

Heel side

- **The heel side position will involve more flexion in the hips and knees, as the knees do not bend backward. The lower spine will stay curved to allow the upper body to stay over the heel side edge of the board. The rider will feel more flexion and a lower position on the heel side.**

Why

Stance allows you to:

- **Determine whether the rider will be goofy or regular.**
- **Become familiar with a centred stance and toe side and heel side positions.**
- **Snowboard with the most efficient and effective position.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **An aligned and centred position.**
- **Anticipation in the stance with eyes focused ahead.**
- **Balance in a centred position then on toe side and heel side.**

PROGRESSIONS

Methods

Stationary board off explanation and practise of centred, toe side and heel side positions.

As above, with the front foot in binding.

As above, with both feet in bindings.

Hop up and down in a centred stance (vertically)

Rock nose to tail (fore and aft).

Roll form edge-to-edge (laterally).

Small hops rotating in each direction.

(With the board off, a gentle slope can be used to aid in the sensation of balancing on a flat board in the fall line and on the heel and toe side.)

KEY POINTS WHEN TEACHING STANCE

- **At this stage the guests should have a good understanding of the importance of a proper and correct stance. It will be the basis of all the skills they are asked to perform from here on. It is important to go through the Centred, Toe and Heel side positions with the board off and on, so the guests can develop awareness of these positions.**
- **Use sporting backgrounds such as surfing, skating, cricket, snooker, martial arts and golf to help determine a rider's stance. If there is trouble determining a rider's preferred stance, the guests will usually discover it themselves during the course of the lesson.**

Safety considerations:

- **Poor equipment or not set up correctly.**
- **Pre-existing injuries.**
- **Uneven or crowed terrain.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Too tense.	Nervous. Lack understanding.	Relaxation exercises, breathing, talking, jokes. Re-explain using common experiences/ analogies. Warm up exercises.
Cannot achieve stance.	Equipment not correct. Confused.	Adjust if possible. Exchange if possible. Use simple terms and analogies. Relate to guest.

5.3
Beginner Progressions/Stance
CHAPTER 5 The Progression

BECOMING MOBILE

Teach your guests to move around flat terrain, lift lines and small hills with only their lead foot in the snowboard.

Previous experience

During the warm-up, the guests have taken some sideways steps and placed their rear foot in the correct areas.

Terrain

Use flat terrain to begin. If the slope increases, skating should be performed on the uphill edge.

Why

Becoming Mobile allows you to:

- Gain mobility on flat terrain.
- Develop the feeling of sliding and balance.
- Approach lifts and clear unloading zones.

MECHANICS OF BECOMING MOBILE

Skating

- With the body centred over the front foot, small steps are made from the front binding to the rear binding by using the back foot to propel the rider forward. The body should remain balanced over the board and the joints should remain flexed. The head and upper body is anticipated in the direction of travel.
- Skating can be performed on the heel side and toe side. Heel side is the more efficient of the two, allowing the joints to stay aligned and keeping the board in front of the rider. Having the rider experience the toe side aids in preparing for sitting on the chair lift.

Uphill side steps

- The snowboard is placed across the fall line (perpendicular). Small steps are made up the hill as the snowboard is lifted and then edged into the hill for grip. The edge must stay high, providing grip and not allowing the board to slip down the slope. Angle the upper body slightly towards the slope lifting the board up and not dragging it.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Balancing over the lead foot with small steps when skating.
- Setting the edge in the snow when stepping uphill.
- Small steps to keep the rider balanced and in control.

PROGRESSIONS

Methods

Stationary sliding the board back and forth, feeling the sensation of the board on the snow.

Practise stepping from the toe side to heel side.

Lifting the board up from both sides.

Pivot in a circle on toe side and heel side.

Attempt skating on the heel side and toe side and develop edge control.

Practise stepping up and down the slope.

KEY POINTS WHEN TEACHING BECOMING MOBILE

- With skating it is important not to rush. Take small steps close to the board and within the bindings to ensure flowing movements. Progress at the pace of your guests and use games and exercises to keep the more coordinated guests interested while others practise.
- Uphill side steps are useful for climbing slopes that are too steep for skating. It introduces the guest to the board's edge and its ability to maintain grip.

Safety considerations:

- Teach guests to stop.
- Low speed (flat terrain).
- Snow conditions.
- Emphasise slow movements.

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Too tense.	Nervous. Lack understanding.	Relaxation exercises, breathing, talking, jokes. Re-explain using common experiences/ analogies. Warm up exercises.
Cannot achieve stance.	Equipment not correct. Confused.	Adjust if possible. Exchange if possible. Use simple terms and analogies. Relate to guest.

STRAIGHT GLIDING

Maintaining balance while moving forward down the slope. The front foot is strapped into the binding while the back foot is placed next to the rear binding on the inside.

Previous experience

Stationary movements and skating, placing the rear foot on the board will aid in balance when the rider begins to use a gentle slope.

Terrain

Good terrain choice is essential. A gentle slope with an even fall line and run-out or uphill pitch is ideal.

Why

Straight Gliding allows you to:

- **Develop balance and the correct stance.**
- **Feel the sensation of gliding on the snow.**
- **Straight running with one foot is important for learning to ride lifts.**

MECHANICS OF STRAIGHT GLIDING

Execution

- **Keep the stance centred with ankles, knees, hips and spine flexed. The body should be in a comfortable, anticipated position with the eyes looking in the direction of travel. Emphasize keeping the feet flat, thereby allowing the base of the board to remain flat on the snow.**
- **The shoulders should match the pitch of the slope to aid in keeping the rider balanced and over the board. The rider needs to remain strong in their muscular core to maintain a solid stance over the moving board.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Keeping the muscular core strong.**
- **Flexing the ankles, knees, hips and rolling the spine to keep the board flat.**
- **Heel side and toe side braking.**

PROGRESSIONS

Methods

Stationary shifting weight fore and aft.

Skating and then placing the back foot on the board.

Straight running with teacher assistance, building confidence.

Straight runs using the back foot as a brake on the toe and heel side when stopping.

Straight running lifting the back foot, and sinking up and down to aid balance.

Straight running with small hops for flexion and balance.

Flexing and breathing exercises.

KEY POINTS WHEN TEACHING STRAIGHT GLIDING

- **The rear foot can be used as a brake to help the rider become comfortable and balanced in a straight run. (This will cause a slight direction change.)**
- **Pushing the rear foot against the back binding or placing the rear foot on a stomp pad will aid in control and reduce the chance of the rear foot slipping off the board.**
- **Teacher assisting guests will aid with balance and confidence.**
- **Focus points will aid in balancing the rider.**

Safety considerations:

- **Low traffic areas with uphill or flat run-out will aid control and stopping.**
- **Ensure equipment is attached correctly.**
- **Do not over-practise straight running and climbing as it may result in early fatigue.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Poor balance.	Rushing Mass not over board. Looking down. Lacking co-ordination.	Emphasize slow movements. Flex joints and even weight. Use focus points. Teacher assistance. Slow speed
Board slides away from rider.	Unfamiliar movements.	Introduce edging, drag back foot heel and toe.
Tripping or becoming tangled with board.	Too quick, stepping incorrectly.	Introduce edging, drag back foot heel and toe. Emphasize slow movements.

DIRECTION CHANGE

Starting in a straight glide, the rider will make a turn to either the heel side or toe side.

Previous experience

Stationary, the rider has rolled onto both edges of the board and when skating, placed the rear foot on the board and rolled onto an edge to feel the sensation of moving to the working edge.

Balanced straight glides are required before attempting direction changes.

Terrain

Use a slope with a consistent fall line and a flat or slightly uphill run out.

Why

Direction Changes allows you to:

- **Experience the movements and sensation of turning the board.**
- **Develop balance on the heel side and toe side edges.**
- **Have greater control when riding lifts.**

MECHANICS OF A DIRECTION CHANGE

Transition:

- **The rider is centred and flexed over the snowboard. The centre of mass starts to move from over the board to the working edge with the aid of inclination and subtle angulation.**

Initiation:

- **The centre of mass moves over the working edge and into the turn. The lower body aids in edging the board by using angulation as the rider's body rotates in the direction of travel.**

Completion:

- **The rider has flexed to create the required edge angle to grip the snow with enough rotation to guide and stop the board.**

Execution:

- **As the rider moves to the heel side edge they will flex in the knees, hips and spine to aid in raising the toe side edge using their ankles and toe strap. At the same time they will look and rotate the leading side of the body in the desired direction of travel.**
- **On the toe side, the knees are flexed and the ankles, with the support of the boots, are used to lift the heel strap and edge for the rider to roll onto the balls of their feet.**
- **There is slight flexion in the hips to stop the lower spine arching. At the same the rider looks and rotates the leading side of the body in the desired direction of travel.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Move the centre of mass to the working edge.**
- **Progressive edging.**
- **Full body rotation.**

PROGRESSIONS

Methods

Stationary edge rolls from a centred position to both heel side and toe side edges.

With rear foot out on gentle terrain, one foot toe and heel drags to balance and control speed.

One foot traverses on a small slope balancing over the edge.

Teacher assisted direction changes.

Begin with a small radius then increase.

Increasing the edge during the execution to aid in turn shape.

Increase edging and rotation to turn the board back up the slope (J-turn).

Use ankles and knees to roll onto edge.

Use focus points.

KEY POINTS WHEN TEACHING A DIRECTION CHANGE

- **The rider must always be looking in the desired direction of travel.**
- **The terrain should allow the guest to control their speed and initiate the turn at a slow pace.**
- **The exercise is to introduce the rider to edging the board and the movements used on both heel side and toe side.**
- **Do not expect perfection. Mileage is needed to refine the direction change and the skills required.**

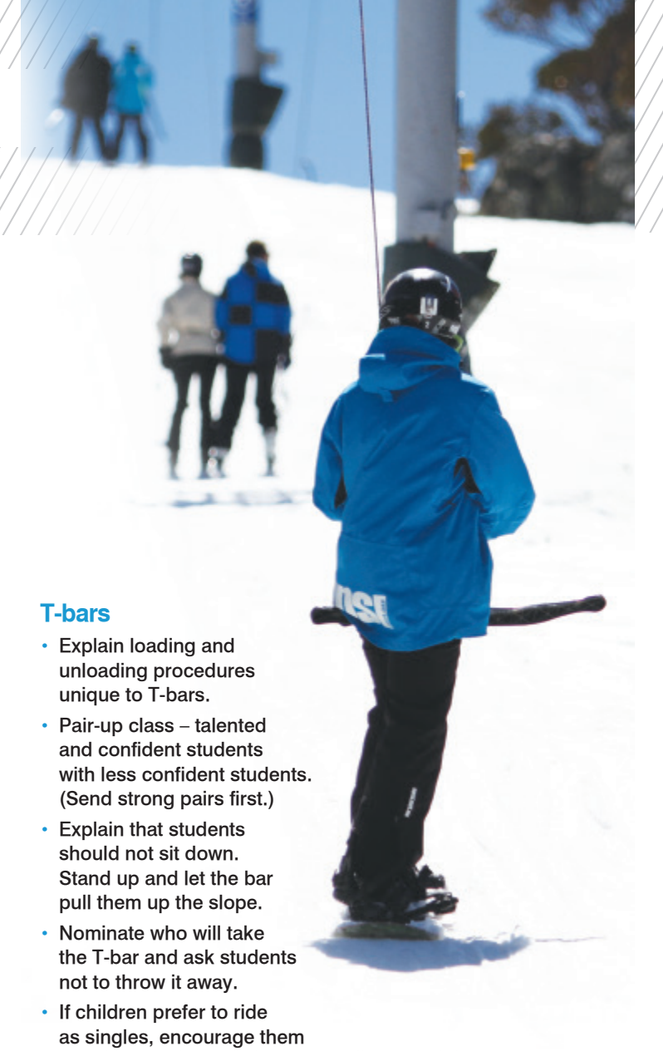
Safety considerations:

- **Ensure the back foot stays on the board. A stomp pad can help.**
- **Low traffic areas with an even run-out helps guests.**
- **Ensure the equipment is set up correctly.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Edging	Inclination. Uneven terrain.	Work on flexing joints. Teacher assistance Use fall line. .
Breaking at the waist.	On back foot. Scared. No support.	Lift back foot up and down. Slower speed. Tighten boots and bindings.
Board turns.	Edging the board. Rotating the body.	Emphasize flat feet and board. Hand and body alignment.
Too stiff.	Tense	Flexing and breathing exercises.

LIFT RIDING



Learning to ride the variety of lifts resorts have to offer.

Use these notes in conjunction with guidelines in 2.5 and the policies at each resort.

Previous experience

Completed a series of one footed exercises and have watched fellow riders load the lift.

Terrain ●

Lifts with easy on and off access, that have a consistent fall line and are not too steep.

Why

Lift Riding allows you to:

- **Move to new terrain and see more of the mountain.**
- **Gain confidence to use a lift outside lesson time.**
- **Saves energy and reduces hiking and fatigue.**

MECHANICS OF LIFT RIDING

Magic carpets/ people conveyers

- **Explain how to load and unload.**
- **Teacher assist to help students load and unload if needed.**
- **Keep the board pointing forward up the carpet and the back foot on the board.**
- **When unloading, keep the board pointing forward and skate out of the way.**
- **Control your group when loading and in the unloading area.**

Skate to the bottom of the carpet using small steps. As the nose of the board and front foot is placed on the carpet the board will begin to grip. The back foot should push forward as the rider loads the carpet and be placed on the board, next to the back binding. The rider should remain flexed and over the board. As the board stops at the top, small steps are used to clear the area.

Safety considerations:

- **The carpet needs to be clean and free of ice and snow to prevent slipping back.**
- **Teacher assist nervous and unbalanced riders.**
- **Guests too close to each other.**

T-bars

- **Explain loading and unloading procedures unique to T-bars.**
- **Pair-up class – talented and confident students with less confident students. (Send strong pairs first.)**
- **Explain that students should not sit down. Stand up and let the bar pull them up the slope.**
- **Nominate who will take the T-bar and ask students not to throw it away.**
- **If children prefer to ride as singles, encourage them to pair up and match them according to height.**
- **A common mistake is to unload the T-bar too early. Wait until they are on the flat area and over the crest where they will see the "unload here" sign.**
- **Explain what to do if they fall over and where to wait.**

Poma lifts

- **Same loading and unloading procedures as for T-bars.**
- **Explain that it is not a seat and that they should stand with their weight evenly on both feet once the board begins to slide.**
- **Be aware, Poma may lift children off the snow.**
- **Disembark only at designated unloading areas.**

The rider skates into position with the snowboard pointing forward up the lift line. When loading the lift from the front side, the rider needs to have their back foot on the heel side. As the lift attendant grabs the lift and places it between the rider's legs, they need to step onto the board with more weight on their back foot. This will prevent the rider being pulled forward. As the board and rider begin to slide they can adjust their weight to the slope of the lift line. The ankles and knees can aid in rolling from edge to edge to adjust the rider's line up the slope. The front arm should hold the T-bar and the back arm is used for balance and is placed over the tail of the board. The lower body needs to stay in alignment with the board to prevent rotation and edging which can turn the board instead of keeping it straight. At the top, the Poma is pulled towards the back leg and released in front of the rider as they exit the unload area. If the rider is loading with the T-bar coming from behind, they must be aware and not look for it. The foot is placed on the toe side then step back onto the board as it is placed between the legs or behind the rear buttock and leg.

Safety considerations:

- **Lift line tracks that are too steep, un-even or rutted.**
- **Teacher assist nervous and unbalanced riders.**
- **Avoiding lift towers with edging skills.**

Chair lifts

- **Explain where to load and unload, and the procedures unique to chair lifts.**
- **Children require special care with chair lifts and should be told to sit still while riding the lift (for safety).**
- **Remind the group of the dangers of loose clothing.**
- **Instructors with small children who need the lift slowed should move them all in one group so the chair will be slowed only once.**
- **Instructors should find competent adult partners for small children, as they should not ride alone. The child should queue to sit on the lift operator's side for assistance.**
- **Ensure that the safety bar is lowered during the ride.**

As the gates open or the lift attendant calls for the next guests to come out, the rider skates into position with the snowboard pointing forward and up the lift line. There is often a coloured line, which the rider can place their front foot over. The rider then steps their back foot over or on to the toe side to allow them to sit on the chair as it comes around. They look over their back shoulder to spot the chair.

Keeping the board pointing up the lift line, the rider sits slightly sideways on the chair so not to twist their knee or turn the board. As the board leaves the snow they sit back and lower the safety bar calling 'Heads' to alert other guests the safety bar is coming down to avoid hitting them in the head. The board can be rested on the back foot for support or the leg rest if the chair has one.

At the top of the lift the rider removes their back foot from under the board and turns their lower body slightly sideways so the board can be pointed straight for exit. The back foot should be over the board and, as the board touches down on the off ramp, placed on the middle of the board next to the back binding. The rider then uses their leg strength and backhand to help lift them up and over the board. The shoulders match the pitch to balance the rider and enable them to exit the area.

If the rider is nervous, slightly dragging the back foot on exit can act as a brake and help slow the guest but only on the flat and should not be attempted down the off ramp.

Safety considerations:

- **Ensure the chair is at the correct height for the guests.**
- **Ask for lifts to be slowed for first timers or nervous riders.**
- **Call 'Heads' when lowering or raising the bar so not to hit fellow guests.**
- **Allow room for students. This may require asking the lift attendants and public.**

  (Don't worry, not many skiers will want to ride the lift with beginner snowboarders.)

Rope tows/Cable tows

- **Get students used to starting off.**
- **Push to help them get moving.**
- **Keep board pointing up slope and do not zigzag.**
- **Explain if they fall to move out of the way quickly.**
- **When unloading, let go and move away as quickly as possible.**

Points from T-bars and Pomas remain the same. The only difference is the rider needs to hold the rope or handle in their front hand or with both hands. This requires upper body strength to keep the lower body in line with the board and track.

5.3
Beginner Progressions/Lift Riding
CHAPTER 5 The Progression

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Placing the rear foot on the board correctly.
- Staying over the snowboard.
- Gentle edge control.

Safety considerations:

- Poor upper body strength.
- Loose clothing.

PROGRESSIONS

Methods

Skating placing the rear foot on the board.

Straight glides with gentle edge work for control and adjusting line.

Straight glides rocking, fore and aft.

Straight glides with hops for pressuring skills.

Straight glides through corridors.

Straight glides pairing up with students.

Key points when teaching Lift Riding

- Be sure the student can handle the terrain serviced by the lift.
- Explain loading procedure, ideally at the location where the student can observe it for themselves (be sure not to impede traffic flow or queue).
- Ensure students know how to unload and move to a safe spot at the top of the lift, away from the exiting area.
- The instructor should organise the class into the required numbers. E.g. pairs.
- Allow sufficient time for safe loading.
- Be sure to alternate the class politely into the lift line with public.
- Make sure back foot is out of binding on all lifts.
- Instructor should respect the lift operator's expertise and follow their instructions.
- The instructor can remove their board to aid in loading and un-loading students.
- Advise the lift operator that it is the students' first time or if they are nervous.
- Ask for the lift to be slowed down if necessary.
- The instructor should go last (unless unloading half way on surface lifts) and ride up with the least confident student. This way you can give advice to anyone who may fall off the surface lift.
- In case of a fall on a surface lift, let go of the lift and move away from the lift track.
- Assist other instructors, especially with children.
- Lower the back bindings high back to avoid falling onto it or it being caught under low chair lifts.
- Ensure all student's bindings and boots are done up correctly.

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Falling off T-bars/Pomas.	Weight too far forward. Inclination. Breaking at the waist. Poor skating. Foot not on board.	Weight on back leg. Flex lower joints. Use arm to hold T-bar. Teacher assistance. Smaller steps, slow lift. Teacher assist. Start with foot on board.
Trouble loading.	Board not straight. Foot not on board.	Turn hips on chair. Point ahead with front arm.
Trouble unloading chair.	Leaning back.	Position foot over board. Push rear foot against back binding. Match shoulders to pitch. Flex front ankle and knee. Touch front knee.

GETTING UP

Teach the rider how to get up off the snow from the heel side and toe side positions or place their rear foot in while standing.

Previous experience

Guests should be warmed-up in both their upper and lower body and will require a level of fitness to get up.

Terrain

Use flat terrain to begin with and develop the understanding and balance required.

Move to a suitable slope that will aid guests on their heel side.

Why

Getting Up allows you to:

- Keep snowboarding and stop guests from continually taking off their board.
- Save energy and provide the most efficient way to get up.

MECHANICS OF GETTING UP

Toe side

From the hands and knees, position the board so it is below the rider and across the fall line. Dig the toe edge into the snow creating a platform. Using the hands, push up off the snow positioning the hips and mass over the board. Then use the legs to stand up assuming the basic position. Ensure the weight is even on both feet and over the uphill edge.

Heel side

With the board and body across the fall line, dig the heel edge into the snow creating a platform. Move the hips close to the heel edge and with either hand grab the toe edge. Keep hold of the toe edge as the other hand moves to one side of the body. The hand on the toe edge is used to pull the head and shoulders over the board as the free hand pushes the hips and mass up over the board. Once over the board use the legs to stand up into the basic position. This method will work best on steeper slopes.

The rollover/rock 'n' roll

From the sitting position, manoeuvre the nose of the board up the fall line and close to the body. Grab under the uphill thigh with the uphill hand and place the downhill hand near the tail of the board. In one continuous movement, ROCK on to your lower back and ROLL over the downhill side of your body. The hand under the thigh can be used to assist the roll. Complete as getting up toe side.

Standing

To reduce fatigue and enable guests that cannot get up the opportunity to ride, it is possible to place the back foot in the binding while standing. This is commonly performed at the top of the run but can be done down the slope if the terrain is not too steep.

There are two methods of standing and placing your back foot in the binding.

Heel side, the rider needs reasonably flat terrain to balance. The back foot is placed uphill and behind the board. The board is then moved forward and backward onto the heel edge until the edge has created a platform to balance on. When the rider can balance on the front foot - they can then place the rear foot into the binding.

Toe side, the rider faces uphill and repeats the same movements as for heel side. The key is to keep the board flat with the terrain until the board is held in position. This then requires the rider to have experienced the toe side and be able to balance before attempting.

Both methods require the board to be perpendicular to the fall line.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Keeping the board across the fall line.**
- **Getting the mass close to the edge.**
- **Balancing the mass over the uphill edge.**

PROGRESSIONS

Methods

On flat terrain practise getting up with board off.

Practise getting up with rear foot out of binding.

Practise creating platform with rear foot out of binding on flat terrain.

Teacher assist for balance early.

Use a suitable slope to practise getting up on heel.

Practise rolling over and getting up on toe side.

KEY POINTS WHEN TEACHING GETTING UP

- **For a high percentage of guests, getting up on the heel side is almost impossible especially when the terrain is flat.**
- **Often teacher assistance is needed early to aid the guest. Teaching the guests how to get up correctly will aid in movement of the class and allow in the guests energy to be focused on snowboarding.**
- **If guests cannot get up on the heel side, the toe side can be introduced. Often a basic turn needs to be introduced to allow the guest to get to their heel side.**
- **Creating a platform underneath the board will aid in the board gripping and not slipping down the hill.**

Learning to get up can be extremely difficult for some students and can cause fatigue before even learning to ride. Instructors can help by

'Teacher Assisting' the students up to help them save energy and gain balance when standing. This may even occur with more advanced riders in tricky conditions like ice and powder.

To safely left students, instructors should remember a few key points:

- **Have students create a platform to stand on**
- **When down hill, place foot on the student's board to prevent sliding.**
- **Keep back straight and lift with the legs and arms with the aid of your own body weight.**

Safety considerations:

- **Ensure suitable terrain for each method.**
- **You will need to assist guest's first attempts.**
- **When helping your guests up use proper technique. Keep the back straight and lift with the legs using your body weight to help lift the guest.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Cannot get up heel side.	Lack flexibility. Clothes are too tight.	Teacher assistance. Pair up with guests. Roll over to toe side. Roll over to toe side. Teach students how to strap in standing up. Dig the edge in.
Board slides away.	No platform. Board not across fall line.	Position board across slope.
Losing balance.	Mass not over edge.	Keep hips over edge. Stand slowly.

SIDE SLIPPING

Balancing on the uphill edge sliding down the slope with the snowboard across the fall line.

Previous experience

With the board off, balancing on a gentle slope feeling the sensation of the toe and heel side positions and movements.

Terrain

A gentle slope with an even fall line, no obstacles and low traffic will aid student's confidence and skills.

Why

Side Slipping allows you to:

- **Introduce a rider to balancing on the edge with both feet and feeling the sensation of skidding.**
- **Stop on the heel and toe side edges.**
- **Negotiate difficult situations and help with speed control.**

MECHANICS OF SIDE SLIPPING

Transition:

- **Emphasize a centred position with weight evenly distributed over both feet and hands by the sides. The board remains straight across or perpendicular to the fall line. The centre of mass is over the working edge with the hips, knees and ankles rolled across the board to help create and control the edge angle. The greater the edge angle, the better the grip and speed control achieved.**

Initiation:

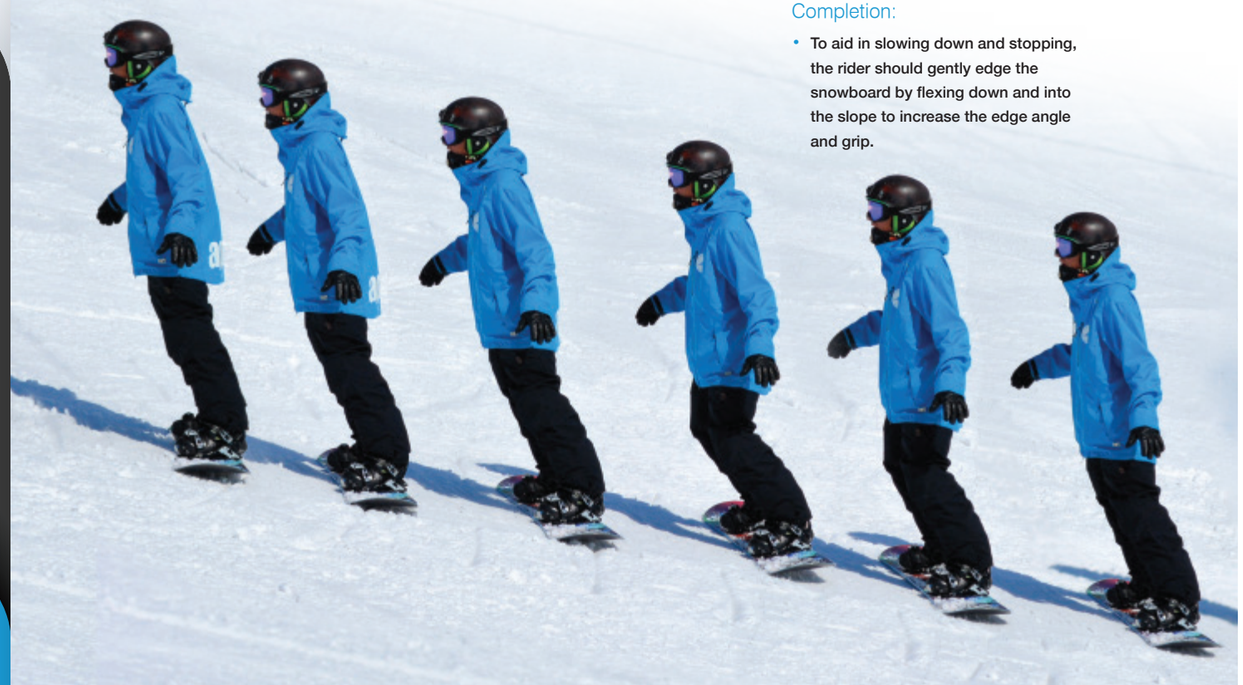
- **To start sliding, the rider should rise up to aid lowering the edge angle to release the grip of the edge on the snow. As the mass moves up and over the board, the edge angle will decrease.**

Execution:

- **Focus on slow and subtle flexion of the spine, hips, knees and ankles to assist control.**
- **The greater the edge angle, the better the grip and speed control achieved.**
- **On the heel side, leaning on the high-backs can aid in supporting a rider early on in their development and increase the edge angle as the centre of mass, knees and ankles are rolled into the slope.**
- **On the toe side, it is important to get the guests to balance on the balls of their feet and not up on their toes. Rolling the ankles and knees into the hill with their centre of mass, will increase the edge angle.**

Completion:

- **To aid in slowing down and stopping, the rider should gently edge the snowboard by flexing down and into the slope to increase the edge angle and grip.**



FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Use core strength to stabilize upper body.**
- **Laterally sinking and rising to control edge angles and pressure.**
- **'Plantar' and 'Dorsi' flexion for fine edge control.**

PROGRESSIONS

Methods: (Heel side edge first then toe side).

With the board off, remain stationary on the slope feeling the movements.

One foot in on flat terrain, rolling the board on to the edge feeling the board grip.

Both feet in the bindings with teacher assistance.

Teacher assistance, gradually letting go to a stop.

Develop sinking to aid in slowing down and rising to allow sliding.

Develop increasing the edge to slow and releasing the edge to slide.

KEY POINTS WHEN TEACHING A SIDE SLIP

- **Introduce and explain the fall line.**
- **Always remaining balanced over the uphill edge.**
- **The side slip is a way for the rider to control speed and is the first time the rider will be moving down the hill with both feet strapped in.**
- **Gentle use of edging to slow the board and rider down.**
- **If the terrain is too flat then moving to a 'Falling Leaf' will be more suitable.**
- **It is very hard to stop and balance in the first side slips. Teaching guests to slow and then go will aid balance.**

Safety considerations:

- **Use terrain with no obstacles and low traffic.**
- **Avoid icy and bumpy conditions.**
- **Explain the importance of staying on the uphill edge at all times.**
- **Teaching guests to slow and get low when stopping will aid in safely sitting guests down.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Abrupt edging.	Fear/ nerves. Breaking at the waist. Lacks movements Uneven weight.	Teacher assistance. Revise stance stationary. Check high backs for correct angle. One footed side-slip, drag back foot heel and toe side on correct terrain. Use alignment exercises.
Board deviates into fall line.	Rotation. Inclining downhill.	Hands on hips. Teacher assistance.
Catching downhill edge.	Dropping edge too quick. Terrain too flat. Looking down. Not sinking when edging.	Steeper slope. Use focal points. Sinking exercises.
Cannot stop.	Board in fall line.	Revise neutral position.

FALLING LEAF

Controlled skidding across the mountain, from side to side on the same edge.

Previous experience

Guests require balance over both edges before moving into falling leaf.

Terrain

Use a gentle slope with an even fall line that aids guests with balance and control.

Concave terrain will help keep guest in a corridor and under control.

Why

Falling Leaf allows you to:

- **Control the direction of travel while skidding.**
- **Negotiate difficult situations such as traffic, poor terrain and steep terrain.**
- **Introduce the rider to switch.**

MECHANICS OF A FALLING LEAF

Initiation:

- **From a side slip, initiate the direction change by slowly raising the mass up to release the edge and rotate the leading side of the body down the slope and in the desired direction of travel.**

Transition:

- **The rider is flexed and centered over the uphill edge in a side slip, which is also known as the 'neutral phase' of the falling leaf.**

Execution:

- **The rider should maintain alignment with the board and slope as the board is guided across the hill.**
- **Torsional flex can be used to blend the movements of the body and board together more smoothly as the Falling Leaf develops. Weight can be applied to the leading foot for riders leaning back.**

Completion:

- **To stop the direction of travel, slowly rotate the body and board back across the fall line and increase the edge angle using angulation.**
- **Then repeat in the opposite direction focusing on keeping the board and body moving together.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Rising and sinking with full body rotation.**
- **Matching shoulder to the pitch.**
- **Progressive edging.**
- **Torsional flex (twist and pedal).**
- **Switch riding.**

PROGRESSIONS

Methods: (Heel side edge first then toe side).

Board off, on the slope, revise movements and feelings.

Use a side slip to promote rising up and sinking on the edge to feel the grip then add small amounts of rotation to feel the board start to move under the rider.

Use focus points across and down the slope to aid in rotating the leading side of the body.

Add torsional flex using the feet and ankles to aid in developing finer movements and direction.

Adjust weight from centred to fore and aft to add balance and build confidence.

Vary the length of travel across and down the slope.

KEY POINTS WHEN TEACHING A FALLING LEAF

- **Start with a centred position and movements to begin.**
- **Emphasize smooth and subtle movements and a centred/neutral position between the direction changes to aid in control.**
- **Speed should remain consistent with the rider slowing down in the neutral phase.**
- **Slightly rotating the board and body uphill during the neutral phase can help control speed and direction.**

Safety considerations:

- **Guests should be advised to look up hill for traffic before entering the slope.**
- **Work with the fall line and terrain.**
- **Turning up hill to aid slowing and stopping.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Board seeking the fall line.	Over rotation. Weight not centred.	Focus points. Point arms. Centre mass between feet.
Cannot achieve direction.	No rotation. Not releasing edge. Uneven weight.	Rotate leading side of body. Torsional flex. Match shoulders to pitch.
Riders on back foot.	Fear, not centred.	More weight on front foot. Match shoulder to pitch. Teacher assist.
Lacking direction.	Not reading fall line.	Teach fall line. Use suitable terrain.

SKIDDED TRAVERSE

A controlled crossing of the slope and fall line with an anticipated stance and more edge control.

Previous experience

Controlled falling leaf on the heel side and toe side and ability to stop on both edges.

Terrain

A wide-open slope with an even fall line and safe stopping points to stop and roll-over to the new edge.

Why

Skidded Traverse allows you to:

- **Allow the guest to have speed control and direction across the fall line.**
- **Prepare the guest for turns and eliminates confusion of which is the leading foot for riding.**
- **Develop the rider's mobility around the mountain.**
- **Build on edging skills and stance over the board.**

MECHANICS OF A SKIDDED TRAVERSE

Transition:

- **The rider is flexed and centred over the uphill edge in a side slip.**

Initiation:

- **From a side slip, rotate the upper body into an anticipated position. Gently rise up and rotate the body and board down the slope allowing the nose of the board to be lower than the tail.**

Execution:

- **Use flexion in the spine, hips, knees and ankles to create a stronger edge angle by rolling the lower joints into the hill to gain greater grip in the snow.**
- **Speed and direction can be maintained by adjusting the position of the nose of the board, either more down the fall line or across the hill.**

Completion:

- **Rotate back to a neutral position and come to a stop, roll over, and repeat on the opposite edge.**
- **To aid in slowing down the rider and board can be guided up the slope.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Core strength to hold anticipation.**
- **Strong lower body angulation.**
- **Less skidding by edging to develop direction and control.**

PROGRESSIONS

Methods

Stationary, introducing anticipation of the upper body and edging movements.

Teacher assist to start then release the student on their own.

Traverse across slope gently increasing and decreasing edge angle to develop edging skills.

Traverse across the hill and steer uphill to stop.

Follow the leader to develop edging skills.

Traverse, gently rolling on and off edge to feel the edge grip and release.

Traverse for longer periods of time and on different slopes.

KEY POINTS WHEN TEACHING A SKIDDED TRAVERSE

- **This is an important stage of the progression as it is the platform for the rider to enter and exit a turn and maintain control.**
- **It allows the rider to cross the entire slope for the first time and will enable them to negotiate more of the mountain.**
- **Turning the board and body uphill during the neutral phase will aid in speed control.**
- **Continually stopping and rolling-over may fatigue the guest.**

Safety considerations:

- **Always look uphill before crossing the slope.**
- **Avoid long traverses with non-athletic guests or children as it can cause muscle fatigue.**
- **Use low traffic areas and give meeting points to the group.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Lacks speed control.	Over edging. Board too much in fall line. Board still in fall line.	Lower edge angle by sinking. Focus point across run. Turn board uphill.
Problems stopping.	Over edging.	Use lower joints to create edge angle.
Falling in traverse.	Inclination. Poor terrain/fall line.	Teacher assist. Edge sets. Use suitable terrain and slope.

GARLANDS

Staying on the same edge directing the rider and board in and out of the fall line. Progress the Garlands until the board is directed into the fall line and flat, and then turn back across the slope. Creates a diagonal 'S' shape across the slope.

Previous experience

Guests should have control of their heel side and toe side edge and be able to turn the board uphill to aid stopping.

Terrain

Wide open terrain with a consistent fall line and low traffic.

Why

Garlands allows you to:

- **Teach the rider the initiation and completion phases of a turn.**
- **Allow the rider to commit to the fall line and develop rotation and edging skills.**

MECHANICS OF GARLANDS

Transition:

- **The rider is in a flexed and anticipated position as they traverse the slope. Their centre of mass remains over the working edge and transitions slowly on and over the working edge depending on the degree of the garlands.**

Initiation:

- **From a skidded traverse, extend up and forward to release the edge and rotate the leading side of the body into the fall line.**
- **Use foot pedalling to aid in releasing the edge at the initiation and also to aid in creating a platform at the completion.**

Execution:

- **The centre of mass should move forward and over the board as it enters the fall line.**
- **Once the board starts to flatten, move the centre of mass back to the working edge by moving into the hill while rotating the body and board across the slope.**
- **On the heel side, it is important to bring the hips and mass over the board and not just the head and shoulders.**
- **On the toe side, gentle looking down the slope and rotating the lower body and legs will help the board move into the fall line.**

Completion:

- **To help complete the garland, roll the hips, knees and ankles (plantar/dorsi flexion) to increase the edge and gain grip and rotate across the slope to the desired direction.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Move the mass forward and over the board.**
- **Full body rotation into and out of the fall line.**
- **Matching shoulders to the pitch.**
- **Torsional flex (twist and foot pedalling).**

PROGRESSIONS

Methods

Teacher assisted garlands to build confidence and skills.

Small garlands, focusing on rising and rotating to release edge.

Use a 'fan progression' to build the size and shape of the garlands for initiation and completion.

Blend 'torsional flex' into garlands to aid in releasing edge.

Teacher assisted direction changes with both feet in, to allow guests to execute and complete turns.

Build rotation edging and pressure skills until board is flat in the fall line.

Follow the leader to develop rhythm and timing.

KEY POINTS WHEN TEACHING GARLANDS

- **Garlands help guests gain the confidence to enter the fall line and control their speed.**
- **Start with shallow garlands and progress slowly into fall line.**
- **It allows the rider to start to blend skills, such as rotation, edging and pressure control, together without having to complete a turn.**
- **Turning the board uphill at the completion phase will aid in speed control and developing skills.**

Safety considerations:

- **Terrain too flat or too steep.**
- **Guest's nerves when entering the fall line and gaining speed.**
- **Blind spots on toe and heel side.**
- **Check uphill before crossing slope.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Trouble turning into fall line.	Fear. No up un-weighting. On back foot. Inclination.	Increase falling leaf into fall line. Rising exercises. Match shoulders to pitch. Flex front ankle and knee more. Revise lower body edging.
Over edging.	No focus points.	Provide focus points.
Over rotation.	Too much front foot.	Uphill falling leaf.

5.3
Beginner Progressions/Garlands
CHAPTER 5 The Progression

SINGLE BASIC TURNS

The first single turns a guest will make. From toe side to heel side first, then heel to toe side.

Previous experience

Riders can make a series of garlands on toe and heel side and are able to guide the snowboard into the fall line and uphill to stop.

Terrain

A gentle slope with a consistent fall line that is not too steep or too flat.

Why

Single Basic Turns allows you to:

- **Change the direction of travel by using both edges.**
- **Blend skills and be more efficient when riding.**
- **Start really snowboarding.**

MECHANICS OF A SINGLE BASIC TURNS

Transition:

- **The rider is flexed and balanced in a controlled skidded traverse as they move across the slope.**
- **The transition starts by gently raising the centre of mass up and over the board to release the edge as the leading side of the body rotates into the fall line. Foot pedalling can be used to assist the rotation to aid in releasing the edge.**

Initiation:

- **The rider needs to be looking in the direction of travel to help guide the board and body into and through the turn. Once the board has flattened and the rider has re-centred over the board, the initiation phase begins with the centre of mass shifting onto the new edge while the rider rotates the board and body in the desired direction.**

Execution:

- **During the execution the rider progressively angulates to gain grip on the board and continues to rotate their body in the direction of travel. This will enable the rider to maintain alignment and balance in the turn.**
- **On the heel side the rider will flex more in the knees and hips as the knees do not bend backwards. The spine is rolled aiding in keeping the rider over the board.**
- **On the toe side the rider will flex more in the knees and ankles to edge the board.**

Completion:

- **Moving into the turn with progressive angulation and sinking aids in edging the board and controlling the pressure, which will allow the rider to create a platform to resume the skidded traverse and prepare for the next turn.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Re-centring and moving into the turns.**
- **Higher edge angle as board executes the turn.**
- **Torsional flex (twist and foot pedalling).**

PROGRESSIONS

Methods

Fan garlands until board is running flat in fall line for transition, initiation, execution and completion.

Uphill turns to aid in completion and speed control.

Teacher assisted direction changes with both feet in to allow guests to execute and complete turns.

Multiple teacher assisted single turns starting with toe to heel then progress to heel to toe.

Three point turns from heel to toe side for guests that have trouble with heel to toe turns.

Work on fluency and balance by shortening the traverse and reducing turn radius.

Follow the leader to funnel turns and develop skills and rhythm.

KEY POINTS WHEN TEACHING SINGLE BASIC TURNS

- **Use of full body rotation through core-strength, legs and upper body, to guide the leading side of body and board in desired direction.**
- **Rotation of the upper body should be minimal and only serves to enhance the lower body rotation.**
- **There are many teaching tools and aids that can be used at this stage to build confidence and get the guests comfortable with crossing the fall line and entering the new turn.**
- **The instructor should show a clear demonstration of an up un-weighted turn with movements blended through the phases.**

Safety considerations:

- **Allow for the time it takes to gain confidence.**
- **Provide an escape route for nervous guests (E.g. garlands).**
- **Use suitable terrain and snow conditions.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Trouble turning into fall line.	Fear. Weight on back foot.	Teacher assistance. Move to less difficult terrain Match shoulders to pitch. More weight on front foot. Up un-weight
Over edging.	Inclination. Not releasing edge.	Lower body angulation and focus. Up un-weight with rotation. Torsional flex. Revise skidding skills.
Over turning.	Inclination. No direction.	Focus points. Traversing skills.

BASIC LINKED TURNS

Turns from edge to edge connected with a smooth transition instead of a traverse.

Previous experience

Riders have completed single turns form toe to heel and heel to toe with teacher assistance and without. Riders have also begun to turn on their own with a traverse in-between.

Terrain

A gentle slope with a consistent fall line that is not too steep or too flat.

Focus on terrain that allows the guests to build their confidence and variety of turn shapes.

Why

Basic Linked Turns allows you to:

- **Begin making more rhythmical turns with more fluent movements.**
- **Understand that linked turns are used on steeper terrain.**
- **Blend the skills and be efficient while snowboarding.**

MECHANICS OF BASIC LINKED TURNS

Initiation:

- **The rider must move the centre of mass to the inside of the turn (inclination) as the lower body begins to flex and create an edge angle by the use of angulation.**

Transition:

- **The rider extends the lower body in order to raise the centre of mass up and forward over the board. This helps to release the edge and pressure on the board.**
- **During the up un-weighting of the board, the leading side of the body rotates into the fall line to guide the rider into the turn. Foot pedalling can be used to assist the rotation to aid in releasing the edge.**

Execution:

- **As the rider rolls onto the new edge, constant rotation of the body and board is made through the fall line, and edging is progressively used to create a platform. The lower body flexes down and into the turn to increase the edge and control the pressure on the board.**

Completion:

- **The rider edges and rotates the board until the turn has been completed and speed control is achieved. The rider will complete the turn in a flexed position.**
- **Once the turn is completed, use subtle rotation whilst rising up and forward to transition to the next turn.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Earlier re-centring and edging.**
- **Forward movement in the transition.**
- **Lower body rotation and angulation.**
- **Slightly faster speed and smaller radius.**
- **Foot pedalling (torsional flex).**

PROGRESSIONS

Methods

Basic turns working on progressive angulation for symmetry and shape of turns.

Garlands working on projection and angulation for initiation and execution.

Basic turns focusing on projection and moving quicker to the new working edge.

'Closed' and 'Open' turns on varied terrain to develop blending and timing skills.

Follow the leader developing rhythm and symmetry.

Drills such as figure 8's, counting exercises and hopping on the edge to develop the rider's balance.

KEY POINTS WHEN TEACHING BASIC LINKED TURNS

- **When executing heel side turns, the hips will flex more than during toe side turns, as the knees do not bend backwards. This will see the rider sink down more on the heel side.**
- **Full body rotation is used with the upper body anticipated throughout the turns and the focus being on developing the edging and rotation of the lower body and legs.**
- **By working on pressure control in the initiation and completion phases of the turn, rhythm will build, eliminating the need for a traverse.**

Safety considerations:

- **Terrain that is not too steep or too flat.**
- **Finish turns for speed control.**
- **Uneven or crowded terrain.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Getting stuck in turns.	Inclining. Weight on back foot. Not releasing edge.	Garlands with lower body edging. Match shoulders to pitch. Work on up un-weighting. Torsional flex (twist/pedal). Counting exercises. Teacher assistance.
Falling.	Edging too early.	Work on un-weighting.
Trouble linking.	Lacking rhythm. Poor pressure control.	Edge hops between turns.
No speed control.	Not finishing turns.	Uphill turns. Follow the leader.

Notes

SECTION 2

5.4 NEW RIDER PROGRESSIONS [FOR LEVEL 2]

The New Rider progressions offer a variety of options to the guest after having learnt the fundamentals of linking turns as a beginner. As an instructor, it is important to tap into the goals of the guest to find out what they should learn and what they are ready to learn.

The objective should be to improve guests' technique and control by developing the necessary skills in preparation to use more of the mountain and its variety of terrain. As well as advancing the guest's versatility by introducing them to a variety of riding skills including steering, short turns, long turns and beginner freestyle.

There is an emphasis on introducing freestyle in the new Rider progression but it is important to remember that there are strong links between the skills developed in all the progressions. These skills will aid in stronger free-ride/freestyle abilities and improve safety all over the mountain.

NEW RIDER PROGRESSION SUMMARY

- **Steered turns - (medium radius)**
- **Switch turns**
- **Long turns**
- **Basic short turns**

BEGINNER FREESTYLE

- **Ollies/nollies**
- **Reverts**
- **Basic airs**
- **Box/rail sliding- 50/50**

STEERED TURNS - (MEDIUM RADIUS)

Turns with more refined edging and rotation skills, improving symmetry and control.

Previous experience

The guests can comfortably link skidded turns on green and blue terrain. Guests can stop by making up hill turns on both the toe and heel side.

Terrain

Green and blue terrain that is groomed with a consistent fall line will enable guests to develop the skills required. The use of banks and rolling terrain can be added once steering is developed.

Why

Steered turns allows you to:

- **Reduce skidding and improve control while turning.**
- **Vary turn radius and speed.**
- **Develop skills and turn shapes.**

MECHANICS OF STEERED TURNS

Initiation:

- **As the board flattens, the rider re-centres over the board and moves the mass forward and into the turn, allowing edge to be set earlier. The lower body and legs angulate at the initiation to aid in edge control and balance.**

Execution:

- **The rider sinks down progressively throughout the turn to increase the edge angle and pressure on the edge by using progressive angulation and rotation.**
- **Edging and pressuring skills are developed through refining the movements in the ankles, knees, hips and spine, by rolling them into the turn and slope with progressive rotary movements of the lower body.**

Transition:

- **The rider is centred, flexed and balanced over the uphill edge. The centre of mass starts to rise up and project forward in the direction of travel as the leading side of the body, especially the lower body and legs, rotate into the turn. Rising enables the edge to be released and the board to flatten as rotation guides the nose of the board and rider down the slope and into the turn.**
- **Foot pedalling will aid in releasing the edge.**

Completion:

- **At the completion of the turn, the board has been edged to create a platform from which the rider can rise up and transition from one turn to the next. The rider will complete the turn in a flexed and balanced position.**

PROGRESSIONS

Methods

Linked turns working on rising and sinking.

Traverse rolling on and off edge (edge sets).

Traverse balancing higher on edge angle and turn the board uphill.

Link turns edging higher at the end of the turn.

Garlands working on projection and releasing the edge earlier.

Garlands working on lower body steering.

Linked turns working on projection and building to a higher edge angle.

Methods

Stationary revising movements and feelings.

Single uphill turns working on edging through the end of the turn and uphill to a stop.

Uphill turns edging earlier through the entire phase.

Linked garlands focusing on projection and sinking.

Turns across the fall line for earlier edging.

Funnel turns working on blending skills and mileage.

Riding banks working on earlier edging and turn shape.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Earlier re-centring with projection through turns.**
- **Full body rotation with lower body steering.**
- **Foot pedalling (torsional flex).**
- **Stronger edging for shape and symmetry of the turns.**

KEY POINTS WHEN TEACHING STEERED TURNS

- **Anticipation of the upper body through the turns is necessary to help develop steering and projection of the rider.**
- **At this stage, the instructor should have developed a keen eye for spotting the general weaknesses and strengths in a rider's stance, skills or equipment.**
- **Perfection is not the goal at this stage but guidance and mileage is key to the guest's development.**
- **More speed, slightly steeper terrain and correct turn shape are important for this turn. This will allow for speed control and give the guest the ability to move down the hill varying the radius of their turns.**

Safety considerations:

- **Earlier edging can cause the edge to catch if skills are weak.**
- **Higher edge angle can affect speed control.**
- **Finish the turn for control.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Over edging.	Inclination. Over edging. Loose bindings/boots.	Upper body and shoulder angulation. Edge sets. Garlands with lower body angulation. Tighten equipment.
Falling into turns.	Lacking edging.	Work on rolling edge up in turn.
Poor turn shape.	Lack of edging.	Refine angulation.
Skidding.	Pushing board. Lack of speed. Confused.	Sink into turn. Uphill turns. Fore aft turns. Faster, steeper pitch. Revisit T.A.D./Demonstrate clearly. Show track left in the snow.
Turns not blended.	Lacking timing.	Follow the leader.

SWITCH TURNS

Linking turns in the opposite direction to the preferred stance.

Previous experience

The guest can comfortably ride blue terrain with steered turns and can link turns down black terrain.

Terrain

Wide-open green terrain is best for introducing the fundamentals. As the guest develops the use of banks, varied terrain can be added to strengthen the rider.

Why

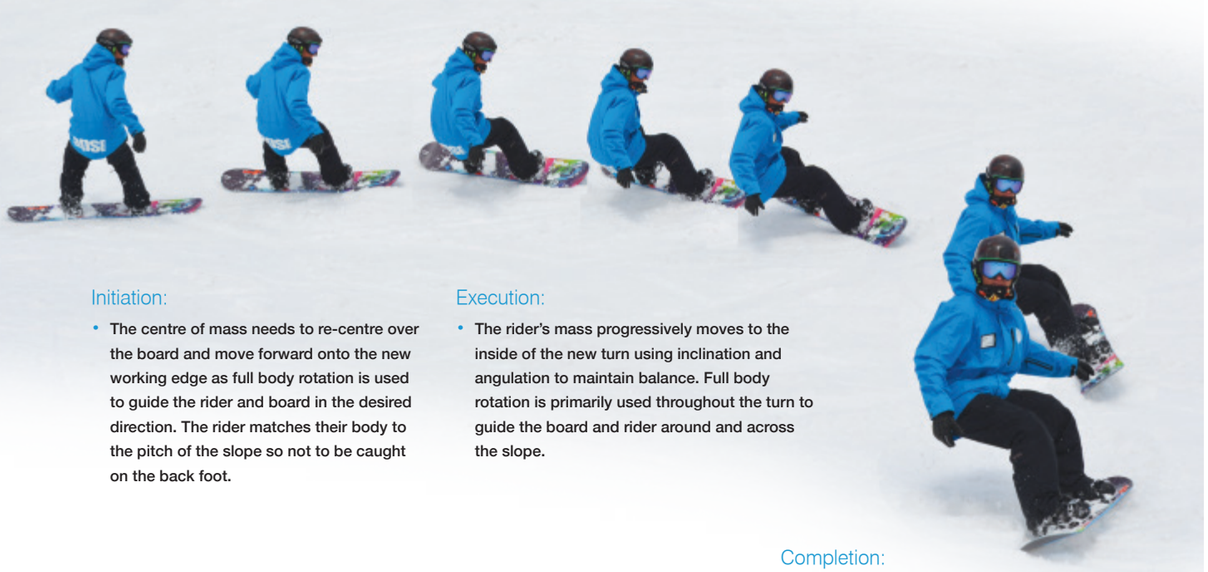
Switch Turns allow you to:

- **Improve and strengthen rider's balance and skills.**
- **Build confidence with riding regular.**
- **The basis of freestyle riding is the ability to ride the board in both directions.**

MECHANICS OF SWITCH TURNS

Transition:

- **The rider is flexed and centred over the uphill edge. Focus is on maintaining an anticipated stance. The muscular core, lower back and spine must work to hold the upper body anticipated and balanced. The rider rises and rotates the leading side of the body in the direction of travel to aid in moving their mass from one edge to the other.**



Initiation:

- **The centre of mass needs to re-centre over the board and move forward onto the new working edge as full body rotation is used to guide the rider and board in the desired direction. The rider matches their body to the pitch of the slope so not to be caught on the back foot.**

Execution:

- **The rider's mass progressively moves to the inside of the new turn using inclination and angulation to maintain balance. Full body rotation is primarily used throughout the turn to guide the board and rider around and across the slope.**

Completion:

- **The rider uses progressive edging and rotation to finish the turn and create a platform underneath them to complete the turn and transition from into the new turn.**
- **Edging is controlled through angulation and the turns remain up un-weighted.**

(Refer to basic linked turns)

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Anticipation in the switch stance.**
- **Re-centring through the turns.**
- **Matching the body to the pitch of the slope.**
- **Earlier edging with lower body angulation.**

PROGRESSIONS

Methods

Revise the beginner progression from falling leaf with emphasis on anticipation in the new direction.

Use varied terrain and teaching styles to develop guest's skills and understanding.

Methods

Uphill falling leaf, heel and toe side developing edging and rotational skills.

3-point turns in both directions.

180's and 360's across the fall line.

360's in the fall line.

Reverts on banks.

Switch direction changes with two feet in.

Follow the leader.

KEY POINTS WHEN TEACHING SWITCH TURNS

- **Stance angles and the position of the bindings can affect ability to ride switch.**
- **Guests can easily move away from the initiation and execution of the turn and end up on their back foot. Projection and confidence is needed.**
- **Time and mileage with the progressions will aid in building guests' confidence and ability to commit to the turn and its completion.**
- **It is possible to use the beginner progression to teach switch. The second methods are more focused on intermediate riders looking for more challenging and fun progressions.**

Safety considerations:

- **Heel side blind spots and traffic.**
- **Give guests an escape route or option.**
- **Teach assist first turns.**
- **Gentle and constant terrain.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Lacking control.	Weight on back foot. Too fast.	Match shoulders to pitch. Projection. Teacher assist.
Getting blocked.	Lacking anticipation. Lacking rotation	Rotation drills. Focus points.
Not committing to fall line.	Fear.	Two footed direction changes. Teacher assist. Use suitable terrain.

LONG TURNS

Steered long radius turns with a higher edge angle and greater speed. The tail of the board follows a similar path to the nose of the board.

Previous experience

The rider can steer their turns on blue terrain and comfortably link turns on black runs.

Terrain

Wide-open groomed terrain with low traffic. The fall line should be consistent and the rider and instructor should be able to see any traffic above or below.

Why

Long turns allow you to:

- **Improve stability and control at higher speeds.**
- **Exhilaration and building towards carving.**
- **Useful for introducing guests to maintaining speed in a race course (Inter-schools).**
- **Build a variety of turn shapes for the rider.**

MECHANICS OF LONG TURNS

Transition:

- **From a flexed position the rider projects forward and over the board allowing the rider's mass to transition over the board. Use of full body rotation is added to guide the rider and board into the turn.**

Initiation:

- **The rider inclines their centre of mass over the new edge and into the new turn. This will aid in setting the edge and keep the rider's weight on the inside of the turn. The muscular core is used to help angulate the lower body to aid in setting the edge and balance the rider.**

Execution:

- **Progressive angulation of the knees, hips and spine is used to build the edge angle to gain grip.**
- **The ankles should not flex too quickly and remain strong to aid in the execution and completion.**
- **Progressive angulation will allow the rider to sink and control pressure with progressive rotation through the turns aiding in turn shape.**
- **On the heel side the rider will need to flex their knees and roll their hips into the hill with the upper body remaining forward and over the board with the use of the spine. This will see the rider become lower on their heel side than their toe side.**

Completion:

- **Strong edging is applied using the muscular core and lower body's angulation skills. This will provide a platform to project and re-centre allowing the body and mass to transition through the turns.**

PROGRESSIONS

Methods

Stationary, show edging movements.

Traverse using edge sets to develop lower body angulation.

Traverse holding edge sets longer to create uphill shape.

Large radius single uphill turns using inclination then combine with angulation.

Single turns down the fall line to develop symmetry and speed control.

Edge rolls in and across the fall line to aid in transitioning and initiating the new turns.

Develop 'Closed' and 'Open' turn shapes to refine skills.

Methods

Review steered turns and lengthen into long turns.

Large radius garlands, introducing the edge at the initiation through to the completion.

Fan progression single up hill long turns across then down the fall line.

Long radius edge rolls, 'cross-over' and 'cross-under'.

Single uphill turns using angulation then change edge when guiding uphill.

Follow the leader and counting drills.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Encourage speed to allow the rider to increase inclination and angulation to produce stronger edging through the turns.**
- **Blending strong rotation and edging to develop radius of turns.**
- **Progressive movements and re-centring.**

KEY POINTS WHEN TEACHING LONG TURNS

- **Maintaining an anticipated stance is key, as it allows the rider's mass to travel through the turns and in the direction of travel with greater balance.**
- **On heel side, angulating the hips and moving them further towards the inside of the turn and slope helps increase the edge angle.**
- **The toe side uses more of the rider's centre of mass, ankles and knees to build the edge angle. It is important to keep the hips flexed and the core muscles strong so as not to arch the lower back or break at the waist. The rider should feel the weight on the balls of the feet.**
- **Progressive sinking movements will aid in edging and pressure control. The rider will rise quicker at the completion phase to help release the edge and pressure to transition more easily through the turns.**

Safety considerations:

- **Speed and skier/snowboarder traffic.**
- **Guests need to be comfortable with speed.**
- **Avoid icy and bumpy terrain.**
- **Check uphill before large radius drills.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Cannot hold a turn radius.	Lacking edge. Lacking speed. Uneven edge angle. Dull edges. Not enough rotation. Over anticipation.	Roll hips, lower body into turn. Edge rolls. Faster. Peter Bauer, Blended Peter Bauer Tune edges. Work on full body rotation with alignment. Check high backs and boots bindings.
Skidding.	Over anticipation Breaking at waist.	Lift toe edge. Stick work. Lower body edging exercises.
Locking on edge.	Inclination.	Blended Peter Bauer.
Static through turns.	Inclination. Lacking lower body angulation or strength.	Blended Peter Bauer. Counting drills, follow the leader. Edge sets. Uphill turns.

5.4
New Rider Progressions/Long Turns
CHAPTER 5 The Progression

BASIC SHORT TURNS

Rhythmical skidded short radius turns in the fall line.

Previous experience

The rider has developed steering skills on blue terrain and is capable of making controlled turns and can stop on their heel and toe side on black terrain.

Terrain ● ■ ◆

A consistent fall line will enable the rider to develop rhythm and symmetry. Use groomed runs that are not too icy or bumpy to assist guests.

Why

Basic Short Turns allow you to:

- **Introduce riders to short turns.**
- **Narrow turn radius and control speed.**
- **Develop skills to aid in riding steeper terrain.**

MECHANICS OF BASIC SHORT TURNS

Transition:

- The rider up un-weights and moves their body forward and over the board. Rising into the new turn will aid in decreasing the edge angle and release the pressure on the board to help the transition phase from each turn. Foot pedalling can be used to release the edge more quickly, while full body rotation is used to guide the rider and board into the turn and slope.

Initiation:

- There is little time to re-centre as the mass moves from edge to edge through the transition and initiation phases. The rider's mass moves forward and onto the new working edge as the lower body aids in setting the edge and rotating in the desired direction.
- Projecting the centre of mass forward will aid in initiating the turn on the nose of the board with the front foot. This will assist guiding the board into the turn.

Execution:

- As the rider sinks down, executing the turn, progressive edging and rotation of the body helps turn the board across the slope. As the rider sinks into the turn the pressure will build on the edge and board.

Completion:

- With the use of angulation and flexion the rider should be flexed and balanced over the working edge. Rotation of the lower body and upper body together will aid in turning the board underneath the rider to create a platform to complete the turn on. Aft pressure on the tail of the board occurs due to the use of edging and rotation working together through to the completion.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Core strength to promote rotation and stabilise the body.**
- **Flexion and extension.**
- **Earlier edging in the turns.**
- **Foot pedalling (torsional flex).**

PROGRESSIONS

Methods

Hockey stops heel side and toe side.

Pivot slips connecting toe and heel side.

Pivot slips with projection and matching shoulders to the pitch.

Garlands to develop shape and rhythm through rotation and edging.

Turns across the fall line to develop earlier edging and symmetry.

Funnel turns blending to short turns.

Methods

Cross-over and cross-under edge rolls on easy terrain.

Add rotary movements to help improve turn shape and speed control.

Blend un-weighting and sinking to improve rhythm.

Garlands focusing on shape and turn radius.

Turns across the fall line for timing and rhythm.

Follow the leader working on rhythm and symmetry (open and closed turns).

KEY POINTS WHEN TEACHING BASIC SHORT TURNS

- **Flexion is used to keep the rider over the board and working edge allowing for stronger edging skills. Staying over the working edge will allow the board to be guided through the execution to the completion.**
- **Projection of the rider forward and in the direction of travel will aid in balance and the ability to initiate turns.**
- **The heel side turn requires greater flexion than the toe side. The upper body must maintain anticipation and allow the rider to move in the direction of travel. The upper body is kept in balance by flexing the hips and rolling the lower spine to enable the head and shoulders to stay forward in the turn.**
- **During the toe side turn, flexion of the ankles, knees and hips will keep the rider over the working edge. The rider should feel balanced on the balls of the feet as the board is guided to completion. It is important that the upper body rotates through the turn to maintain alignment, allowing the rider to move through to the completion of the turn.**
- **Toe side turns do not require as much flexion but it is still important to keep the core strong and the lower spine rolled to allow for correct edging and pressure control skills.**
- **Through the turns the shoulders should match the pitch of the slope, aiding in balance and control.**

Safety considerations:

- **Finish the turns for speed control.**
- **Have the ability to stop if control is lost.**
- **Progress the pitch of the slope slowly to allow for skills to develop.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Gains too much speed	Not finishing turns. Railing.	Turn across fall line. Revise hockey stops.
Excess upper body movement.	Incorrect edging or rotation.	Edge sets Hold pants with back hand. Funnel turns.
Trouble holding rhythm.	Trouble with timing.	Easier terrain. Counting.
Lacking confidence.	Slope too steep.	Easier terrain. Slower speed. Uphill turns
Poor board performance.	Pushing the board.	Flexion/extension drills.

Notes

INTRODUCTION TO FREESTYLE

Freestyle plays a huge part in why people, especially children, take up the sport of snowboarding. It is important to remember that all guests require fundamental skills before attempting these manoeuvres. Guests need to understand the progressions, safety requirements and etiquette involved with all aspects of freestyle.

Equipment can be a huge factor when starting freestyle. With the wrong equipment and incorrect adjustments it is unsafe and virtually impossible to develop the required skills.

While in the Terrain Park, instructors should teach the etiquette involved and warm-up the guests appropriately. Guests should be advised on safety equipment such as helmets to prevent head injuries and body armour to prevent cuts and abrasions caused by boxes and rails.

When teaching freestyle, the progressions should be broken down and explained with A.T.M.L. (Approach, Take-off, Manoeuvre, Landing).

SUMMARY

- Ollies/nollies
- Reverts
- Basic airs
- Box/rail sliding - 50/50

OLLIES AND NOLLIES

Applying pressure to the tail or nose of the board, causing the board to flex. When the flex of the board is released the spring-back (re-bound) allows the board and rider to leave the surface of the snow. Landing centred on both feet.

Previous experience

The rider has completed flat land manoeuvres such as 360's tail and nose presses.

A.T.M.L has also been introduced along with basic safety.

Terrain

Flat, even green terrain that allows the rider to ride on a flat board down the slope and not gain too much speed.

Why

Ollies and Nollies allow you to:

- **Develop pressuring skills fore and aft.**
- **Gain greater height off various terrain like knolls, rolls and rocks.**
- **Develop balance and performance on the nose and tail of the board.**

MECHANICS OF AN OLLIE AND NOLLIE

Landing:

- **For both an Ollie and Nollie the legs are extended from the body evenly to help make contact with the snow, allowing the lower body to absorb the pressure of the landing. The eyes should always be focused ahead for balance and timing.**

Manoeuver:

- **Ollie- to release the flex and gain spring out of the board, the back leg extends as the mass rises up and then retracts to the height of the front foot, allowing the board to level out in the air and centre the rider. The rider should be projecting in the direction of travel.**
- **Nollie- to release the flex and gain spring out of the board, the front leg extends as the mass rises up and then retracts to the height of the back foot, allowing the board to level out in the air and centre the rider. The rider must make sure not to lean their mass too far forward, as this will cause them to lose balance.**

Take-off:

- **Ollie- the centre of mass is shifted over the back foot quickly to allow the front leg to be retracted up or pulled up towards the body. The back foot rolls slightly to the outside (supination) as the board flexes. The front foot will roll inwards (pronation) as the rider mass moves back.**
- **Nollie- the centre of mass is shifted over the front foot quickly to allow the back leg to be retracted up or pulled up toward the body. The front foot rolls slightly to the outside (supination) as the board flexes and the back leg is retracted. The rider projects their mass forward and retracts their legs.**
- **The rear foot will roll inwards (pronation) as the rider's mass moves forward**

Approach:

- **For both Ollie and Nollie, the rider is flexed and centred over a flat board that is directed into the fall line.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Pronation/supination of the feet.**
- **Extension/retraction of the lower body.**
- **Independent use of the legs.**
- **Project forward on take-off.**

PROGRESSIONS

Methods

Stationary with board off and then on revising movements and feelings.

Rock back and forth on nose and tail feeling pressure and pronation/supination.

Stationary balancing on tail and nose of board.

Nose press to tail press rocks.

Straight runs pressing the tail and nose.

Straight runs small ollies and nollies.

Ollie and nollie objects like snowballs and lines in the snow.

Ollie and nollie off small bumps and features.

KEY POINTS WHEN TEACHING AN OLLIE AND NOLLIE

- **The timing and accuracy required to get both the body and board to take-off, level out in the air and then land flat and even on the snow can be difficult to master (T.A.D.).**
- **Having the correct equipment is very important for the success of all age groups.**
- **Soft boards do not offer much spring although stiffer boards can be harder to flex.**
- **Stance width can affect the rider's ability to move and stay centred.**
- **The force that builds up in the board during the ollie or nollie will aid in 're-bounding' the rider once the flex has been released.**

Safety considerations:

- **Avoid trying to ollie solid objects.**
- **Be conscious of over-shooting and losing balance.**
- **The board running straight and flat can be difficult to control.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Ollie uneven.	Timing. Popping off two feet.	Independent leg use. Keep upper body centred.
Cannot ollie.	Board too stiff. Bindings set in incorrect position.	Softer freestyle board. Adjust bindings.
Take-off/landing uneven.	Braking at the waist. Inclination.	Emphasise independent leg use. Keep mass over board.
Unbalanced on board.	Looking down.	Use focus points. Eyes look ahead.

REVERTS

The snowboarder rides into a transition or bank in one direction and rides out in the opposite direction.

Previous experience

The riders should have covered basic switch riding and progressions to prepare for reverts.

Terrain

Use small banks and transitions on the side of the runs that are easy to see.

Ensure the terrain is not too steep or bumpy and the snow quality is suitable.

MECHANICS OF A REVERT

Approach:

- `Focus on maintaining an anatomically and structurally correct stance throughout the revert.
- `The rider should approach the terrain low and flexed over the board and working edge.

Take-off:

- `As the board flexes to the contour in the terrain, the rider extends to release some of the pressure that has built-up.

Manoeuvre:

- `As the rider reaches the apex, up un-weight the snowboard and rotate the head and shoulders into an anticipated position to aid in the direction change back down the terrain. The rider can choose to stay on the same working edge or change edges to develop directional skills.
- `Small pops at the apex can also be added to work on pressure, T.A.D. and freestyle.

Landing:

- The rider flexes and lowers their centre of mass to be stable as they ride down the terrain. Once established, this will enable the rider to develop pumping skills.
- Fundamental Mechanics to be taught
- Re-aligning anticipation in the stance.
- Matching the shoulders to the pitch of the slope.
- Keeping the centre of mass over the board and working edge.

Why

Reverts allow you to:

- **Refine balance and stance.**
- **Promote switch skills and riding.**
- **Improve terrain use and freestyle skills for take-offs and landings.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Re-aligning anticipation in the stance.**
- **Matching the shoulders to the pitch of the slope.**
- **Keeping the centre of mass over the board and working edge.**

PROGRESSIONS

Methods

3-point turns.

360's across and down the fall line.

Basic switch riding.

Ride up small transition switch then ride out regular.

Ride up transition regular then out switch.

Add edge change through revert.

Add hop at apex of transition.

Blend pumping at base of the terrain.

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Over-edging.	Inclining into slope.	3-point turns. 360's across slope.
Off balance.	Straight legs.	Revise switch skills.
Board shoots out from body.	Not centred.	Shoulders match pitch.
Catching edges.	Board not steered into fall line.	Introduce lower body rotation.

KEY POINTS WHEN TEACHING REVERTS

- **Reverts will assist a rider in re-centring and aligning the body to multiple directions of travel.**
- **The shoulders should match the pitch of the slope.**
- **Reverts help progress riders into 180's and other freestyle skills.**
- **A rider landing a jump and losing control of the landing causing them to spin around is also known as a Revert.**

Safety considerations:

- **Guest must be able to ride switch.**
- **Rider needs to stay over working edge.**
- **Ensure equipment is suitable for task.**

BASIC AIRS

This is the first time a rider will use terrain to perform a jump.

Previous experience

The rider can make controlled turns in and around obstacles and can straight run from a side-slip position. Flat land manoeuvres and tricks have been completed.

Terrain

Use terrain that has a consistent a fall line in and out of the features and allows for the rider to enter and exit safely. The snow conditions should be suitable for jumping and not too icy.

Use small features to begin with.

Why

Basic Airs allow you to:

- **Introduce Approach, Take off, Manoeuvre and Landing (A.T.M.L.).**
- **Maintain a safe and fun learning environment.**
- **Add to the rider's freestyle ability.**

MECHANICS OF A BASIC AIR

Approach:

- **On the approach the rider needs to stay low, centred and relaxed as the board runs straight towards the jump on a flat base. This will provide the platform to gently 'pop' off the lip of the jump.**

Take off:

- **As the guest rides up the jump and towards the lip for take-off, the rider needs to gently un-weight the snowboard by extending the lower body.**

Manoeuver:

- **As the rider projects through the air the legs retract up towards the core of the body so the rider becomes compact for the manoeuvre. The muscular core aids in compressing the upper body and lower body in the air.**

Landing:

- **The legs extend out to help absorb the pressure of the landing. As the snowboard touches down the rider lands flexed, low and centred over the board, absorbing the landing.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Approach, Take-off, Manoeuvre and Landing - A.T.M.L.**
- **Timing the take-off.**
- **Being compact in the air.**

PROGRESSIONS

Methods

With the board off, practise movements stationary.

Revise straight runs with small hops.

Hops in between turns, off each edge to improve balance, awareness and timing.

Straight runs with hops off small rolls.

Straight run at jumps and knolls rolling over them.

As above, add pops and work on amplitude.

Introduce bigger jumps.

KEY POINTS WHEN TEACHING BASIC AIRS

- **Jumping is a skill that many guests pick up in only a short time and many cannot wait to do so. A gentle slope with a small jump in a quiet spot, away from traffic is a safe environment.**
- **Try to mark a start point for the run in to aid in the approach. Use low speed and small jumps to build skills and confidence.**
- **Evaluate the guests and ensure they have sound fundamental skills before attempting jumps.**
- **In the air, the eyes are focused in the direction of travel and used for spotting the landing.**
- **Warm the guests up before attempting freestyle tricks.**
- **Alignment is key through the phases of the jump.**

Safety considerations:

- **Jump size relevant to the standard rider.**
- **Use a spotter if the landing is not visible.**
- **Snow could be too icy or even too soft.**
- **Clear visibility is needed.**
- **A clear and even of run-out.**
- **Use safety equipment.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Cannot line up the jump.	Cannot straight run. Too much speed.	Revise straight runs. Set start point.
Unbalanced in the air.	Tense. Looking down. Going too big.	Smaller jumps. Compress. Focus points. Build amplitude slowly. Pop off knuckle onto landing.
Falling on landing.	Extending too much on take-off.	Compress in the air.

BOX OR RAIL 50/50

The body and board remain aligned with the box or rail. The rider successfully completes a straight slide across box or rail, keeping the board flat.

Previous experience

The rider has completed flat land manoeuvres and tricks. They are comfortable riding the board flat on the snow and have an understanding of A.T.M.L. and park safety.

Terrain

Start by riding on boxes that are wide. This will provide an easier approach and a wider platform for the rider to slide on.

Why

50/50's allow you to:

- **Introduce the rider to a rail or box.**
- **Be able to ride features in Terrain Parks.**
- **Improve freestyle versatility and style.**

MECHANICS OF A 50/50

Approach:

- **Approach low and centred with the board and body aligned and pointing towards the feature.**

Take-off:

- **On the take-off the rider should un-weight slightly and move their mass into position over the feature and board. The rider should remain flexed.**

Manoeuvre:

- **As the rider touches-down on the feature, the lower body should absorb the pressure thereby keeping the mass balanced over the board. Focus should be on the end portion of the feature to aid in the direction of travel and landing.**
- **When sliding, the board MUST remain flat by keeping the ankles, knees, hips and spine flexed over the board. The upper body should remain slightly anticipated with the hands out to the side of the body for balance and alignment.**

Landing:

- **When leaving the feature, the lower body can extend out to help absorb the landing.**
- **The rider should land low and centred over the board.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Alignment of the body with the board and feature.**
- **Approach, Take off, Manoeuvre and Landing (A.T.M.L.).**
- **Flexing the lower body and spine to keep the board flat.**

PROGRESSIONS

Methods

Straight runs developing stance and line.

Straight runs with flexing and hopping to improve balance and positioning.

Straight runs with counter rotated hockey stops for speed control and straight approach.

Straight runs through corridors. Use snowballs, sticks, cones, etc.

Stand on box without board for balance and understanding.

With board in hand-slide board on box for feeling the sensation of how the board will slide.

Teacher assisted slide, walking alongside.

KEY POINTS WHEN TEACHING A 50/50

- **The guest must remain confident and committed to completing the slide.**
- **Aim for a balanced strong approach with the right amount of speed so the rider has enough momentum to complete the slide.**
- **Teacher assistance can give the guest confidence and develop the 'locked on' feeling when on the feature.**
- **Develop the rider's ability to ride with the board flat and straight on the snow before attempting boxes or rails.**
- **A rider's equipment can affect the result. Too much forward lean can cause edges to catch on the box or rail. Poorly maintained edges and bases can also prevent a smooth slide.**

Safety considerations:

- **Protective gear such as helmet, shin guards and turtle back.**
- **Height and length of feature.**
- **Damage on the box or rail.**
- **Poor run-in or landing.**
- **Feature not in the fall line.**
- **An exit route and clear run-out.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Cannot line up feature.	Unbalanced. Inclining or edging.	Revise straight runs and hops. Flex ankles (collapse) and flex knees, hips and spine.
Falling off feature.	Rail too long. Poor approach. Rotating body.	Shorter feature. Adjust line into feature. Hands align with feature.
Falling on landing.	Leaning. Landing on edge.	Flex low. Check forward lean. Pop-off feature to flat board.

5.4
New Rider Progressions/Box or Rail 50/50
CHAPTER 5 The Progression

Notes

SECTION 2

5.5 INTERMEDIATE PROGRESSIONS (FOR LEVEL 3)

The Intermediate progressions are designed to introduce the rider to all aspects of the mountain. The progressions are designed to develop skills and match them to achieve the tasks and ride new terrain. Riders should have developed basic fundamentals and have the ability to control their speed around the mountain.

During the introduction of new movements and terrain, the rider needs an appropriate level of fitness and range of movement.

The goal for instructors is to improve technique and control by developing the skills and tactics that allow the guest to use and explore more of the mountain. Objectives are to develop a variety of riding skills through steering, carving, short turns, switch riding and intermediate freestyle.

The freestyle progressions and teaching should be broken down into A.T.M.L.

INTERMEDIATE PROGRESSION SUMMARY

- Steered short turns
- Steered switch turns – (medium radius)
- Carve turns
- Down un-weighted turns – (medium radius)
- Introduction to moguls
- Pumping

INTERMEDIATE FREESTYLE

- Airs with grabs
- Nose/tail rolls
- 180 Airs
- Nose/tail press – (on a box/rail)
- Board slide – (on a box/rail)
- Introduction to half pipe

STEERED SHORT TURNS

Rhythmical short radius turns in the fall line, performed with the correct blending of skills allowing the rider to steer the board.

Previous experience

Guest should have the ability to make closed and open medium radius steered turns on green terrain. Guests should also be comfortable on blue and black terrain with larger radius turns.

Terrain

Use terrain that has a consistent fall line and allows the guests to slow down if speed increases. Terrain that changes in pitch from easy to harder is best suited to develop skills and rhythm. Low traffic areas will help confidence and improve safety.

Why

Steered Short Turns allow you to:

- **Control speed on steeper terrain.**
- **Ride narrower terrain, trees and moguls.**
- **Develop symmetry and control.**

MECHANICS OF STEERED SHORT TURNS

Transition:

- As the rider up un-weights and projects their body forward through the transition, the lower body steers the board into the new turn and under the rider. There is little time to re-centre as the mass moves from edge to edge through the transition phases. Foot pedalling will release the edge more quickly and initiate the new edge earlier.

Initiation:

- The rider's mass moves into the new turn and over the working edge as the lower body angulates to initiate the new edge. There is slightly more weight and pressure on the nose of the board due to projecting forward, which will aid in guiding the board in the direction of travel.

Execution:

- Focus is to develop movements in the lower body. Rotation of the muscular core is used to help promote steering of the lower body and legs, as the upper body stays anticipated and relatively stable through the turns. It is important that the upper body continues to complete the turns to enable alignment.
- As the rider sinks down executing the turn, angulation and rotation of the lower body and legs helps steer and turn the board throughout the phase.

Completion:

- The rider continues to use angulation and rotation of the body to steer the board underneath their centre of mass creating a platform to set the edge and complete the turn on. With the use of steering, the rider will have built slightly more pressure on the tail of the board (aft pressure).

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Earlier edging in the turns with the use of projection and foot pedalling.**
- **Steering the lower body to create fore/aft pressure.**
- **Core strength to stabilise the upper body.**

PROGRESSIONS

Methods

Hockey stops heel side and toe side.

Hockey stops adding projection for initiation.

Hockey stops with edge sets across the fall line.

As above, working on setting the new edge before the fall line.

Garlands to develop lower body steering.

Garlands focusing on projection with lower body and leg steering.

Funnel turns blended to short turns.

Methods

Turns across the fall line aiding timing, rhythm and symmetry.

Add rotary movements to help improve turn shape and speed control.

Blend un-weighting and sinking to improve rhythm and projection in the fall line.

Edge rolls in and across a gentle slope focusing on 'cross-under' movements.

Edge to edge hops to develop up un-weighting and pressure control.

Short uphill turns focusing on lower body steering and turn radius.

Follow the leader working on rhythm and symmetry.

KEY POINTS WHEN TEACHING STEERED SHORT TURNS

- **The upper body is required to rotate throughout the turn to maintain alignment and allow the rider to move in the direction of travel.**
- **On the heel side, the upper body is kept in balance by use of the muscular core, flexing the hips and rolling the lower spine to enable the head and shoulders to stay forward over the board during the turn.**
- **During the toe side turn, separation of the upper and lower body will develop at the completion of the turn, allowing the rider to move more effectively through the transition. It is important that the upper body rotates through the turn to maintain alignment, allowing the lower body to steer through to the completion of the turn.**
- **Toe side turns do not require as much flexion but it is important to keep the muscular core strong and the lower spine rolled to allow for correct edging, rotation and pressure control.**
- **As the rider sinks, the pressure will build on the edge and board. Projecting into the new turn will aid in decreasing the pressure on the edge and help in the transition from turn to turn.**
- **Steering of the lower body is key in the short turn, which allows for fluent and rhythmical turns.**
- **The ankle joint can be used to fine-tune edging and also create a platform at the completion of the turns.**
- **Through the turns, the shoulders should match the pitch of the slope, this will aid in projection and balance.**

Safety considerations:

- **Finish the turns for speed control.**
- **Have the ability to stop if control is lost.**
- **Increase the pitch of the slope slowly to allow skills to develop.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Gains too much speed.	Not finishing turns. Railing.	Turn across fall line. Revise hockey stops/pivot slips.
Excess upper body movement.	Incorrect lower body use.	Refine lower body steering. Hold pants with backhand. Funnel turns.
Trouble holding rhythm.	Incorrect timing.	Easier terrain. Follow the leader.
Lacking confidence.	Slope too steep.	Use suitable terrain. Projection with torsional flex, foot pedalling.
Poor board performance.	Pushing the board.	Sinking drills. Work on steering. Fore/aft turns.

STEERED SWITCH TURNS

(MEDIUM RADIUS)

Linking switch turns in the opposite direction using more refined edging and rotational skills.

Previous experience

Basic switch turns on green terrain are required before introducing steering and steeper terrain.

The guest should have the ability to stop switch on their heel and toe side while riding switch.

Terrain

Use wide-open terrain that allows guests time to develop switch skills. A consistent fall line will help with linking turns and the use of banks and other terrain features will aid in refining skills and incorporating fun into the lesson.

Why

Steered Switch Turns allow you to:

- **Improve and strengthen the guest's ability to ride switch around the mountain.**
- **Develop and strengthen the rider's freestyle manoeuvers.**
- **Developing switch riding strengthens regular riding skills.**
- **Improve safety and versatility through the ability to ride in all directions.**

MECHANICS OF STEERED SWITCH TURNS

Initiation:

- To initiate the turn, the rider's mass moves over the new working edge and into the turn. Rotation of the leading side of the body and lower body angulation is used to steer the board into the direction of travel.

Execution:

- The rider maintains anticipation throughout the turns by using the muscular core, spine and upper body. The lower body and legs progressively edge and rotate underneath the rider to help fine tune the turn shape.
- Progressively angulating and rotating increases the edge angle and pressure on the board. Edging and pressuring skills are developed through refining the movements in the ankles, knees, hips and spine, by rolling them into the hill with gradual rotary movements.

Transition:

- The centre of mass rises up and projects forward over the board, in the direction of travel. Foot pedalling will aid releasing the edge and flattening the board.
- As the board flattens, the rider re-centres over the board and transitions their mass into the turn.

Completion:

- At the completion of the turn, the rider will be low and in a flexed position due to progressive angulation, creating a platform from which the rider can rise up and transition from one turn to the next.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Anticipation in switch riding.**
- **Projection switch through the turns.**
- **Earlier edging with lower body angulation.**
- **Switch foot pedalling.**

PROGRESSIONS

Methods

Revise the Basic Switch Turns progression.

Use varying terrain and teaching styles to aid lessons.

Methods

'Alley-oop' 360's, across the slope to develop edging, rotation and symmetry.

Flat land 360's in the fall line to aid rotation in both directions

Traverse switch developing edge sets for grip and control.

Uphill turns switch for speed control and completion.

Toe to toe turns to aid rotation and control.

Heel to heel turns to build rotation and aid in confidence with blind spots.

Funnel switch turns for rhythm and symmetry.

Riding banks and rollers switch to develop skills.

KEY POINTS WHEN TEACHING STEERED SWITCH TURNS

- **Stance angles, positioning and width of the bindings can affect the ability to ride switch and steer the board.**
- **Guests will need to revise some of the skill progressions regular before attempting switch.**
- **Time and mileage with the progressions will aid in building guests' confidence and skills.**
- **Using a variety of terrain and choosing progressions that will aid the guest's skills and development.**

Safety considerations:

- **Heel side blind spots and traffic.**
- **Use suitable terrain to aid guests.**
- **Snow and terrain conditions.**
- **Incorrect stance angles.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Lacking control.	Weight on back foot. Too fast.	Match shoulders to pitch. Projection. Speed control, uphill turns.
Getting blocked.	Lacking anticipation. Lacking rotation.	Focus on upper body rotation. Rotation drills. Focus points.
Not committing to fall line.	Incorrect timing.	Easier terrain. Teacher assist. Two-foot direction change switch.

CARVE TURNS

Steered linked turns with a higher edge angle and greater speed. The tail of the board follows the same path as the nose of the board.

Previous experience

The guests should have developed a solid long turn before attempting carving.

Understanding of the Alpine Responsibility Code and where to carve should also be explained.

Terrain

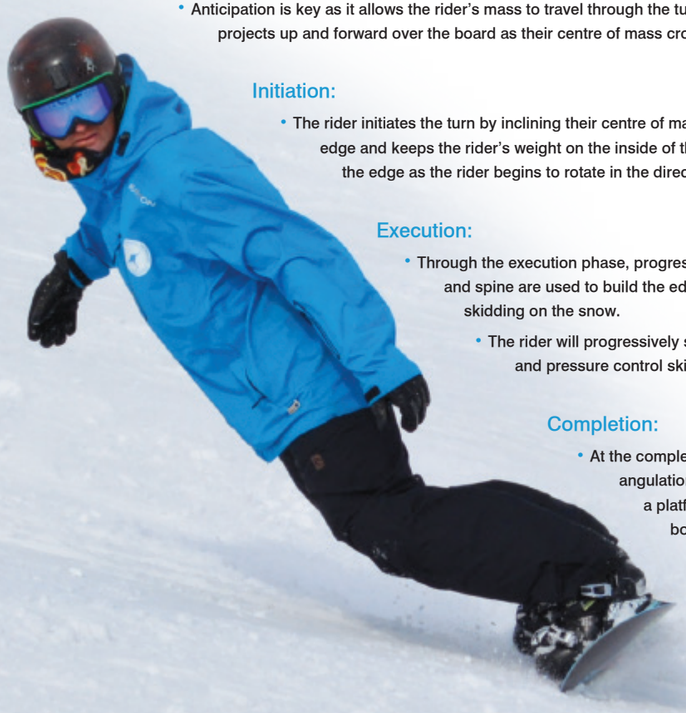
Wide-open green and blue terrain that has been groomed with low traffic is best suited for progressing to carving.

Why

Carve Turns allow you to:

- **Improve stability at higher speed.**
- **Exhilaration and the sensation of carving.**
- **Useful in introducing guest to maintaining speed in a race course (Inter-schools).**
- **Aids in strong edging skills in the half pipe and other terrain.**

MECHANICS OF CARVE TURNS



Transition:

- Anticipation is key as it allows the rider's mass to travel through the turns and in the direction of travel. The rider projects up and forward over the board as their centre of mass crosses from one edge to the other.

Initiation:

- The rider initiates the turn by inclining their centre of mass over the edge. This will aid in setting the edge and keeps the rider's weight on the inside of the turn. The lower body joints help to engage the edge as the rider begins to rotate in the direction of travel.

Execution:

- Through the execution phase, progressive angulation of the ankles, knees, hips and spine are used to build the edge angle to gain grip and stop the board from skidding on the snow.
- The rider will progressively sink down and into the turn enabling steering and pressure control skills to aid in shaping the turn radius.

Completion:

- At the completion, the edge is set using lower body angulation and muscular core strength. This will provide a platform to re-centre and project from allowing the body and mass to transition through the turns.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Encourage speed to allow for greater inclination and angulation.**
- **Lower body and leg steering to work radius of turns.**
- **Projection and re-centring.**
- **Core strength.**

PROGRESSIONS

Methods

Stationary practising and feeling edging movements.

Traverse using edge sets to develop lower body angulation.

Traverse holding edge sets longer to create uphill shape.

Single uphill turns across the fall line using inclination then combine with angulation.

Single turns across the fall line developing steering and symmetry.

Introduce pressure control to vary size and radius.

Blend to linked carved turns.

Methods

Review refined turns and lengthen into long turns.

Garlands, from skidding the board, to setting the edge.

Large radius garlands, introducing the edge earlier.

Edge rolls in and across fall line.

Edge rolls holding edge longer.

Single carve turns using angulation across and in the fall line.

Link two or more carve turns together focusing on projection and timing.

KEY POINTS WHEN TEACHING CARVE TURNS

- **The heel side uses more flexion to aid in edging the board. The lower spine, knees and hips are moved further to the inside of the turn and toward the slope to help increase the edge angle.**
- **The toe side uses more of the rider's centre of mass, ankles and knees to build the edge angle. It is important to keep the hips flexed and the muscular core strong so as not to arch the lower back.**
- **A combination of the snowboard's size, flex pattern and side cut will determine the turn shape and radius. Small boards are manoeuvrable but lack stability. Larger/stiffer boards are more stable and work well on ice but can be hard to manoeuvre.**
- **Subtle fore/aft, rising/sinking and steering movements will vary the pressure on the board and allow variation in turn shape.**
- **Foot pedalling will aid in releasing the edge in the transition phase and engage in the initiation phase.**
- **'Dorsi' and 'plantar' flexion will regulate the edge angle during a carved turn.**

Safety considerations:

- **Speed and skier/snowboarder traffic.**
- **Guests need to be comfortable with speed.**
- **Avoid icy and bumpy terrain.**
- **Check uphill before large radius drills.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Cannot hold a carve turn.	Lacking edge. Uneven edge angle. Lacking speed.	Roll hips, lower body into turn. Peter Bauer. Edge sets. Faster. Use suitable terrain.
Skidding.	Dull edges. Equipment. Poor alignment.	Tune edges. Check high backs, boots. Revise stance.
Locking on edge.	Lacking edge angle Inclination.	Uphill turns. Edge sets. Stick work. Uphill turns. Blended Peter Bauer.

DOWN UN-WEIGHTED TURNS
(MEDIUM RADIUS)

Lowering the rider's centre of mass during the transition and initiation phase of the turns.

Previous experience

Short turns and medium radius down un-weighted turns on groom runs should be completed prior to using bumpy or mogul terrain.

Terrain ● ■ ◆

Develop the understanding and movements on even terrain to begin with.

Introduce concave and convex (moguls) terrain to aid in refining skills and develop timing.

Why

Down Un-weighting Turns allow you to:

- **Ride variable terrain and moguls.**
- **Provide the rider with options when riding variable terrain and terrain features.**
- **Develop pressure control skills and T.A.D.**
- **Work towards extension retraction turns.**

MECHANICS OF DOWN UN-WEIGHTING TURNS

Initiation:

- As the board flattens the rider should be at the lowest point and most flexed.
- The rider's mass moves over the new working edge and into the next turn. The lower body and core start to extend and steer the board across the slope. Foot pedalling will aid in engaging the new edge.

Execution:

- Edging and pressuring skills are developed through refining the movements in the ankles, knees, hips and spine, by progressively extending and rotating the body and core through the turns.

Completion:

- At the completion of the turn, the rider is extended and has edged the board to create a platform from which the rider can complete the turn and transition to the next.
- As the force increases at the completion of the turn, the rider can release the build up of pressure by flexing down and releasing the edge.

Transition:

- In the transition, the body moves from an extended position over the working edge, forward and down, by using the muscular core and flexing the ankles, knees, hips and spine to get the desired reaction of reducing the edge and pressure between the board and the snow. During the retraction, rotation of the leading side of the body, especially the rider's muscular core, is used to guide the board in the desired direction.
- Foot pedalling will aid in releasing the edge and guiding the board.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Flexing down to release edge.**
- **Extension of the body to execute the turn.**
- **Foot pedalling.**
- **Core strength and rotation.**

PROGRESSIONS

Methods

Garlands focusing on sinking to release edge.

Garlands focusing on foot pedalling to aid in releasing the edge as the rider retracts.

Garlands working on lower body extension with steering.

Cross-over and cross-under edge rolls.

Edge rolls from the flexed position allowing lower body to extend out and retract under the upper body.

Funnel turns to work on timing and movements.

Methods

Hockey stops from tall to small during edge change.

Pivot slips focusing on flexing down to initiate turn and extending to complete.

Garlands focusing on foot pedalling to aid in releasing edge as rider retracts.

Riding up banks working on retracting to change edges.

Riding down banks, working on extending to steer board.

Link bank riding with retracting and extending to steer the board.

Riding bumps, working on sinking down to change edges and rising in grooves.

Funnel turn working on timing and blending of skills.

KEY POINTS WHEN TEACHING DOWN UN-WEIGHTED TURNS

- **The lower body and legs should progressively extend to steer the board. Important for the rider not to push the board).**
- **The toe side will look and feel as if there is greater flexion/extension. The hips and spine aid in these movements as the legs are able to move behind the rider for greater extension. The heel side will use less extension as the rider is flexed in the hips during the execution. The extension mainly occurs in the legs and muscular core.**
- **Down un-weighted turns will aid riders who struggle in varied and bumpy terrain.**
- **As the rider progresses, projection of the rider's mass can be introduced to build performance and dynamics.**
- **Guests need to posses some athletic ability to ride for long periods of time with this technique.**
- **At this stage the instructor should have developed a keen eye for spotting the general weaknesses and strengths in a rider's stance, skills or equipment.**

Safety considerations:

- **Earlier edging can cause the edge to catch if skills are weak.**
- **Leaning into turns or crossing over too far.**
- **Fitness and flexibility of students.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Over edging.	Inclination.	Projection forward. Garlands with lower body angulation. Lower leg flexion.
Falling into turns.	Over edging.	Work on edge rolls and a quiet upper body. Cross-under turns.
Poor turn shape.	Loose bindings/boots. Lacking edging.	Check equipment. Sink into turn. Refine angulation. Edging drills.
Skidding.	Pushing board.	Uphill garlands to aid shape.

INTRODUCTION TO MOGUL TURNS

Controlled up un-weighted turns through small moguls.

Previous experience

The guests should be able to make controlled up un-weighted short turns and medium radius down un-weighted turns on groomed terrain. Guests also need to have an understanding of passive and active pressure control to aid in varied terrain.

Terrain

Begin with small rollers and banks to practise movements and timing. As skills develop move to small moguls that have a run out for safety. Progress to larger moguls once skills are blended and funnel turns until rhythmical.

Why

Introducing Moguls allows you to:

- **Develop active and passive pressure control.**
- **Negotiate rough terrain and ride more of the mountain.**
- **Develop timing, rhythm and line in variable terrain.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Pivoting on the uphill side of the bump with projection.
- Developing fore/aft movements through bumps.
- Flexion and extension.
- Lower body steering.
- Muscular core strength to maintain balance.

MECHANICS OF INTRODUCING MOGUL TURNS

Mechanics up un-weighted

Transition:

- The turn takes place on top of the mogul (up-hill side) allowing the board to pivot more easily and quickly at the transition and initiation. The rider extends at the transition and projects the body over the mogul and down the other side. Foot pedalling will aid in releasing the edge.

Initiation:

- As the rider's mass crosses-over the board and mogul, the lower body aids in setting the new working edge. Rotation of the body is used to guide the rider and board around the mogul and in the desired direction.

Execution:

- The lower body is used to steer the board on the downhill side of the mogul as the rider sinks to absorb the pressure and terrain.
- The board should be steered until the completion of both the turn and the mogul to maintain speed control.

Completion:

- The rider should be flexed down and over the board to control the pressure. This will also provide a platform to extend and project into the next turn.
- The muscular core is used to stabilise the upper body and head so that the rider can maintain balance through the terrain.

5.5
Intermediate Progressions/Introduction to Moguls
SECTION 5 The Progression

Mechanics down un-weighted

Transition:

- From an extended position, the rider sinks and retracts their lower body and muscular core through the transition to help flatten and pivot the board over the top of the mogul.
- Foot pedalling and flexion of the legs will aid in decreasing the edge angle and guiding the board over the terrain.
- The mogul will aid in retracting the rider as the natural variation in terrain and use of active pressuring enables the rider to flex down (retract) during the edge change.

Initiation:

- The centre of mass is projected to the down side of the mogul as the lower body and core rotates into the trench and sets the new working edge.
- The upper body helps initiate the turns and must continue to rotate from the initiation to the completion of the turn in order to maintain alignment and balance.

Execution:

- The lower body and muscular core extends to help steer and maintain surface contact while controlling the pressure. The ankles should remain flexed to help fine tune and manage the edge angle through the terrain.
- The rider's mass will slightly rise and sink with the flexion and extension of the body and the contours of the terrain.

Completion:

- The rider will have extended the lower body and steered the board through the trench with the aid of their muscular core. As the board completes the turn, the rider begins the transition as the new mogul is reached.

PROGRESSIONS

Methods

Revise short turns.

Traverse moguls or bumps to develop passive and active absorption skills.

Traverse on top and between moguls working on line and timing.

Funnel traverse down turning on top of moguls.

Link four turns then eight turns in small mogul field.

Develop rhythm and line to link turns through moguls.

Introduce down un-weighted turns to aid in adapting to changes in terrain.

Methods

Revise down un-weighted turns.

Traverse moguls or bumps lowering centre of mass over mogul.

Balance on uphill side of the mogul, practise foot pedalling and lowering centre of mass on the downhill side of the mogul as the rider pivots and turns the board.

Garlands, focusing on extending the legs and lower body into the troughs of the moguls.

Medium radius turns focusing on lowering centre of mass during edge change and extending lower body through turn for steering.

Funnel turns focusing on down un-weighting at peak of mogul and extending into troughs.

KEY POINTS WHEN TEACHING INTRODUCTION TO MOGULS TURNS

- **Emphasize lower body movements and the ability to keep the upper body balanced and in control.**
- **The upper body remains steady and projects down the hill and through the moguls. The lower body uses steering skills to navigate the board through and around the moguls. These skills are learnt in the short turn progression.**
- **Active flexion and extension movements are used to absorb changes in the terrain and keep the rider balanced.**
- **Edging skills become more important for speed control and maintaining snow contact. It is important not to move the centre of mass too far into the turns, as this will affect the edge angle and balance of the rider.**
- **Guests should be encouraged to think about line and read the terrain two or three moguls ahead.**
- **Foot pedalling will aid in releasing the edge in the transition phase and engage in the initiation phase.**
- **Upper body remains anticipated to prevent blocking on the heel side.**

Safety considerations:

- **Start with small bumps with a run-out.**
- **Avoid large or icy bumps.**
- **Do not over exert non-athletic guests.**
- **Avoid hazards such as trees, rocks and other people.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Trouble with speed control.	Not finishing turns. Not maintaining rhythm	Finish turns across fall line. Uphill turns. Work rhythm on groomed slopes.
Chattering.	Lacking pressure control. High edge angle.	Work on active pressuring. Flexion of lower joints. Follow the leader.
Losing control.	Poor line. Lack pressure control.	Revise pressuring skills. Fore/aft turns.

PUMPING

Generating speed out of the board and terrain using pressuring skills.

Previous experience

Guests require the understanding of passive and active pressure control.

Terrain ● ■ ◆

Use individual rollers and banks to develop the movements and timing. Progress to rollers, bumps and moguls to develop faster movements, smoother riding and T.A.D.

Why

Pumping allows you to:

- **Develop and refine pressure control movements.**
- **Develop flexion and extension.**
- **Generate speed in a variety of terrain such as half pipes, banks and race courses.**

MECHANICS OF PUMPING

Transition:

- **The upper body is anticipated to assist with balance and the rider is flexed in all the joints.**
- **The rider can perform pumping on an edge to begin with, then on a flat board.**
- **There is no true transition from edge to edge when introducing pumping.**

Initiation:

- **Focus on the active pressuring movements of the lower body and core by extending and retracting the lower body and legs under the upper body.**

Execution:

- **Each leg acts independently in pumping to maintain surface contact and control.**
- **The lead leg extends and retracts before the back leg to promote fore and aft pressure and aid in generating speed. Slightly moving the centre of mass up and down in conjunction with the terrain and lower body will increase the performance and speed.**

Completion:

- **As the rider progresses, fore/aft movements with projection can be combined to generate more speed. The muscular core is constantly working to extend and retract each leg and maintain a balanced upper body.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Independent use of the legs.**
- **Core strength to stabilise the upper body and control lower body movements.**
- **Supination/pronation of the feet.**

PROGRESSIONS

Methods

Stationary, revising movements and feelings.

Ride through a series of bumps developing PASSIVE absorption.

Ride through a series of bumps developing ACTIVE absorption.

Use single transitions and banks to develop timing and pressuring of pumping.

Traverse bumps working on PUMPING.

Funnel turns with active absorption to develop timing and rhythm.

Ride over rollers on a flat board, pumping to generate maximum performance.

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Over edging.	Inclining into slope.	Uphill turns with hops.
Off balance.	Straight legs. Lacking absorption.	Revise pressuring skills. Traverse with edge hops.
Board shoots out from body.	Not centred.	Shoulders match pitch. Core strength. Fore/aft turns and drills.

KEY POINTS WHEN TEACHING PUMPING

- **Pumping can be used to refine absorption skills and work on extension and retraction for the purpose of pressure control.**
- **Pumping is an essential skill for upper level freestyle including terrain parks, half pipe and snowboard-cross.**
- **The rider needs to understand fore/aft movements and recovery options if balance is lost.**

Safety considerations:

- **Ensure terrain is not too steep or bumpy.**
- **Guests require a reasonable fitness level and no injuries.**
- **Ensure equipment is suitable for task.**

Notes

INTERMEDIATE FREESTYLE

Guests should understand basic freestyle progressions, safety requirements and etiquette involved with all aspects of freestyle.

Using freestyle specific equipment that is correctly adjusted will greatly enhance the guest's learning experience.

Guests should be advised on safety equipment such as helmets to prevent head injuries and shin guards to prevent cuts and abrasions caused by boxes and rails.

The progressions and teaching should be broken down into A.T.M.L.

INTERMEDIATE FREESTYLE

- Airs with grabs
- Nose/tail rolls
- 180 Airs
- Nose/tail press – (on a box/rail)
- Board slide – (on a box/rail)
- Introduction to half pipe

AIRS WITH GRABS

Understand that jumping and grabbing the board requires the correct approach speed, the correct timing on take-off and the correct aerial manoeuvre with a clean landing.

Previous experience

The guests are able to pop-off both edges around the mountain and its small natural features and also ride a flat board in the fall line.

Guests should also have an understanding of A.T.M.L. and park etiquette.

Terrain

Use small natural terrain to develop balance and confidence before entering the terrain park.

Start with small jumps that have a clear run-out for safety and control.

Why

Airs with Grabs allow you to:

- **Stability in the air.**
- **Add style and amplitude to a jump.**
- **Add to freestyle tricks.**

MECHANICS OF AIRS WITH GRABS

Approach:

- Approach the jump low and centred. The lower body remains flexed with the muscular core and spine aiding in keeping the upper body steady and the eyes level.

Take-off:

- On take-off, the rider must un-weight the board by extending the lower body and project their mass through the optimal line in the air. The speed and angle of the jump will aid in the take-off, requiring the rider to slightly 'pop' off both feet and not jump or over extend too far.

Manoeuvre:

- For the manoeuver of grabbing the board in the air, the core muscles are used to help compress the upper and lower body together as the legs are sucked up. One hand is directed to the desired grab on the board while the other arm extends out for stability and style

Landing:

- The grab is released and the lower body and legs are extended out so they can compress and absorb the pressure when the board touches down.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **A.T.M.L.**
- **Timing the take-off.**
- **Projecting the mass through the apex of the jump.**
- **Core strength to steady upper body and aid in grabbing.**

PROGRESSIONS

Methods

Stationary with only the front foot strapped in, practising the grab and movements.

Board off jump off small ledges or steps reaching for grabs.

Straight runs flexing down touching the top of the board for grab position.

If possible - turns feeling for grabs and positioning.

Small jump staying low and touching the board.

Progress to larger jumps and build amplitude for grab.

Vary grabs and style out the grab.

KEY POINTS WHEN TEACHING AIRS WITH GRABS

- **The success of the board grab is greatly increased with the choice of run-in, jump and landing.**
- **Demonstrate the correct speed needed for the jump and set a good start point for guests.**
- **It is important to reinforce that the legs and body come together and the rider does not break at the waist to reach down to grab the board. Choose the easy grabs first like:**
- **Indy - back hand between the feet on the toe side.**
- **Mellon - the front hand grabbing between the feet on the heel side.**

Safety considerations:

- **Comfortable with basic airs.**
- **Approach with a pull out and good run-out.**
- **Check for hazards such as ruts and uneven transitions.**
- **Use a spotter if the landing is not visible.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Missing grab.	Lacking flexibility. Not retracting in air.	Compress in air. Retract legs up to body. Use core strength.
Unbalanced in air.	Reaching for grab. Inclining.	Use core and leg together. Stay low and flexed.
Stiff legs.	Poor take-off.	Wait for lip to take-off.
Crashing on landing.	Lacking absorption.	Pop-off knuckle to gain experience of landing.

NOSE/TAIL ROLLS

Flexing and rotating (pivoting) around the nose or the tail of the board.

Previous experience

Confident regular and switch riding is a must. Centring drills such as 3-point turns and flat land 360's should be covered as well as nose and tail presses to allow guests the understanding and balance required on the ends of the board.

Terrain

Wide-open, low traffic terrain that allows time for the guest to prepare for the nose and tail rolls is best. Progressing to banks will aid in developing balance and fun once the guests can consistently nose and tail roll.

Why

Nose and Tail Rolls allow you to:

- **Improve freestyle versatility.**
- **Introduce riders to 180's.**
- **Help to progress to pressing on boxes and rails.**

MECHANICS OF NOSE AND TAIL ROLLS

Manoeuvre:

- **As the mass is shifted forward, the core and the upper body rotate in the direction of travel. The arms can aid in rotating the upper body. As the body starts to rotate, the back leg is slightly retracted to help flex the board and pivot around the leading foot.**

Approach:

- **The rider is flexed and centred in a traverse. For a nose roll the rider will be riding normally and for a tail roll will be riding switch.**

Landing:

- **At the end of the nose or tail roll the rider shifts their weight over the board and sinks down to regain balance and re-centre.**

Take-off:

- **The rider applies pressure to their back foot and then projects their weight forward and over the lead foot.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Projection forward and over the lead foot with rotation.**
- **Separation of the upper and lower body.**
- **Core strength for rotation.**
- **Pronation/supination of the feet.**

PROGRESSIONS

Methods

Teacher assisted nose and tail flexes.

Stationary, balancing on the nose and tail of the board.

Teacher assisted nose and tail pivots.

Charlie Chaplin.

Front side and back side 360's in the fall line.

Toe to toe.

Traversing flexing onto nose and tail.

Single nose and tail rolls down the slope developing pressing and pivoting.

KEY POINTS WHEN TEACHING NOSE AND TAIL ROLLS

- **It is important that the eyes help lead in the rotation of the body and board. As rotation increases, the leading foot and ankle needs to develop fine movements such as 'plantar/dorsi' flexion and 'supination/pronation' in order to avoid catching edges and enable the board and rider to continuing pivoting.**
- **The timing of combining pressure and rotation on one leg at the end of the board can be quite difficult and strenuous; time should be spent on progressions to aid the guests.**
- **Guests that have trouble committing their weight forward can rock their weight to the back foot and then project forward; popping-off the back foot will also aid this.**

Safety considerations:

- **Snowboards that are too stiff or soft.**
- **Traffic and obstacles.**
- **Loss of focus points and balance.**
- **Catching edges.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Cannot flex board.	Board too stiff. Weight not moving forward.	Softer board. Lift/retract back leg.
Cannot finish roll.	Incomplete rotation.	Focus points. Use core strength.
Catching edges.	Mass not over edge.	Flat land pivots. Toe to toe.

5.5
Intermediate Progressions/Nose/Tail Rolls
SECTION 5 The Progression

180 AIRS

Riding regular and leaving a jump, rotating 180 degrees front side or back side and landing switch in control.

Previous experience

Strong switch riding is a must. On snow '180's', pop 'reverts' and pop 'alley-oops', will aid in developing the guest's balance and timing.

Terrain

Begin with small natural terrain features that allow guests the time to progress to full 180 airs. Start with small jumps that have a clean run-in and run-out for safety and control.

Why

180 Airs allow you to:

- **Learning how to spin in the air will lead to greater rotations and tricks.**
- **Build confidence with manoeuvres in the air.**
- **Increase freestyle abilities and control.**

MECHANICS OF A 180 AIR

Approach:

- Approach the jump flexed, low and centred. The rider can position their upper body and arms into a prepared stance to aid with the rotation. This is done with the use of the muscular core.

Take-off:

- As the mass rises up on take-off, the ankles, knees and core provide some spring to allow projection through the optimal line in the air.
- The rotation comes from the core, lower back muscles and upper body.

Manoeuvre:

- The legs need to retract under the upper body in the air so the rotation and manoeuvre is more compact and smooth. This will also allow the rider to control the speed of the rotation. Whilst in the air, the rider spots the landing and the legs are extended to help the board make contact with the snow.

Landing:

- On the landing, the rider needs to remain flexed to absorb the pressure and ride away in a strong switch position.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Edge awareness.
- Core strength for rotational movements and stabilisation.
- Focus points.
- A.T.M.L. front side and back side.

PROGRESSIONS

Methods

Stationary board off and on, practising movements, and direction of travel.

Switch turns and switch straight runs.

Toe to toe to control rotational skills front side.

Heel to heel to control rotation skills back side.

On snow 180's, across and down the fall line.

Traversing pop 180's across slope front/back side.

Ride banks and pop 180's for timing and speed control (alley-oops).

Use small rolls and knolls.

KEY POINTS WHEN TEACHING A 180 AIR

- **Take-off should not be on a high edge angle as this can cause problems. The edge angle should remain low by keeping the ankle and knees flexed. The edge is only used as a platform from which to project.**
- **On the backside 180, the toe edge is optimal as the side-cut aids rotation.**
- **For the front side 180, the heel edge side-cut is the ideal shape to for the desired rotation, but taking-off on the heel is hard. In most sports it is not normal to spring-off the heels, so greater flexion in the knees, hips and spine are needed. If attempting front side 180's off on the toe edge, the board's edge must remain low so the board and body can remain on the same path. Using the ball of the feet instead of a high toe edge is recommended and a strong use of the core to keep the upper and lower body together is also desirable.**

Safety considerations:

- **Helmets and safety equipment.**
- **Avoid flat landings.**
- **Revise safety and etiquette.**
- **Strong switch riding is a must.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Over rotation.	Rushed spinning on take-off. Not spotting landing. Lack of committment/confidence.	Work on timing the take-off. Mark landing.
Under rotation.	Rotation. Inclining downhill. Rotating before leaving jump.	Revise switch for landing. 180's on banks (alley-oops).
Catching edges.	Inclining/mass moving in wrong path.	Stationary, draw lines in the snow. Move in correct path.
Drifting/lack of projection.	Poor approach or set up turn.	Improve approach and line.

5.5

NOSE/TAIL PRESS – ON A BOX/RAIL

To run straight across a feature and balance on the nose or tail of the board by balancing and flexing the board correctly

Previous experience

The guests should be comfortable flexing the nose and tail of the board in progressions such as flat land presses and nose and tail rolls.

They should be confident with 50/50's and have an understanding of A.T.M.L. and park etiquette.

Terrain

Begin with small rails or boxes to develop A.T.M.L. and confidence.

Why

A Nose and Tail Press allows you to:

- **Improve versatility and style when riding freestyle features.**
- **Increase balance and pressure control skills.**
- **A fun sensation.**

MECHANICS OF A NOSE PRESS

Approach:

- Approach the rail or box centred, flexed and aligned.

Take-off:

- On take-off the rider gently un-weights the board by moving their mass up and over the feature and nose of the board slightly. Retracting the lower body underneath their mass will keep the rider more stable and flexed as they touch down.
- The upper body and head should stay level and balanced while the arms can be used to fine tune balance.

Manoeuvre:

- Flexing the front ankle and knee allows the rider to absorb the feature and stay positioned over the front foot and nose more effectively, while the back leg can gently lift the back binding and tail of the board.
- The rider should feel the sensation weight on the outside of their front foot and the binding strap on the top of the back foot.

Landing:

- At the end of the feature, the rider uses their core and leg strength to un-weight and retract their legs and board back underneath them to re-align for a clean landing.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Pronation and supination of the feet.**
- **Projection fore and aft.**
- **Retracting and lengthen the legs independently.**

MECHANICS OF A TAIL PRESS

Approach:

- **Approach the rail or box centred, flexed and aligned.**

Take-off:

- **The movements on take-off are much the same to the nose press except the rider shifts back slightly. The rider should not shift too much as the angle of the ramp can cause the rider to move back too far and become unbalanced.**

Manoeuvre:

- **On touch-down the front leg can be used to bone the nose forward as the back leg retracts underneath the rider's mass.**
- **The rider should feel the sensation of weight on the outside of their back foot and the binding strap on the top and inside of the front foot.**

Landing:

- **When leaving the feature, the body re-aligns using core and leg strength to move the rider forward and the board back underneath for a solid landing.**

Safety considerations:

- **Use a good start point for speed control.**
- **Have an option to pull out if not ready.**
- **Be aware of the condition of the feature and snow.**
- **Have a clear run-out.**
- **Safety equipment helmet and body armour.**

PROGRESSIONS

Methods

Stationary, practise movements and feelings.

Break down each section of A.T.M.L.

Straight runs with nose/tail presses for movements and control.

As above but extend the presses and set corridors on snow.

Ollie and nollie into presses.

Stand on feature without board to revise movements and A.T.M.L.

Small presses at end of feature then move to during feature.

Build to holding press and progress to 'pop on'.

KEY POINTS WHEN TEACHING A NOSE OR TAIL PRESS

- **The head and eyes must remain balanced and steady through the approach,**
- **take-off, manoeuvre and landing to aid balance.**
- **The arms work in conjunction with the upper body to aid balance.**
- **The force that builds up during the press is known as a 'stored force' and will aid in**

're-bounding' the rider off the feature.

- **Focus on keeping the board flat on the feature at all times.**
- **Build guests' confidence and ability by working on movements outside the park first.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Falling on feature.	Leaning on heels. Inclining on toes. Looking down. Poor approach.	Check forward lean. Static exercises. Flex ankles, knees and hips. (Work on a low flexed position with a flat foot). Focus points. Revise approach and 50/50.
Sliding off feature.	Poor take-off. Bending/breaking at waist.	Practise ollies onto feature. Focus on lower body and leg flexion. Ollies and nollies to presses on snow.
Poor press.	Leaning on front/back foot.	Flex ankle and knee joints. Lift rear/front leg.

BOARD SLIDE – ON A BOX/RAIL

To slide the board across a box or rail sideways.

Previous experience

Guests should be comfortable on terrain park features and be able to pop-on to boxes or rails. Separation needs to be introduced before attempting board slides.

Terrain

Begin with wide boxes that allows for the rider to balance over the feature with less chance of drifting to one side.

Ride-on features that will aid in pivoting while on the feature then progress to features that have a gap on.

Why

Board Slides allow you to:

- **Use the man made features to the best advantage.**
- **Develop separation.**
- **Improve versatility and style.**

MECHANICS OF A BOARD SLIDE

Approach:

- Approach the rail or box centred, flexed and aligned.

Take-off:

- On take-off the rider gently un-weights the board by moving their mass up and over the feature. The upper body and head should rotate slightly down the feature.

Manoeuver:

- The lower body separates and rotates across the feature and under the rider's mass. The rider must remain flexed to allow the board to stay flat while sliding and to absorb the impact on the feature.

Landing:

- At the end of the feature the rider uses their core strength to re-align the upper and lower body for a clean landing.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Separation of the upper and lower body.**
- **Flexion of the lower body and spine to maintain a flat board.**
- **Maintaining a stable position with the upper and lower body.**

PROGRESSIONS

Methods

Stationary, practise separation and movements.

Straight runs with separation/speed checks to refine movement and control.

Small jumps with 'shifties' to promote movements.

Side slipping focusing on low edge angles and a flatter board.

Stand on feature without board, revise movements.

50/50's with small pivots on feature.

Build to board slide and progress to 'pop-on' board slides.

KEY POINTS WHEN TEACHING A BOARD SLIDE

- **The head and eyes must remain balanced and steady through the approach, take-off, manoeuvre and landing.**
- **The arms work in conjunction with the upper body and aid in separation.**
- **The force that builds up between the upper and lower body as it twists to separate is known as 'torque' and will aid in re-aligning the body.**
- **Focus on keeping the board flat on the feature at all times.**
- **A steady progression and teacher assistance can build guest confidence and ability.**

Safety considerations:

- **Use a good start point for speed control.**
- **Have an option to pull out if not ready.**
- **Be aware of the condition of the feature and snow.**
- **Have a clear run-out.**
- **Safety equipment helmet and body armour.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Falling on feature.	Leaning on heels. Inclining on toes.	Check forward lean. Static exercises. Flex (collapse) the ankles and flex knees, hips and spine. Work on separation.
Sliding-off feature.	Poor approach. Poor take-off.	Revise approach and 50/50. Practise ollie's onto feature.

INTRODUCTION TO HALF PIPE

To introduce the half pipe and teach riders the skills and etiquette required to enjoy it.

Previous experience

The rider should have strong edging and carving skills and have the ability to ride in varied terrain and to stop on both edges at speed.

Terrain

Use of banked terrain and rolling features is best to progress riders before entering the half pipe. If possible, using natural half pipes or small beginner half pipes is best to introduce guests.

Why

Introducing Half Pipe allows you to:

- **Gain the basic skills and understanding required to enjoy the half pipe.**
- **Develop the skills and timing required.**
- **Strengthen riding and confidence.**

MECHANICS OF INTRODUCING HALF PIPE

The half pipe can be broken down into five main sections the rider must be introduced to;

the flat bottom, the transition, the vertical section, the lip of the half pipe and the top deck.

In the flat bottom the rider uses strong angulation skills to maintain and adjust both the edge angle and line, across and down the pipe to keep speed and control.

The transition is entered in a low, flexed position maintaining the edge angle and line. As the rider continues up the transition, the mass is raised by extending the lower body to reduce the edge angle. Slight rotation down the pipe is added to enable the board and body to continue travelling down the pipe while maintaining the optimal line.

As the rider reaches the vertical section and the apex of the air, the edge is released and the mass rolls over and across the board to allow the board to engage the new edge and angle back down the pipe.

As the rider comes back down the transition and through the flat bottom, compression of the joints will help absorb the pressure and maintain the edge and line.

The lip of the half-pipe is the top of the vertical section that meets the top deck.

It is sometimes referred to as the coping and is a skateboarding reference, however, there is no steel and should be referred to as the lip. The lip aids in timing take-offs and projecting riders into the air.

The top deck is only talked about at this stage, as we do not want the guest to be aiming out of the pipe in the introduction stage.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Optimal line in the pipe.**
- **Edge control through the pipe.**
- **Rising and sinking on transition to release and engage the edge.**
- **Matching the body to the pitch of the pipe.**

PROGRESSIONS

Methods

Revise jump turns stationary and moving.

Revise switch, reverts and riding banks.

Revise carving for correct edging skills and control.

Refined falling leaf on heel side in the pipe to develop a centred stance and line.

Heel side falling leaf, adding a pop at the apex for pressuring and timing of skills.

Introduce a sliding turn in the transition, avoiding the vertical section.

Focus on un-weighting and rotation skills to aid with line and speed.

Develop small pops for transition off the edge.

Develop line and timing of skills working towards the vertical section.

KEY POINTS WHEN TEACHING INTRODUCTION TO HALF PIPE

- **Do not rush into airs too quickly, just riding the pipe and becoming familiar with the pipe segments will build confidence and skills.**
- **Working on maintaining constant speed and a good line is key.**
- **Minimise pumping and projection movements, as they are not necessary to introduce the pipe.**
- **Once in the pipe there is no way out, the rider needs to have the ability to stop quickly and maintain constant pressure control as they approach the transitions.**
- **Edging and carving skills are a necessity through the pipe.**
- **It is important not to jump away from the pipes transition or vertical section as this will cause the rider to free fall into the pipe and land flat.**
- **Projecting down the pipe will aid in line and prevent landing on the lip or top deck, which will cause the rider to bounce back into the pipe.**

Safety considerations:

- **Poorly shaped pipes.**
- **Poor snow and weather conditions.**
- **Skill level and traffic.**
- **Protective gear is recommended.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Poor heel side.	Poor edging. Inclining. Broken at waist. Back foot.	Check high backs. Revise edging skills, carving. Use core strength. Flex front knee and ankle. Carving/pumping. Line.
Poor toe side.	Lacking speed. Poor edging.	Blended Peter Bauer/line. Uphill turns. Edge setting drills.
No height on walls.	Poor line. Slow start.	Demonstrate line. Work on roll/drop in. progressions.

Notes

SECTION 4

5.6 ADVANCED PROGRESSIONS [FOR LEVEL 4]

The advanced progressions are designed to build skills and take the intermediate rider to the next level with the ability to ride all terrain and snow conditions. The objective is to develop dynamic free riding skills, advanced freestyle and recreational racing skills.

Due to the nature of the tasks and drills, it is important that riders have a high fitness level and a strong understanding for the mountain environment.

All sections of this manual need to be understood in order for the instructor to be trained and self-train at this level of riding.

The freestyle progressions and teaching should be broken down into A.T.M.L.

ADVANCED RIDING

- Dynamic short turns
- Extension/retraction short turns
- Advanced moguls
- Pure carved turns soft boots
- Pure carved turns hard boots
- Switch carving
- Advanced freestyle
- Advanced grabs
- Front board slide - (box/rail)
- 360 Airs
- Switch airs
- Half pipe

SPECIAL CONDITIONS

- Steeps
- Ice
- Powder
- Crud
- Trees

INTRODUCTION TO RACING GIANT SLALOM (GS) AND SNOWBOARD-CROSS (BX)

DYNAMIC SHORT TURNS

High-speed short turns that are steered at speed using strong edging, rotation and pressuring skills. Turns are in the fall line and projection is used more aggressively down the slope.

Previous experience

The rider should have developed strong steering skills through a range of progressions such as steered short turns and carving. The rider should also be strong riding in variable conditions such as moguls to aid with pressuring skills and recovery skills.

Terrain ■ ◆ ◆◆

Avoid icy and steep slopes to begin with until the rider has developed the control and skills required. Use steeper terrain to aid with learning to control pressure and turn shape once skills are developed.

MECHANICS OF DYNAMIC SHORT TURNS

Transition:

- In the transition, the upper body is projecting forward in the direction of travel. This allows the centre of mass to cross-over the board and the lower body to steer the board into the fall line and onto the new edge. Foot pedalling can aid in releasing and engaging the edge.

Initiation:

- With the projection through the transition phase, the rider will initiate the new turn more to the nose (fore) of the board and front foot.
- As the mass moves into the turn and over the new working edge, the lower body joints flex quickly to engage the edge with the use of the hips, knees and ankles. Rotation of the body is consistent to steer the board in the desired direction.

Execution:

- Strong angulation skills combined with rotation of the body are used to steer the board across the fall line and underneath the rider. It is the combination of muscular core and leg rotation with angulation that primarily turns the board under the rider.
- It is important that the upper body continues to rotate with these movements to allow for alignment through the turns and to maintain a strong position.
- The rider will flex down to absorb some of the pressure that is building on the edge and board. With projection and developed lower body steering, the pressure will move form the nose (fore) of the board through the middle and build on the tail (aft) of the board.

Completion:

- The tail of the board will be loaded with pressure. This will require the rider to project their mass forward and in the direction of travel and initiate the next turn.

Why

Dynamic Short Turns allows you to:

- **Develop more powerful, dynamic riding.**
- **Make controlled short turns on steep, narrow terrain with firm snow conditions.**
- **Maintain and produce speed through turns on any terrain.**
- **Develop speed and the sensation of riding on the edge.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Upper body projection and stabilisation.**
- **Lower body and leg steering creating fore and aft pressure.**
- **Core strength and absorption.**
- **Turn shape.**

PROGRESSIONS

Methods

Side slip edge sets to develop strong edging and balance over a platform.

Hockey stops sinking to the edge sets, blending to pivot slips.

Hockey stops with projection and edge sets, blending to pivot slips.

Garlands sinking to strong edge sets.

Garlands focusing on lower body steering and edge sets.

Uphill garlands focusing on fore and aft with projection.

Single short turns or ‘hook’ turns from the fall line, trying to turn back up the hill.

Dolphin turns aiding projection and pressuring.

‘Open’ and ‘closed’ turns working on turn shape, performance and symmetry.

Methods

Edge rolls in and across fall line for developing ankle and knee speed.

Garlands to develop lower body and leg steering.

Garlands focusing on foot pedalling with projection.

Garlands working on rolling to the downhill edge before fall line.

Garlands working on developing a strong edge platform for projection.

Nose roll turns for initiation and projection.

Dolphin turns developing fore and aft with lower body flexion/extension.

Funnel turns to work on radius and rhythm.

KEY POINTS WHEN TEACHING DYNAMIC SHORT TURNS

- **In dynamic short turns, the rider is never static. There is a constant movement of the mass forward and down the slope.**
- **The turns are about active lower body movements, especially the ankles, knees, hips and spine or the short levers. Core strength is required to maintain projection and allow the upper body to stay balanced.**
- **The rider will need a full range of movements in all the joints and quick muscular actions to deal with the snowboard's rebound. Rebound is achieved through strong steering skills and fore/aft movements.**
- **Foot pedalling through the transition and initiation phases will enable the rider to release and engage an edge from which a platform can be formed through the turns.**
- **It is important the upper body completes the turns with the lower body to maintain a level of alignment throughout the lower body.**
- **Even though the turns are high speed and quick it is important to allow time for the body and board to complete the turns. Less than a second can be the difference between a completed turn and one that is pushed or kicked to complete.**

Safety considerations:

- Fitness and skill level.
- Snowboard design and maintenance for grip and control.
- Finishing turns for speed control.
- Low traffic and safe run-out area when practising.

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions
Sliding too much.	Lacking edging. Pivoting on front foot. Kicking back foot.	Edge sets (hockey stops). Fore/aft turns. Work on aft movements. Fore/aft turns. Dolphin turns.
Washing tail out.	Lacking steering.	Lower body garlands. Rhythm exercises.
Toe/heel not consistent.	Too much fore/aft.	Steady upper body focus on lower body steering. Hop turns. Suitable terrain.
Cannot handle rebound.	Lack of rotary skill.	Check for change/hold back pocket. Focus points on heel side.
Counter rotating.	Blocking.	Projection across slope. Follow the leader. Lead hand behind back.

EXTENSION/RETRACTION SHORT TURNS

The rider's mass remains at the same height above the snow whilst the lower body extends and retracts from the upper body through the turns.

Previous experience

Up un-weighted turns combined with down un-weighted turns will provide better understanding of the movements required. The use of passive and active pressure control drills will aid the rider's movement patterns and timing.

Terrain ■ ◆ ◆◆

Use terrain such as rollers, bumps and banks to aid in flexion and extension of the lower body. Natural terrain will help the body flow through the movements. Build to groomed terrain in order to work on the rider creating the movements and not the terrain.

Why

Extension/Retraction Short Turns allow you to:

- **Ride advanced moguls and bumps on the mountain.**
- **Assist with controlling pressure in varied terrain.**
- **Develop separation between the upper and lower body.**

MECHANICS OF EXTENSION/RETRACTION SHORT TURNS

Stance and positioning

- **The stance first needs to be adjusted to allow for separation of the upper and lower body.**
- **The rider opens their upper body into the direction of travel using the spine and muscular core to allow for separation. The centre of mass needs to be lowered by flexing in the lower joints. This will enable the lower body to steer the board and the legs to extend and retract under the body.**
- **There is still subtle rotation of the upper body with the turns to avoid twisting or counter rotating of the body and spine. The centre of mass remains at the same height off the snow and continues to project down the slope and through the turns.**

Transition:

- The transition will see the rider retracted in a low position as the board has been steered underneath the rider's mass. The upper body and mass is moved over the nose of the board and in the direction of travel.
- Foot pedalling will enable the board to be rolled off and on to the edge quickly.

Initiation:

- As the lower joints and mass roll across the board to engage the edge, the mass will continue to travel down the fall line and in the direction of travel, allowing the legs to start to steer and extend the board out to the side. The muscular core needs to remain strong and keep the rider in a retracted position and not allow the rider to extend or stand up.

Execution:

- Extension of the legs and muscular core aid in steering the board out and back under the rider. The muscular core is used to promote extension and especially retraction of the lower body and legs. Steering of the lower body will aid in shaping the turn and guiding the board out for extension and back under for retraction.

Completion:

- As the lower body steers underneath the rider's mass, the muscular core is used to aid in retracting the rider's legs. This will help flatten the board, release the pressure and begin to project and move the rider over the board and into the new turn.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Core strength, lower back and spine used in separation.
- Lower body and leg steering.
- Foot pedalling (torsional flex).
- Movement of the centre of mass.

PROGRESSIONS

Methods

Revise down un-weighted turns.

Down un-weighted pivot slips focusing on separation and fore/aft movements.

Edge rolls down the fall line.

Edge rolls with separation.

Edge rolls low and separated to allow for extension and retraction using the side cut.

Garlands focusing on extension/retraction with lower body steering.

Garlands focusing on developing fore and aft with foot pedalling.

Stick or string work to aid in separation and positioning.

Funnel turns focusing on blending movements.

Methods

Stationary, show body position and leg movements. (Figure eight/hula-hoops).

Counter rotated pivot slips.

Separated hockey stops blending to pivot slips.

Separated hockey stop with extension/retraction blending to pivot slips.

Garlands focusing on lower body and leg steering to extend and retract.

Riding banks developing extension/retraction and turn shape.

Riding small bumps and moguls working on extension/retraction movements.

Follow the leader developing turn shape and symmetry.

KEY POINTS WHEN TEACHING EXTENSION/RETRACTION SHORT TURNS

- **The muscular core and spine control the separation between the upper and lower body.**
- **The shape of the turns relies on the amount of extension/retraction and leg steering applied.**
- **As the board steers under the rider and the mass crosses the board, retracting the legs will un-weight and allow the edge to flatten and pressure to be released on the board.**
- **It is important to use core strength to stabilise the rider's upper body and keep the mass moving down the hill and over the board.**
- **The lower body is used to absorb changes in terrain and snow conditions, allowing the upper body to stay steady and in balance.**

Safety considerations:

- **Fitness level and flexibility.**
- **Snow conditions.**
- **Pre-existing injuries.**

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions
Losing separation.	Old habits. Difficult position to hold. Lacking core strength.	Stick work. Tighten core muscles. Stationary teacher assist. Revise down un-weighted turns.
Breaking at waist.	Lack of flexion. Lack of lower body angulation.	Funnel turns focusing on lower body edging.
Inclination.	Pivoting around front foot.	Retraction of back foot under body. Fore/aft turns.
Uneven toe/heel turn.	Lacking extension/retraction.	Traverse bumps working on active pressuring.
Upper body rising.	Poor steering.	Separated garlands and pivot slips.

5.6
Advanced Progressions/Extension/Retraction Short Turns
SECTION 5 The Progression

ADVANCED MOGUL TURNS

High-speed short turns in the fall line (zipper line) of a mogul field with speed control, rhythm and balance.

Previous experience

Guests should be comfortable with riding moguls and ‘off-piste‘ conditions.

Up and down un-weighted turns and extension/retraction turns will aid in the development of riding advanced moguls.

Terrain

The use of small bumps, rollers and natural terrain will aid in developing and refining movements for larger more advanced moguls. When in large moguls, work towards the side of the run where the moguls are often smaller and offer an escape route. Moguls that are rhythmical and have a clean line are best.

Why

Advanced Mogul riding allows you to:

- Use passive and active pressure to maintain surface contact.
- Develop riding skills for steeps, powder and variable snow conditions.
- Riding moguls are one of the most difficult aspects of snowboarding. Once mastered, it allows the rider to snowboard all runs on the mountain.

TECHNIQUES

The two turn styles used in Advanced Mogul riding are extension/retraction turns and dynamic short turns. Ideally, the extension/retraction turn allows the rider to maintain snow contact and absorb pressure. The key is to maintain the optimal line through the bumps and not lose rhythm. The ‘zipper line’ or the troughs allows the rider to avoid the largest part of the moguls and use of steering allows the rider to navigate the path through.

MECHANICS OF DOWN UN-WEIGHTED ADVANCED MOGUL TURNS

Transition:

- The rider will be retracted in a low position as they ride over the mogul. The rider’s mass and upper body is moved forward and into the direction of travel, which will be to the down side of the mogul.

Initiation:

- The initiation will see the rider’s mass move forward and over the board. The rider will initiate the new turn with slightly more weight on the nose and front foot of the board (fore pressure).
- The lower body and legs roll across the board to engage the edge as the mass crosses the board and mogul.

Execution:

- The muscular core aids in extending and steering the lower body and legs into the turns and down the mogul, as the upper body and mass remains at the same height. As the turn is shaped in accordance with the terrain, the muscular core begins to retract and steer the board back underneath the rider’s mass and upper body.

Completion:

- The leading leg will retract first as it makes contact with the new mogul and as the board continues to be steered, the back legs will retract to the terrain. Steering to the completion will see the rider complete the turn with slight pressure on the tail (aft) of the board and in a retracted position.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Optimal line through the bumps.
- Active extension and retraction through the bumps.
- Separation with lower body steering.
- Active pressure control.

MECHANICS OF UP UN-WEIGHTED ADVANCED MOGUL TURNS

Transition:

- The rider extends and projects their mass forward and over the mogul to aid in releasing the pressure and edge of the board. Steering of the body and board will guide the rider into the correct line.

Initiation:

- As the rider's mass crosses-over the board and mogul, the lower body aids in setting the new working edge. Steering is used to guide the rider and board around the mogul and in the desired direction.

Execution:

- The rider flexes down using the muscular core and leg muscles to flow with the contour of the terrain. Flexing also allows the rider to steer and control pressure though the moguls. The board should be steered until the completion of both the turn and the mogul to maintain speed control.

Completion:

- The rider should complete the turn flexed and over the board to control the pressure and edge angle. This will also provide a platform to extend and project from to transition into the next turn. The muscular core is used to stabilize the upper body and head so that the rider can maintain balance through the terrain.

PROGRESSIONS

Methods

Revise extension/retraction turns.

Traverse moguls to develop active pressure control and absorption.

Garlands in moguls to develop steering with extension/retraction.

Straight run with separation in moderate/small moguls to develop extension/retraction.

Separated pivot slips with extension/retraction to narrow line.

Funnel turns developing line.

Select 2 to 4 moguls and link turns for line.

Methods

Large radius turns developing active pressure control and absorption.

Medium radius turns working on separation and absorption.

Garlands retracting over mogul and steering through trough.

Fore and aft turns to develop pressure control skills.

Hop turns in mogul field to develop terrain use, pressuring and timing skills.

Retracted nose roll turns for initiation and independent leg use.

Set 'stubbies' or markers through mogul field to develop line and rhythm.

Follow the leader to develop line and timing.

KEY POINTS WHEN TEACHING ADVANCED MOGUL TURNS

- **Dynamic short turns can be used to deal with rhythm changes in the mogul field and adjust to changes in snow conditions.**
- **Up un-weighting can cause more vertical displacement of the rider's mass and the board to lose surface contact, so gentle movements are required in conjunction with a smooth line through the bumps.**
- **It is important that the legs can start to act individually through the mogul field. The nose of the board encounters the mogul requiring the front leg to retract. As the front leg retracts and rides over the mogul, it will need to extend to maintain board contact on the snow. As the front leg is extending, the back leg will be retracting following the path of the front leg.**
- **The rider needs to be constantly moving in order to control the board and maintain surface contact.**

Safety considerations:

Give guests an escape route.

- **Pre-existing injuries and guest's fitness level.**
- **Correct equipment (not too stiff).**
- **Discuss tactics for use in various situations.**

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions
Loss of rhythm.	Cannot turn quickly enough. Hesitation.	Work on short turns. Follow the leader. Smaller moguls.
Getting forced into the air.	Too much speed. Unable to absorb.	Skid turn for control. Steer for turn shape. Traversing working on active absorption and pumping.
Getting pushed to the back foot.	Not projecting. Blocking.	Pull mass over front foot. Rotate upper body through turn.
Traversing.	Poor line.	Set 'stubbies' in moguls. Smaller bumps. Follow the leader.

5.6
Advanced Progressions/Advanced Mogul Turns
SECTION 5 The Progression

PURE CARVED TURNS SOFT BOOTS

Fast long radius turns with the tail of the board following the direct path of the nose. Pressure control and steering movements are well developed with the edging progressive and strong.

Previous experience

Guests should be experienced with riding at speed with progressions such as long turns and carving.

Terrain ■ ◆

The terrain should be groomed and not icy for progressing to Pure Carve Turns.

Avoid high traffic and beginner areas.

Why

Pure Carve Turns on soft boots allows you to:

- **Generate speed and acceleration from turns whilst staying in control.**
- **Aid in riding at a high speed and race training.**
- **Correct the line when racing or with freestyle.**

MECHANICS OF PURE CARVE TURNS ON SOFT BOOTS

Transition:

- **Projection of the upper body and mass forward and across the board is used to help move into the new turn and set the edge. The amount of projection required is related to the speed of the rider and pitch the turn is being performed on. Rotation of the body is used to steer and guide the board into the direction of the new turn.**

Initiation:

- **The rider's mass moves into the turn with the use of balanced inclination to aid with the speed whilst riding, as the lower body begins to angulate to help maintain balance and control of the board and turn shape. The turn will be initiated towards the nose and front foot of the board**
- **(fore pressure) aiding in guiding the rider, and board's side cut design, in the direction of travel.**

Execution:

- **On the heel side the hips roll and flex into the hill and turn. Assisted by the knees and spine, they help build the edge angle. The ankles remain strong and can flex (dorsi) to fine tune the board's edge angle and create a platform at the end of the turn. The spine aids in keeping the upper body forward in the turn and over the heel edge.**
- **On the toe side the rider's mass moves to the inside of the turn. The rider's muscular core remains strong as the hips flex allowing the upper body to remain balanced and the knees and ankles to be rolled into the hill to build the edge angle. The rider must ensure they do not arch their lower back by pushing the pelvis forward to achieve the edge. Plantar flexion of the ankles throughout the toe side turn will enable the rider to roll onto the balls of the feet, aiding in creating a strong projection platform.**

Completion:

- **A platform is created from strong angulation, allowing the rider rise up and project forward. With the aid of steering, the build up of pressure will be on the tail of the board (aft pressure). Strong use of the muscular core and timing of setting the edge at the completion is required.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Active projection and cross-over movements through the turns.**
- **Separation at the completion of turns.**
- **Progressive angulation.**
- **Creating a strong platform throughout the turns.**

PROGRESSIONS

Methods

Fast inclined single uphill turns.

Fast inclination with angulation single uphill turns.

Blend shoulder and lower body angulation (Peter Bauer).

Single uphill turns blending fore/aft movements.

Single turns adding pops to build pressure control and edging skills.

Single turns from the fall line, blending movements.

Single turns focusing on aft movements then projection.

Dolphin turns at the completion to develop pressuring skills and projection.

Edge rolls in the fall line and across hill for the edge change and transition.

Stick work to aid in upper body angulation and separation.

KEY POINTS WHEN TEACHING PURE CARVE TURNS ON SOFT BOOTS

- **The shoulders should remain level with the slope and adjust progressively through the turns (upper body and shoulder angulation).**
- **There is slight separation between the upper and lower body at the completion and initiation phases of the turn. The lower body uses active steering throughout the turns to aid in the shape and radius, while the upper body remains balanced for the next turn.**
- **On the toe side, it is important to keep the core strong and the lower spine curved and not arched to allow for progressive angulation and pressure control.**
- **Focus on maintaining alignment and working on efficient movements to help generate speed and aid in driving the board through the turns.**

Safety considerations:

- **The guest should be comfortable at speed.**
- **Equipment should be maintained.**
- **There should be minimal traffic and a wide-open run.**

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions
Not accelerating.	Static. Lack of projection.	Blended Peter Bauer/edge sets. Move hands forward at completion. Fore/aft turns. Stick work. Core strength.
Loss of position.	Inclination. Over rotation.	Backhand check for change. Single pure carve turns. Alignment exercises.
Skidding.	Lacking edge angle. Over-rotation. On front foot.	Switch carving.
Poor turn shape.	Lack of steering. Poor pressure control.	Focus points/uphill turns. Fore/aft turns and drills.

5.6
Advanced Progressions/Pure Carved Turns [Soft Boots]
SECTION 5 The Progression

SWITCH CARVE TURNS

Carved turns whilst riding switch.

Previous experience

Guests should be comfortable riding switch and be able to steer the board. A range of turn shapes has been developed, especially large radius turns switch.

Terrain ● ■ ◆

Wide-open terrain that has been groomed is best suited to develop switch carving.

Use low traffic areas to aid in guest safety and blind spots.

Why

Switch Carve Turns allows you to:

- **Ride switch faster and in control.**
- **Improve freestyle options and skills.**
- **Feel the sensation and enjoyment of carving switch.**

MECHANICS OF SWITCH CARVE TURNS

Initiation:

- In the initiation the mass moves into the turn using inclination to help set the edge and keep the rider balanced at speed. The lower body begins to angulate to control the edge angle required.

Execution:

- The body uses angulation through the turn to help build the edge angle and pressure on the board. Constant rotation through the turns will aid in steering the board and rider in the desired direction.

Transition:

- Develop and emphasise the use of an anticipated body position. This uses the muscular core, and spine to hold the position throughout the turns.
- As the rider transitions through the turns, their mass projects slightly to aid in re-centring over the board and moving in the direction of travel.

Completion:

- As the board reaches the completion of the turn the edge is increased to create a platform for up un-weighting and projection. The rider should complete the turns aligned and over the board.

(See level three carving).

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Anticipation in the switch stance.**
- **Re-centring and projection through the turns.**
- **Earlier edging.**
- **Progressive edging.**

PROGRESSIONS

Methods

Stationary, revising stance and movements.

Switch traverse with edge sets.

Switch garlands skidding to edge set.

Single uphill turns inclining then add angulation.

Switch long turns working on upper body angulation and position

Switch long turns at speed.

Switch edge rolls in fall line.

Link 1-2 then 4-5 carve turns together.

KEY POINTS WHEN TEACHING SWITCH CARVE TURNS

- **The use of progressive angulation will prevent the board from skidding out.**
- **A combination of the board's side-cut and the rider's steering skills through the turn will determine the turn radius.**
- **The position of the bindings and the flex of the board's tail and nose will affect the performance of the turn. Bindings set back will create a short tail thus making the turn initiate quickly. Boards that are directional and have a stiffer tail than nose, require more fore pressure to guide the board in the initiation.**
- **Foot pedalling will aid in releasing the edge in the transition phase and engage in the initiation phase.**
- **Focus on gradual/progressive movements for smooth riding.**

Safety considerations:

- **Comfortable riding switch at speed.**
- **Be aware of rider's blind spots.**
- **Equipment set up and designs.**

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions
Cannot hold carve.	Poor edging.	Single carve turns. Stick work.
Locking on edge.	Inclination. On back foot.	Switch edge sets. Match shoulders to pitch. Flex front ankle and knee more.
Getting blocked.	Lacking anticipation.	Focus point. Follow the leader. Check binding angles.

5.6
Advanced Progressions/Switch Carve Turns
SECTION 5 The Progression

INTRODUCTION TO HARD BOOT RIDING

Understanding the basic skills of hard boot equipment and riding-up to long radius turns with the tail of the board following the path of the nose.

Previous experience

If possible, use soft boot equipment and set the binding angles to a suitable and similar angle to the hard boot set-up. This will aid in a similar sensation and feels and provides more forgiving equipment. The use of 'stick-work' exercises and drills will develop upper body positioning and separation.

Terrain ● ■ ◆

Wide-open terrain that has low traffic is best suited for introducing hard boot riding.

Use an even fall line that has a consistently groomed pitch to aid guests.

Why

Introducing hard boot riding allows you to:

- **Adapt to different race equipment (GS).**
- **Aid in Giant Slalom and Snowboard-Cross racing skills and development.**
- **Develop skills for both hard and soft boot riding.**

MECHANICS OF PURE CARVE HARD BOOTS TURNS.

Stance

- The stance is affected by the angles of the feet and the width of the bindings. The weight should remain centred to begin, with the lower body flexed and the upper body anticipated by the muscular core and spine. The spine remains rolled and relaxed to allow for maximum angulation and flexion. The hands remain out to the sides and aid in shoulder and upper body angulation.

Rotation

- Rotary movements help initiate, execute and complete the turns. The rider uses strong rotation of the muscular core to help turn the upper body and lower body.
- The muscular core rotates the hips as the femur rotates in the hips socket to turn the legs.
- Leg rotation is used to fine-tune the turn radius as the muscular core and hip edge and rotate the rider and board.
- There is some separation at the completion of the turns but more so on the toe, as the rider up
- un-weights and rotates the mass in the direction of travel.

Edging

- The turns are initiated by moving the centre of mass to the inside of the turn by the way of inclination. The hips and knees move laterally across the board to aid in initiating the edge and increase the edge angle.
- When executing a heel side turn, the pressure is felt on the outside calf on the front leg and the inside calf on the back leg.
- On execution, the toe side the pressure is felt on both shins through the turn and then slightly more on the back shin at the completion.
- Lower leg angulation helps with progressive edging and balance throughout the turns.
- The muscular core and spine are used to help promote lower body edging and rotation whilst maintaining a strong angulated upper body position that is balanced through the turns. The upper body works in conjunction with the lower body and needs to angulate accordingly to the turn and speed. The muscular core separates the upper body from the lower body and positions the head and torso into an angulated position. Too much inclination of the upper body into the turns will cause a number of problems including railing of the board.
- The boots restrict flexion in the ankles, requiring the knees and hips to aid in creating the desired amount of edge. The upper body and shoulders still angulate to the hill to aid in keeping the rider aligned and able to re-centre through turns. It is possible to use subtle movements of the ankles to help release and engage the edges.

Pressure control

- Throughout the turns the rider progressively sinks to edge and control the pressure on the board.
- There is projection forward through the transition and at the initiation of the turns, applying pressure to the nose (fore pressure) of the board. This aids in flexing the nose of the board and steering the board in the direction of travel.
- As the rider executes the turn, the pressure becomes more even as the board is steered through the turn.
- Steering through to the completion will build pressure towards the back foot and tail (aft pressure) of the board. As the rider up un-weights and projects forward, the pressure that has built up in the board can be used to aid in projecting the rider through turns and through the transition (re-bound).

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **New stance and positioning on heel side and toe side.**
- **Upper and lower body separation and balance.**
- **Leg rotation to help guide the board.**
- **Core strength to aid in body position.**
- **Progressive movements.**

PROGRESSIONS

Methods

Stance

Teacher assists guest into correct position.

Stationary, rolling edge to edge and fore/aft.

Direction changes for balance and feel.

Straight runs flexing up and down, add small hops.

Single uphill turns on toe and heel side for positioning.

Stick work to aid in separation.

Edging

Edge sets, side-slipping and traversing focusing on ankles, knee, hips and spine.

Direction changes with both feet to find edge.

Edge sets holding the edge longer.

Edged garlands.

Single uphill turns then add projection.

Fan progression single turns.

Edge rolls in and across fall line.

Peter Bauer turns focusing on progressive angulation and rising/sinking.

Stick work focusing on lower and upper body angulation.

5.6
Advanced Progressions/Introduction to Hard Boot Riding
SECTION 5 The Progression

Rotation

Falling leaf.

Garlands.

3-point turns.

180's and 360's on snow.

Hockey stops.

Separated pivot slips.

Lower body and leg steering in garlands and uphill turns.

PRESSURE CONTROL

Traverse with small hops.

Traverse, rolling the feet fore and aft for driving the board.

Fore/aft turns (bone turns).

Hockey stops rising and sinking.

Hockey stops with projection.

Nose roll turns.

Dolphin turns.

KEY POINTS WHEN TEACHING PURE CARVE TURN ON HARD BOOTS

- **Having the appropriate equipment set-up correctly is vital. The length of board, side-cut radius, stance angles, width of bindings and stiffness of boots all come into play.**
- **Hard boot riding is challenging to start and many positions and feelings are unfamiliar and awkward. Time needs to be spent feeling the transition between soft boots and hard boots.**
- **Driving the knees and ankles laterally across the board will use 'pronation' and 'supination' of the feet.**
- **Moving the hands forward in the direction of the new turn will help in projection and direct the energy.**
- **There are a large number of progressions that aid in the isolation of skills and blending them together.**
- **Remaining in a flexed position will cause muscle fatigue. Provide adequate time for guests to recover.**

Safety considerations:

- **Psychological and physical factors.**
- **Poor equipment or set-up incorrectly.**
- **Fear of speed.**
- **Over inclination lacking angulation.**
- **Lacking skills and/or understanding required.**
- **Poor terrain/snow or weather conditions.**

COMMON PROBLEMS AND SOLUTIONS

Common Problem	Possible Causes	Possible Solutions
Lack of separation.	Old habits. Lack of strength.	Stationary positioning. Tighten core/stick work.
Inclination.	Poor angulation skills. Fear.	Edge sets/stick work/ blended Peter Bauer. Easy terrain.
Lack of turn shape.	Inclination. Poor steering.	Blended Peter Bauer edge sets and up hill turns. Lower body pivot slips to develop rotation/separation.
Getting pushed into the air.	Lack of pressuring. Stiff equipment.	Nose roll/dolphin turns. Loosen top of boots.

5.6
Advanced Progressions/Introduction to Hard Boot Riding
SECTION 5 The Progression

Notes

ADVANCED FREESTYLE

GUESTS SHOULD UNDERSTAND AND BE ABLE TO COMPLETE ALL THE INTERMEDIATE FREESTYLE PROGRESSIONS, SAFETY REQUIREMENTS AND ETIQUETTE INVOLVED WITH FREESTYLE.

Equipment can be a huge factor when performing freestyle tricks at this level. The wrong equipment, incorrect adjustments and lack of tuning can make it unsafe and virtually impossible to develop the required skills.

Guests should be advised on safety equipment such as helmets to prevent head injuries and body armour to prevent cuts and abrasions caused by boxes and rails and mouthguards to protect the teeth.

The guests should have an understanding of all the features in the park and be able to warm-up accordingly.

Snow conditions, weather conditions and park design and flow, can play a huge role in a guest's success.

The progressions and teaching are to be broken down into A.T.M.L.

ADVANCED FREESTYLE

- **Advanced grabs**
- **Front board slide - (box/rail)**
- **360 Airs**
- **Switch airs**
- **Half pipe**

ADVANCED GRABS

Building a variety of different grabs in the air off a jump.

Previous experience

Riders should be comfortable with straight airs off medium size features that allow time for grabs to be performed. They should be familiar with the park and features.

Terrain

Use natural terrain that will aid in grabs and positioning the rider. Start with small jumps and progress to larger jumps if conditions suit.

Why

Advanced Grabs allow you to:

- **Advance freestyle versatility.**
- **Aid in speeding up or slowing down rotations.**
- **Provide more options while in the air and aid in pipe manoeuvres.**

MECHANICS OF ADVANCED GRABS

Approach:

- The rider remains centred and flexed on approach.

The muscular core aids in maintaining a strong position as the eyes are balanced and focused on the feature.

Take off:

- On take-off the legs extend to aid in projecting the mass through the air. The core and back muscles are used to position the shoulders, arms and hands to the desired grab.

Manoeuvre:

- In the air the legs retract towards the centre of mass and aid in the desired grab as the muscular core helps compress the rider and position the body.
- The rider must remain compact in the air, assisting balance and allowing easy access to any part of the board for the grab.
- After the apex of the jump and during the rider's descent, the body extends to allow for absorption on landing.

Landing:

- As the board touches down the rider lands low and flexed, looking ahead in the direction of travel. Edge awareness will be required for manoeuvres that are 'shifted' or 'tweaked out'.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Core strength in the air to assist the grabs.**
- **Compact in the air.**
- **Timing and projection.**
- **The grab and body position required.**

PROGRESSIONS

Methods

Stationary, learning grabs' names and positioning.

Straight runs touching board.

Small jumps positioning board and hands.

Small jumps touching board.

Use natural jumps and hits that aid in grabs and positioning.

Jump with quick grabs on the board.

Larger jumps with longer grabs and 'tweaks'.

KEY POINTS WHEN TEACHING ADVANCED GRABS

- **The core and lower body can be 'shifted' while in the air to aid in 'tweaking' out the grabs. For example, during the 'method' air the abdominals are extended as the lower spine is arched and retracted while the heel side edge is brought up behind the rider by flexing the legs. The front hand grabs the heel edge and the backhand extends to counter-balance the upper body.**
- **Advanced grabs aid in positioning the rider on jumps as well as on both sides of the half pipe.**
- **The muscular core is used to aid in bringing the legs up and also compressing the upper and lower body to make for a compact position in the air.**

Safety considerations:

- **Flexibility of students and pre-existing injuries.**
- **Size of jump and snow conditions.**
- **Clear take-off and landings. Use a 'spotter' if required.**

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Loss of balance.	Breaking at waist. Inclining.	Revise lifting legs up. Core strength. Revise airs with no grabs.
Cannot grab.	Lacks flexibility.	Stretching exercises. Touch position first.
Missing grab.	Grabbing too quick. No grip on gloves.	Advise on freestyle gloves. Stretching.

5.6
Advanced Progressions/Advanced Grabs
SECTION 5 The Progression

FRONT BOARD SLIDE

Box/Rail To slide the board across a box or rail, using a front board slide. The upper and lower body separates, with the lower body sliding backwards down the feature.

Previous experience

Separated exercises and drills should be covered before attempting Front Board Slides. Guests should be comfortable in the park and with manoeuvres such as nose presses and board slides.

Terrain

Begin with on-snow exercises to aid with movements and positioning. In the park work on ride-on boxes and features to begin with then progress to 'popping-on'. Once the rider has developed control, move to rails and other advanced features.

Why

Front Board Slides allow you to:

- **Use the man-made feature to its best advantage.**
- **Improve versatility and separation.**
- **Develop style and flow through the park.**

MECHANICS OF A FRONT BOARD SLIDE

Approach:

- Approach the feature in a flexed and athletic position. The appropriate line needs to be taken into the feature which is often slightly to the left side for a 'regular' rider or right side for a 'goofy' rider.

Take-off:

- The rider extends their lower body and projects their mass forward and over the feature.
- The muscular core is used to help separate the upper and lower body.

Manoeuvre:

- The shoulders remain slightly down the feature as the lower body separates under the upper body. Separation is restricted and extending the back leg out can impart more angles to the board slide.
- This will cause the front board slide to occur more under the front foot and will aid in exiting the feature. The hips can be flexed to help in keeping the upper body over the front foot, maintaining balance over the feature.

Landing:

- When leaving the feature, the body re-aligns using core strength which can be aided by swinging the arms back, landing flexed and centred.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Separation of the upper and lower body into a front side position.**
- **Flexing of the lower body and spine to maintain a flat board.**
- **Keeping the upper body in a stable position over the leading foot and board.**

PROGRESSIONS

Methods

Stationary, practise separation movements and feelings.

Straight runs with separation/speed checks for movement and control.

Side slipping focusing on low edge angles and a flat board.

Nose presses for balancing over lead foot.

Small jumps with 'shifties' for separation and movements.

Stand on feature without board, revise movements.

Approaching feature on the correct line.

50/50's with small pivots on feature.

Build to front board slide and progress to 'pop-on' board slides.

KEY POINTS WHEN TEACHING A FRONT BOARD SLIDE

- **The head and eyes must remain balanced and steady through the approach, take-off, manoeuvre and landing.**
- **Focus on keeping the board flat on the feature at all times.**
- **The arms work in conjunction with the upper body and aid in separation.**
- **The force that builds up between the upper and lower body as it twists to separate is known as 'torque' and will aid in re-aligning the body.**
- **A steady progression and teacher assistance can build guests confidence and ability.**
- **A good analogy – Bowling and bowling ball. The body twists, the back leg goes back, the back arm comes forward as the eyes stay ahead.**

Safety considerations:

- **Use a good start point for speed control.**
- **Have an option to pull-out if not ready.**
- **Be aware of the condition of the run-in, feature and snow.**
- **Have a clear run-out.**
- **Safety equipment, helmet and body armour.**

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Falling on feature.	Leaning on heels. Inclining on toes.	Check forward lean. Static exercises. Work on separation. Flex (collapse) front ankle and flex knee, hips and spine.
Sliding off feature.	Poor approach. Poor take-off.	Revise approach and 50/50's. Approach form correct side of feature. Practise ollie's onto feature. Revise nose presses.

5.6
Advanced Progressions/Front Board Slide
SECTION 5 The Progression

360 AIRS

A controlled 360-degree aerial rotation, back side or front side with a controlled landing.

Previous experience

Guests should be comfortable in the park and off natural features. 180 progressions including popping flat land switch, 180's will greatly help guests' awareness and balance.

Terrain ■ ◆ ▬

The use of natural terrain and soft snow will set guests up for success in the park.

Start with smaller 'hip jumps' and jumps to build rotation skills with timing.

Why

360 Airs allow you to:

- **Improve rotation skills and versatility.**
- **Improve a rider's collection of tricks.**
- **Can aid in stabilizing the rider in the air.**

MECHANICS OF A BACK SIDE 360 AIRS

Approach:

- On approach, the rider remains centred and flexed. The upper body stays anticipated and the eyes are focused on the jump and take-off.
- On the transition, the rider rolls slightly onto the balls of the feet to create a platform on the toe side. The board still remains flat in order to maintain a straight path.

Take-off:

- On take-off, the muscular core and upper body project and rotate backside with the eyes leading the way by looking over the back shoulder or under the arm-pit. The lower body helps the projection and rotation by extending on the take-off, providing amplitude in the air, and retracting under the body so the rider stays compact.

Manoeuvre:

- The rider will use the core to help compress the upper and lower body in the air for a compact spin. After the first 180, the landing will become visible and the eyes will stay focused on this point. The body will then slowly extend to control the rotation and absorb the landing.

Landing:

- As the board and rider touches down, the lower body and core flexes to absorb the impact as the rider lands centred, looking ahead at the run-out. Edge awareness is required in order to maintain a straight run-out.

MECHANICS OF A FRONT SIDE 360 AIRS

Approach:

- On approach, the rider remains centred and flexed. The upper body remains anticipated and the eyes are focused on the jump and take-off. On the transition, the rider rolls slightly on to the heel edge, creating a platform.
- The heel edge is chosen first as the side cut is shaped to assist the front side rotation.

Take-off:

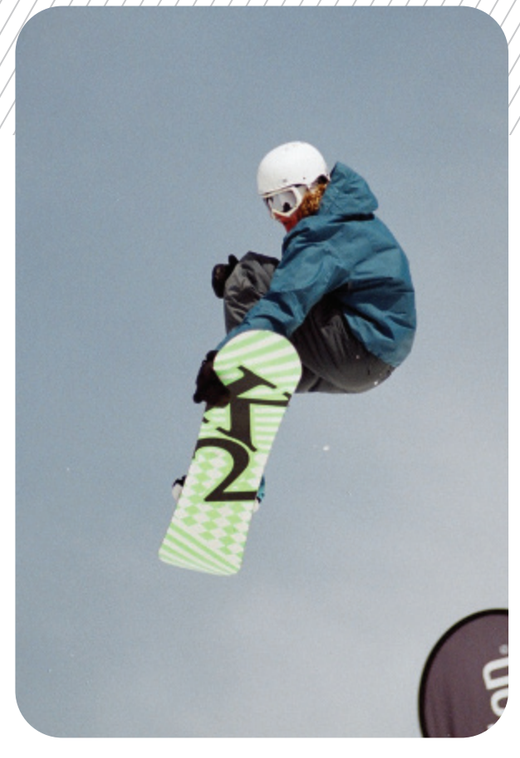
- The rider must flex more in the knees, hips and spine to aid in the extension on take-off.
- The eyes, upper body and muscular core lead with the rotation as the rider extends on take-off. The eyes can focus over the front shoulder or under the leading armpit.
- If the toe edge is chosen for the front side rotation, it is important that the edge remains low and the board travels in a straight path. The muscular core and upper body will need to work harder on take-off to project and rotate the mass in a straight path. This is due to the side cut wanting to move in the opposite direction.

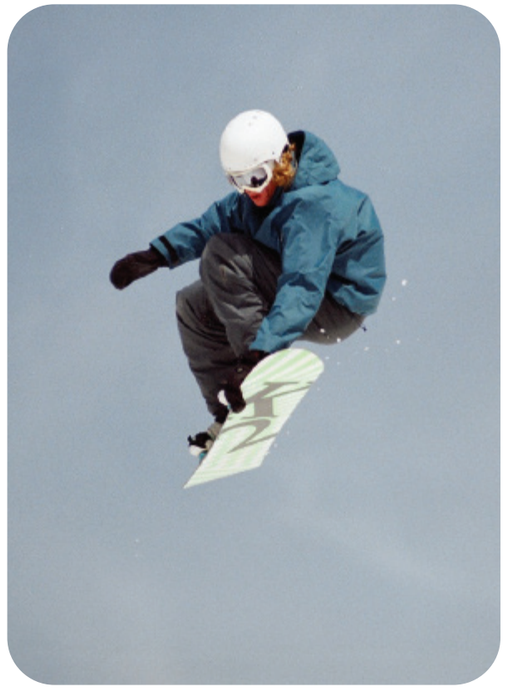
Manoeuvre:

- In the air, the legs retract under the body keeping the rider compact and the rotation smooth. The rider will use core strength to help compress the upper and lower body in the air for a compact spin.

Landing:

- The landing is blind and it is not until the last 90 degrees of rotation that the landing becomes visible. The rider will extend during the completion of the 360, allowing for rotation control and absorption on landing. As the board and rider touch down, the lower body and core flexes to absorb the impact as the rider lands centered, looking ahead at the run out. If the rider looks too quickly ahead it can cause over-rotation on the landing.
- Edge awareness is required in order to maintain a straight run-out.





FUNDAMENTAL MECHANICS TO BE TAUGHT

- Approach, take-off, manoeuvre and landing movements (A.T.M.L.).
- Body and board rotation.
- Set-up turns.
- Timing on the take-off.

PROGRESSIONS

Methods

Stationary, board off 180's, build to 360's.

Stationary 360's with board on.

On snow 180's and 360's developing rotation and spotting the landing skills.

Across hill hop 180's in all directions.

Uphill turns with hops 270's.

Alley-oops on banks front-side and backside.

Natural jumps and hits that aid in rotation and set-up turns.

All four 180 airs off small features.

Use small bumps and jumps across hill and 360.

Use small jumps and build on amplitude.

KEY POINTS WHEN TEACHING 360 AIRS

- The rider's eyes, core strength and back muscles control the rotation of the body. The lower body and legs control the amount of pop and edge on take-off.
- It is important that the upper and lower body do not separate from each other too much on take-off as this will cause poor rotation and balance in the air.
- The timing on take-off can be critical. Extend too early and the rider losses amplitude and rotation. Miss the take-off and the rider loses the platform used to spin from.
- A good take-off will allow for a compact position and solid rotation in the air.
- On approach, a 'set-up turn' can be taught to aid in creating a platform for take-off. As the rider develops and improves their spinning, the need for an edge will decrease and the board will run flatter.
- Set-up turns should be taught carefully as they can cause problems such as drift, pre-spinning or inclination on take-off and in the air.

Safety considerations:

- Avoid icy jumps and landings.
- Use the correct size jump.
- Use a spotter if landing is not visible.
- Safety equipment (helmets, wrist guards).

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Under rotating.	Not leading with the eyes. Upper body rotating too early.	Board off spins. Rotate from core and compact position in air.
Losing vertical axis.	Inclining. Dropping shoulder on take-off.	Revise 180's/alley-oops. Elbows up.
Drifting in the air.	Turning on take-off.	Less set-up turn. Flatter board on take-off.
Over-rotation.	Throwing too hard. Not spotting landing.	Work on take-off timing. Colour landing.

SWITCH AIRS

A controlled basic air, off a jump whilst riding switch.

Previous experience

Guests should be very comfortable riding black and variable condition switch. Riding switch over rollers and performing switch 50/50's will aid in the A.T.M.L. of switch airs.

Terrain

Begin with natural terrain and small features to build confidence and skills. Start with small rolls and jumps in the park to improve A.T.M.L.

Why

Switch Airs allow you to:

- **Advance guest's freestyle abilities.**
- **Present options and tricks to the rider.**
- **Prepare riders for spinning switch.**

MECHANICS OF A SWITCH AIR

Approach:

- **The upper body stays anticipated through all the phases of the jump.**
- **The muscular core works to keep the head and shoulders open and travelling in the direction of travel.**
- **On approach, the rider remains centred and flexed.**

Take-off:

- **The rider gently un-weights on the transition and take-off by extending the lower body. Slightly 'popping' on the take-off will improve amplitude and provide a platform to project off.**

Manoeuvre:

- **The legs retract under the rider's mass in the air as the muscular core aids in compressing the upper and lower body in the air. The rider's spine is also flexed and not kept straight to aid in a balanced position through the air.**

Landing:

- **The rider spots the landing and extends the lower body and legs to absorb and land low, centred and flexed.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Approach, take-off, manoeuvre and landing movements (A.T.M.L.).**
- **Timing of the take-off.**
- **Positioning of the body when switch.**
- **Compact in the air.**

PROGRESSIONS

Methods

Stationary, focusing on position, movements and feelings.

Revise switch and switch straight runs.

Switch ollies and nollies.

Traverse switch, practising edge hops.

Switch straight run-over small rolls then add hops.

Switch hops on knuckle of jump to help landing on pitch.

Small switch airs build on amplitude.

KEY POINTS WHEN TEACHING SWITCH AIRS

- **The key movements are the same as a regular air but more focus is required on holding anticipation in the phases. Being anticipated allows the rider's mass to move through the phases and stay in balance.**
- **Mileage while riding switch is essential at this level. The rider should be comfortable riding switch in most conditions and terrain situations.**
- **Building confidence and allowing guests to learn switch airs will strongly improve their options in park, pipe and other freestyle situations.**

Safety considerations:

- **Must have strong switch skills.**
- **Speed and size of jump.**
- **Spotter for landing.**
- **Safety equipment (helmet, body armor).**

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Cannot line up jump.	Poor approach. Too much speed. Rotating.	Switch straight runs. Set start point. Work on alignment.
Unbalanced in the air.	Breaking at waist. Looking down. On back foot.	Flexion exercises. Focus points. Switch nollies on flat terrain.
Falling	Going too big. Landing stiff.	Less extension on take-off. Switch pressuring drills.

5.6
Advanced Progressions/Switch Airs
SECTION 5 The Progression

HALF PIPE

To confidently ride the half pipe, gain height and perform basic tricks.

Previous experience

Guests should have been introduced to the half pipe and have an understanding of how to ride the terrain. Strong edging skills need to have been developed to have success in the half pipe.

Terrain

Use small half pipes and quarter pipes to progress riders to the larger half pipes.

Why

Half Pipe riding allows you to:

- **Build confidence and control in the half pipe**
- **Improve the guest's freestyle skills and versatility.**
- **Develop the guest's ability to get air out of the pipe.**

MECHANICS OF HALF PIPE RIDING

Approaches

Drop-ins

- To increase speed at the start of the pipe a 'drop-in' from a high point on the top deck or higher start point is needed. When entering the pipe the board should be angled down the pipe with the body and not across the pipe. This will avoid free-falling into the pipe and produce maximum speed.

Transitions/flat bottom

- Through the transition and flat bottom the rider needs to edge correctly using angulation in order to hold the optimal line and maintain speed. As the rider starts to ride up the opposing transition, it is vital that the eyes are focused up and out of the pipe in the direction of travel.

Vertical section/lip of pipe

- This will allow the rider to project out and down the pipe by driving the leading side of their body and mass towards the apex of the air.

Manoeuvres

- Through the air, the rider should remain relatively compact and focused on the landing to allow for a smooth re-entry into the pipe. The muscular core aids in compressing the upper and lower body in the air as the legs retract under the rider.

Take off

- On take-off the rider does not need to extend aggressively as this will affect the line and cause the rider to land on the flat bottom. The rider needs to delay take-off until the nose is past the top of the pipe. There is slight extension of the lower body to aid the take-off and rotation of the body down the pipe to maintain the optimal line.

Landings

- On landing, the legs should extend out to make contact with the transition. Matching the shoulders and body to the transition will assist the rider's landing.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **The timing on releasing the board out of the pipe.**
- **Optimal line and speed.**
- **Rotation of the mass down the pipe to aid in optimal line.**
- **Compressed position in the air.**

PROGRESSIONS

Methods

Build on rotary skills and projection in the vertical phase of the pipe.

Introduce 'dropping-in' at the low points of the pipe.

Introduce 'dropping-out' at the bottom of the pipe.

Work on 'dropping-in' at the top of the pipe and 'dropping-out' at the bottom.

Drop-in and out through the pipe.

Work on speed and line connecting airs together.

Develop height by increasing speed and projecting out of pipe.

Work on pumping the transition for more speed and height.

Follow the leader to develop the optimal line.

Once confident, work on airs with grabs to stay compact.

Less extension on take-off.

KEY POINTS WHEN TEACHING HALF PIPE

- **Pumping, although necessary and important, should be used sparingly and only when required.**
- **Minimising the amount of pumping simplifies the movements necessary to ride the pipe. Excessive pumping down the transition and flat bottom will force the rider to sink too low. This means the rider has to fight the downward forces to maintain speed across the bottom, while setting-up for the opposing wall and its forces.**
- **Confidence and speed is key and the rider needs to have the ability to change and adjust their line through the pipe.**
- **If the pipe is under vertical, a stronger jump or pre-ollie will help the rider avoid landing on the top deck. If the pipe is over vertical, the rider can absorb the kink or angle the board more down the pipe to avoid landing on the flat bottom.**
- **When initiating a trick, the rider needs to use the transition to set their body in position.**

Safety considerations:

- **Poorly shaped or maintained pipes.**
- **Skill level should match the pipe size.**
- **Safety equipment (helmets, body armour).**
- **Snow conditions and traffic.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Poor heel side.	Fear. Leaning on high backs and into pipe.	Drop-out on deck. Check forward lean. Revise reverts/pumping.
No speed in transitions.	Lacking edging skills. Lacking pumping.	Carving. Active pressuring drills.
Not getting out of pipe.	Not enough speed. Poor line.	Drop-in and outs. Follow leader.
Landing on flat bottom.	Projecting into pipe.	Focus point out of pipe. Less extension on take-off.

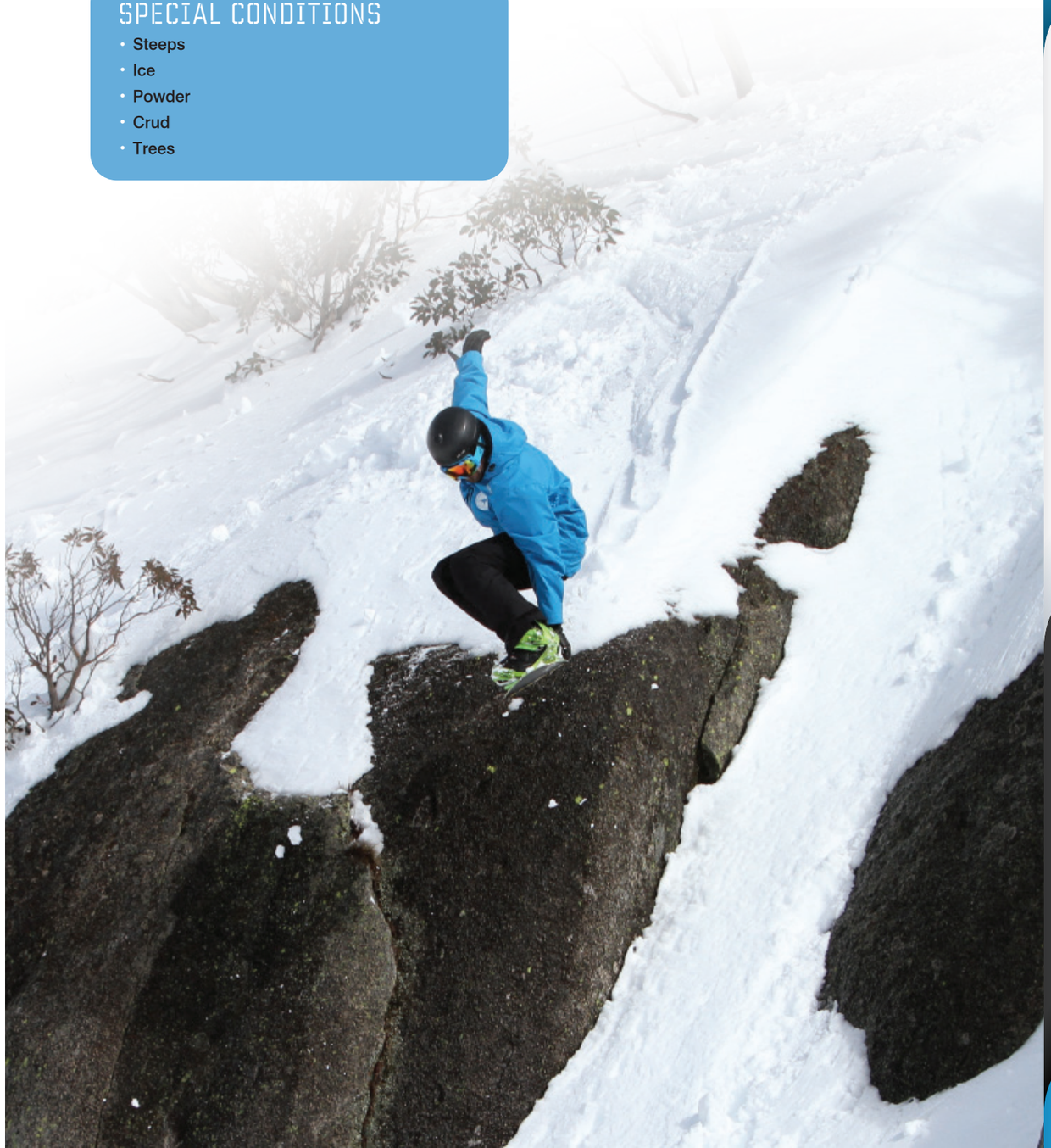
Notes

SPECIAL CONDITIONS

STEEPS / ICE / POWDER / CRUD / TREES

SPECIAL CONDITIONS

- Steeps
- Ice
- Powder
- Crud
- Trees



STEEPS

Genuine steep snowboarding is on terrain that is inclined at 40 degrees or more. Riding steep terrain can consist of black and double black terrain.

Previous experience

Guests should have covered the variety of high-end turn performances. Short turns are a must when riding steeper terrain.

Terrain ◆ ◆◆

The use of mogul terrain and crud condition will aid in progressing riders to steeper more challenging terrain.

Why

Steep riding allows you to:

- The ability to negotiate steep terrain and ride challenging 'off piste' slopes.
- Ride all the mountain terrain, in Australia and overseas.
- On the mountain, riders often find themselves above a steep chute or slope and require the skills and balance to successfully ride down.

MECHANICS OF STEEP TURNS

Transition:

- In the transition of the turn it is important that the upper body does not project too far away from the board and snow.
- As the mass is up un-weighted, the lower body and legs retract quickly, release the pressure from the edge and steer the board whilst the mass is transferred to the new edge.

Initiation:

- The edge is engaged early by extending the lower body and legs down to the snow. The lower body is used to 'cross-under' the upper body during the transition and initiation to keep the rider balanced and over the board.

Execution:

- The body flexes down to aid in edge grip and pressuring the board. It is important the mass remains over the edge and does not incline too far into the slope.
- This will help control the edge angle and assist the ankles and knees in staying flexed over the board. The lower body is used to steer the board underneath the rider's mass.

Completion:

- The pressure is moved to the aft of the board to aid in grip and will require a small amount of projection and retraction to initiate the new turn.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Keeping the mass over the working edge.
- Independent use of the legs, extending and retracting.
- Subtle fore/aft movements.
- Core strength for stability.

PROGRESSIONS

Methods

Hockey stops with projection.

Hockey stops sinking to edge sets.

Pivot slips with projection and edge sets.

Nose roll turns focusing on projection and edging.

Nose roll turns focusing on fore/aft movements.

Retracted nose rolls turns focusing on lower position and less vertical movement.

Jump turns for rotation and pressuring.

Traverse steeps if possible.

Funnel turns on steeps.

KEY POINTS WHEN TEACHING STEEP TURNS

- The lower joints remain flexed and do not progressively angulate the board to a high edge angle on the steep slopes. As the board is steered across the slope, the edge angle will increase. It is more important that the rider remains on top of the board to create a solid platform through the turn.
- Each leg must act independently to aid in maintaining surface contact through strong fore and aft movements.
- The rider and board need to move quickly through the turns in order to maintain contact with the snow and maintain speed control.
- The head and shoulders should remain balanced through the turns and must not incline into the slope. Matching the shoulders to the pitch will help.
- The turns use a blend of dynamic short turns and extension/retraction movements.

Safety considerations:

- Rocks, cliffs and other objects.
- Snow conditions.
- Ability to stop and self-arrest (stop if sliding).
- To improve control while riding on snow that is icy or extremely firm.

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Too much speed.	Not turning board enough. Not finishing turns.	Hockey stops/jump turns. Uphill steering.
Not linking turns.	No projection. On back foot.	Blended Peter Bauer/line. Uphill turns. Edge setting drills.
Chattering	Inclining. Pushing the board.	Stick work. Fore/aft movements.
Losing control in turn.	Too much speed. Overhang of heel or toe.	Funnel turns. Adjust bindings.

ICE

To improve control while riding on snow that is icy or extremely firm.

Previous experience

Short turns are vital to allow the rider to keep moving and maintain rhythm on the ice.

Ranges of turn shapes from 'open' to 'closed' turns need to be developed.

Terrain ● ■ ◆

Begin with terrain that is not too icy and skied off. Slightly rough surfaces will provide more grip and friction for the rider. Avoid frozen crud and moguls.

Why

Riding Ice allows you to:

- **Riders need the ability to ride in all conditions.**
- **In Australia the altitude and temperature often creates conditions that cause the snow to become firm.**
- **Race courses and half-pipes often have icy sections due to use and shade.**

MECHANICS OF TURNING ON ICE

Transition:

- The aim is to keep the rider's mass over the board and working edge as best as possible.
- Inclination is best avoided in the transition with the aim to perform cross-under turns.
- Rising up and forward at the start of the turn will release the edge and enable a quick transfer between edges.

Initiation:

- With steering and projection skills, the turn will initiate slightly towards the nose of the board and front foot of the rider (fore pressure).
- The lower body angulates and flexes to engage the edge as the body rotates the rider and board into the turn.

Execution:

- Sinking down on to the working edge will keep the rider above the board and create a solid platform underneath the centre of mass.
- The use of the smaller levers such as the ankles and knees will keep the board's edge precise and allow the rider to stay on top of the board.

Completion:

- Use of steering and pressuring skills will develop aft pressure on the tail of the board. This will allow the board to grip and not slip-out at the completion.
- The rider will then project slightly forward to release the pressure and edge.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Constant movements.**
- **Up un-weighted turns.**
- **The mass staying over the board and working edge.**

PROGRESSIONS

Methods

Side-slip heel/toe side rolling on and off edge.

Traverse rolling and flexing on and off edge.

Pivot slips with rising and sinking.

Pivot slips with fore/aft movement to aid in initiation and completion.

Funnel turns working on fore and aft movement.

Blend to turns.

KEY POINTS WHEN TEACHING TURNING ON ICE

- **Rhythm is important on ice as it creates constant movement through the turns. Should a rider become static, inclination will occur.**
- **Movements should remain subtle and consistent so as not to disturb any edge grip.**
- **Confidence is needed to continue movements.**
- **Use the sound of the board on the snow to aid in rhythm and skill development.**
- **Equipment should be well-tuned and the bindings tight to allow maximum control.**
- **Keep a low edge angle for maximum balance.**

Safety considerations:

- **Open run-out.**
- **No obstacles.**
- **People sliding.**
- **Safety equipment such as wrist guards and tail-bone protectors.**

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Chatter.	Stiff legs. Inclining.	Adjust high backs. Active pressuring drills Rising/sinking drills for edging.
Losing grip.	Dull edges. Poor edging.	Tune edge. Lower body edging drills.
Cannot maintain edge.	Overhang of toe/heels.	Adjust bindings. Wider board.

5.6
Advanced Progressions/Ice
SECTION 5 The Progression

POWDER

Snowboarding in deep, new, untracked snow.

Previous experience

Developing a range of turn shapes from 'open turns' to 'closed turns' will aid the guests in riding powder. The use of fore and aft progressions will help the rider to find balance points when in and out of powder snow.

Terrain ● ■ ◆

Use terrain that is not too flat causing the rider to lose speed and become stuck.

On deep powder days, use groomed runs that have snow on the sides allowing the rider to enter and exit with single turns, developing the skills and sensation of riding powder.

Why

Powder riding allows you to:

- **The ability to ride deep snow.**
- **The sensation of riding powder is like no other.**
- **Adventure like; heli-snowboarding and back country in overseas destinations.**

MECHANICS OF POWDER TURNS

Transition:

- **Powder riding involves extension/retraction movements with vertical movements as well. The board and lower body retract under the rider to allow the board to resurface and initiate the new turn.**
- **Each leg will begin to act individually to aid with the extension/retraction movements and aft pressuring skills.**
- **The rider generally has more weight on the back leg throughout the turns. This is created by flexion and not leaning the upper body back.**

Initiation:

- **As the lower body retracts and steers the board into the turn, the upper moves and projects over the board and in the direction of travel.**
- **It is important not to project too far forward and on to the nose of the board as this will cause the board to nose dive into the snow.**
- **Engaging the edge is less important as the snow is soft and deep. The aim is to steer the board in the direction of travel and use the base and edge to guide the board into the turn.**

Execution:

- **The muscular core aids in the extension and rotation of the lower body and legs through the turns.**
- **The back leg is extended to steer the tail of the board through the turn and assist the front foot in guiding the board in the deep snow.**
- **Due to the resistance of the snow, pressure will build and allow for greater 're-bound' from the board, which assists in retracting into the next turn.**

Completion:

- **The back leg is retracted to release the pressure build-up in the board and complete the turn. The rider's muscular core aids in the flexion and extension of the lower body and legs.**

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Separation with lower body steering.**
- **Pressure on the tail of the board.**
- **Extension/retraction.**

PROGRESSIONS

Methods

Straight runs with centre of mass on back foot.

Straight runs extending/retracting legs for rebound.

Single turns retracting the front foot and extending the back foot.

Single turns in powder then back on to groomed run.

Single turns using inclination then angulation.

Funnel turns using inclination then extension/retraction.

Open turns and closed turns for speed control and rhythm.

Figure 8's for rhythm and timing.

KEY POINTS WHEN TEACHING POWDER TURNS

- **When terrain is flat, the snow is deep, or speed is slow, the centre of mass is shifted toward the tail of the board to enable the nose to float on the surface and not to dive into the snow.**
- **Longer turns in powder can involve more inclination or 'banking' as there is more snow under the board allowing a greater platform on which to ride.**
- **Keeping the turns more open down the slope will aid in speed and rhythm and stop riders from getting stuck in deep snow.**
- **If riders lose speed, teach them to ride in other tracks where the resistance is less, allowing them to keep moving.**
- **In deep un-tracked snow, a powder board will aid in riding the powder.**
- **Increasing positive stance angles can aid in pressuring the tail of the board and projecting forward into the direction of travel.**

Safety considerations:

- **Avalanche danger and tree wells.**
- **Objects under the snow, rivers, rocks, fallen trees, stumps.**
- **Fitness of the guest.**
- **Always ride with someone.**

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Falling into turn.	Over-edging. Inclining too much. Over-turning.	Ride in lower position. Lower body steering. Open turn shape.
Board sinks in snow.	Not enough speed. Terrain too flat.	Increase speed. Steeper terrain Ride in tracks/increase speed.
Board nose-dives.	Nose too short. Weight forward.	Move bindings back. Shift mass over back foot.

5.6
Advanced Progressions/Powder
SECTION 5 The Progression

CRUD

Crud can be classed as: Chopped up powder/ Wind packed snow/Heavy or rotten spring snow/ Rain affected snow/Un-groomed snow/Variable snow with different consistencies.

Previous experience

Short turns and extension/retraction movements should be covered before entering crud terrain that is too advanced. Pressuring skills and progression with the rider balancing over the working edge will aid the guest's ability to ride the crud.

Terrain ■ ◆ ◆◆

To start, use terrain that is not to steep or cruddy and that has an easy entry and exit.

Why

Riding Crud allows you to:

- **Experience variable snow conditions.**
- **Controlled riding in varied conditions.**
- **Access to hidden places and stashes.**

MECHANICS OF TURNING IN CRUD

Transition:

- Short precise movements are most effective to stop the board from getting stuck in the transitions and turns.
- The lower body and legs extend to project the rider in the direction of travel and over the board. This will in turn release the edge and pressure on the board.

Initiation:

- The lower body steers the board and rider into the turn and onto the new edge as the mass moves into the new turn.

Execution:

- The rider must rotate their body to maintain alignment in the turn as the lower body steers the board underneath their mass. This will enable the rider to absorb pressure changes through the lower body caused by variable terrain and snow.

Completion:

- The lower joints are used to set the edge at the completion of the turn and create the platform from which to project.
- The core is used to keep the upper body stable and moving down the hill and to aid in lower body steering.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Core strength for balance and to aid in steering.**
- **Lower body edging to create a platform.**
- **Constant movements with fore and aft.**

PROGRESSIONS

Methods

Revise short turns and extension/retraction turns.

Traverse terrain working on edging and pressure.

Nose-roll turns to pivot around the nose for initiation and maintaining surface contact.

Ollie turns to pressure tail of board for completion.

Retracted nose-rolls turns working on keeping the rider's mass lower.

Jump turns.

Follow the leader.

KEY POINTS WHEN TEACHING TURNING IN CRUD

- **Choosing a smooth line down the slope will assist in blending the movements.**
- **When riding crud, mileage is needed to develop and refine active pressure control.**
- **Being confident and aggressive with the movements will enhance the rider's ability to move down the slope.**
- **The rider needs to be reactive to changes in terrain and conditions.**
- **True crud riding combines all the skills and turns that riders have learnt.**

Safety considerations:

- **Loss of control.**
- **An exit for the run.**
- **Snow conditions and obstacles.**

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Loss of control.	Lacking rhythm. Poor position. Not finishing turns.	Follow the leader. Counting drills. Short turns. Single turns/hop turns.
Getting stuck in turn.	Lack of projection. Hesitation.	Nose-roll turns. Build confidence.
Chattering	Poor pressure control	Practise active pressuring and pumping to improve pressure.

5.6
Advanced Progressions/Crud
SECTION 5 The Progression

TREES

Riding through the trees.

Previous experience

The rider should be experienced in riding through moguls and variable terrain.

Turns with rhythm changes should also be covered before entering the trees.

Terrain

Use tree lines that allow for an easy exit or that are well spread out to give the guests the confidence and experience to move to tighter trees.

MECHANICS OF TURNING IN TREES

Transition:

- The rider needs to maintain a flexed position to avoid inclination when in the trees.
- Use of the muscular core will enable use of separation of the upper and lower body to promote lower body steering and a stable upper body.

Initiation:

- The rider's mass moves to the working edge as the lower body is used to flex and engage the edge.
- Keeping the upper body steady will improve balance and allow the rider to stay focused on the line ahead and through the trees.

Execution:

- Using the lower body and legs to adjust fore and aft movements will help adjust speed and line as the rider follows the line through the trees.
- Separation and countering movements will help the rider adjust if the line becomes too tight or starts to close out in the trees.

Completion:

- On completion the rider should find themselves flexed and over the board. This will provide a platform from which to move.

Why

Tree riding allows you to:

- Have the ability to negotiate a good line in and out of the tree line.
- Access and ride all areas of the mountain.
- Introduce riders to a new environmental factor and fun.
- Access to powder when it has not snowed for a long period of time.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Keeping the mass over the working edge with minimal inclination.
- Lower body steering with fore and aft.
- Separation and countering of the upper and lower body.

PROGRESSIONS

Methods

Funnel turns and changes of rhythm.

Follow the leader riding.

Across and down the fall line short turns.

Riding moguls working on line.

Fore and aft turns for initiation and completion.

Hockey stops to counter rotated hockey stops for quicker turns.

Pivot slips with separation.

In and out of tree line turns.

KEY POINTS WHEN TEACHING TURNING IN TREES

- The rider needs to focus on the line through the trees and not focus on the trees. Look at the gaps and not the trees.
- The rider and board needs to move quickly through the turns in order to maintain contact with the snow and maintain speed control.
- Fore and aft movements combined with pressure control to aid stopping and control speed.
- Strong separation of the upper and lower body.

Safety considerations:

- Tight trees, branches and blind spots.
- Rocks, cliffs and other objects.
- Snow conditions.
- A safe entry and exit.
- Safety equipment should be worn.

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Too much speed.	Not turning board enough. Not finishing turns. Nerves.	Hockey stops/jump turns. Single turns. Wider trees.
Trouble linking turns.	Lack of rhythm. Not initiating.	Changes of rhythm. Retracted nose roll turns.
Poor line.	Trees too tight. Hard to see lines.	Wider trees. Follow the leader. Practise in moguls.

INTRODUCTION TO RACING

Riding a Giant Slalom/Snowboard-Cross race course with understanding and skills.

Previous experience

The use of 'cones' or 'stubbies' before entering a racecourse will provide understanding and skills for the guests.

Terrain ■ ◆ ⛿

Use terrain that is groomed and similar to the racecourse.

If using a race course make sure to use an open course that is approved.

Why

Racing allows you to:

- Safely negotiate a race course.
- Ability to select an efficient line through the racecourse.
- Teach the fundamentals of racing from the start line to the finish line.
- Set a fast time in a race course.

MECHANICS OF GIANT SLALOM

- All the movements in the course are directed down the slope and laterally through the turns. The downhill movements blend rising and sinking with projection to efficiently and effectively un-weight the edge and make for a quick turn between the gates. The lateral movements are focusing on the centre of mass moving from edge-to-edge and forward to set up for the turn and line that needs to be taken.
- The fastest turn through a course is a pure carved turn, but often the racecourse does not allow for this style of turn. A blend of pivoting, edging and steering skills are required and often the dynamic carved long turn is more effective when introducing GS racing.
- It is important to introduce the components of the race course.

FUNDAMENTAL MECHANICS TO BE TAUGHT

- Separated position.
- Early edging and line.
- Angulation.
- Constant movements.

PROGRESSIONS

Methods

Review dynamic carved turns.

Set drills and re-explain the concept of line and tactics.

Set up easy 'stubbies' to work three to four long turns then three to four medium turns and then blend.

Funnel the 'stubbies' working on wide line to a tight line.

Use gates and 'stubbies' together to help rider with the rise line and optimal line through the course.

Practise starts and tuck finishes.

Work on tactics and line. Following the instructor can help both in and out of the course.

Run the course at 60-70% to improve course memory and gain familiarity.

Run course at 80-90% building on timing and line.

Run at 90-100% and add course timing to give guests an accurate result through the course.

Repeat with feedback and gauge the guest's improvement.

KEY POINTS WHEN TEACHING RACE TURNS

- 'Line' is the most important aspect when racing and the majority of the time should be spent on this.
- Timing is when and where the rider initiates and finishes the turns to obtain the 'optimal line'.
- The 'set point' is the point where the initiation of the edge should happen. Timing is critical. If we initiate the turn before this point, the rider will go too straight or chatter the turn at the gate. If the rider initiates after this point the turn can become wide and slow causing the rider to run late.
- The 'rise line' is an imaginary line drawn uphill from the gate. This helps to guide the racer through the correct line. The racer is in the execution phase of the turn by this stage and should be aiming to complete the turn as they pass the gate.
- It is better to challenge with exercises than with terrain.
- Students should be able to ride at a high level and be able to make rhythm changes in their turns.
- Slipping the course allows the chance to explain various lines and changes in the course.
- Never run the course while it is being set-up and constantly slip the course to maintain its condition and keep it safe.

Safety considerations:

- Keep the course in good condition and roped off to the public.
- Only one rider on the course at a time.
- Students should know what to do in the event of a fall.
- Use correct snowboard gates and not ski gates.
- Safety equipment like helmets, shin guards and body armour.

COMMON PROBLEMS AND SOLUTIONS

Common Problems	Possible Causes	Possible Solutions
Too straight and late.	Late edge set. Poor line.	Line drills. Follow leader.
Poor heel side.	Poor position.	Stick work. Check equipment.
Poor toe side.	Inclining.	Work on separation. Stick work, Peter Bauer.
Too slow.	Poor line. Fear.	Set 'stubbies' to aid in line. Set easy course first.
Skidding too much.	Weak edging. Pushing board.	Develop carving skills. Fore/aft movements.

Slip the race course explaining optimal line, rhythm changes, delays, set points, rise line and terrain changes.

Starts:

Use both hands on the start posts to gain the best pull and push from the start. Often having the hands below the wrists can allow the rider to pull their mass through the start gate and then push down the slope. The aim is to achieve as much initial speed as possible by projecting through the start wand and setting up for the first gate. The first gate should be set in the fall line.

Line:

The 'optimal line' through the racecourse is the fastest path the rider can take through the course.

The best line is an 'early line' that sets the rider up well before the gate and allows the turn to be finished as the rider passes the gate.

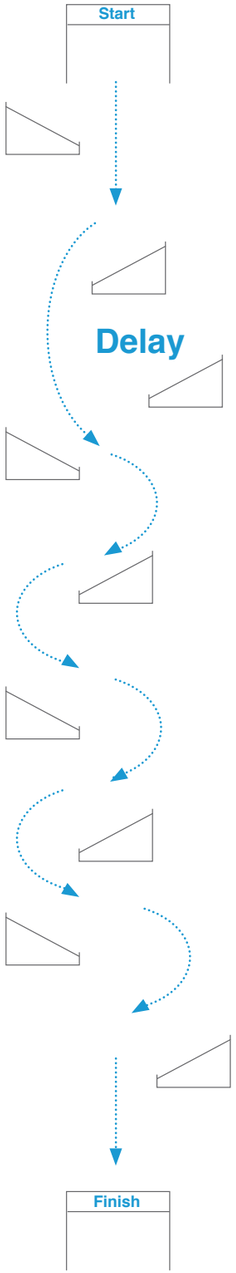
Another line is called the 'late line' where the rider often does not turn until they are close to the gate causing them to go wide and low, thus late for the next gate.

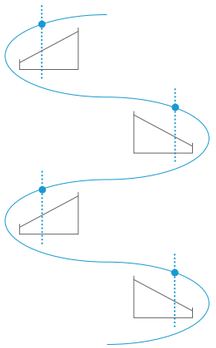
Delays:

A delay or 'banana' may be used in a course to utilise a direction change in a slope or to vary the courses' rhythm making it more interesting and challenging.

Finish:

Tucking through the finish or pushing the nose of the board through the finish line is the most effective way to finish. If tucking, throwing the hands forward at the finish line can cause the finish sensor to be tripped earlier. Be aware that the shortest distance between the last gate and the finish line may not require turning at all. For safety, the last gate should guide the racer straight through the finish to avoid the possibility of connecting with the finish tower.



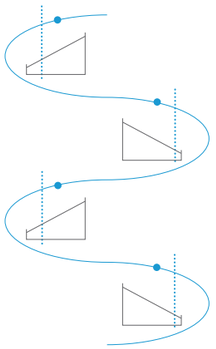


RISE LINE:

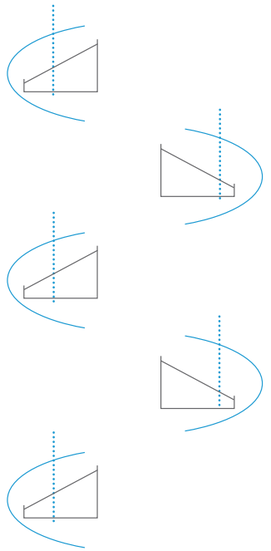
Is an imaginary line drawn uphill from the gate. This helps to guide the racer along the correct line for the following turn.

SET POINT:

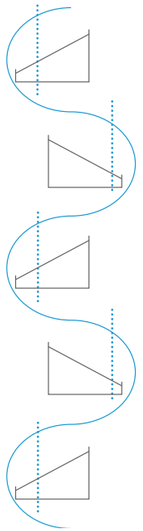
This is the initiation phase of the turn where the snowboard is set on its edge. This point can change according to where and how the gates are set due to steepness of the pitch, terrain and snow conditions. If the gates are set across the fall line, it will happen earlier than if the gates are set in the fall line.



When the gates are set **across** the fall line, the racer needs to aim towards the outside of the turn.



When the gates are set up **in** the fall line, the racer can aim towards the turning gate.



FUNDAMENTAL MECHANICS TO BE TAUGHT

- **Anticipation.**
- **Early edging and line through angulation.**
- **Flexion and extension.**
- **Core strength.**
- **Course knowledge.**

MECHANICS OF SNOWBOARD-CROSS

The fundamentals of racing remain the same in a Snowboard-Cross course as compared with any race course.

There are two main differences. One is that up to 3 other competitors can be on the course racing at the same time. The other is the terrain features on the course.

Snowboard-Cross courses consist of features including drops, rollers, step-ups, gap jumps, jumps and berms, which the rider must complete successfully in order to get through the course.

The time is not the factor in winning the race, it is the first rider to successfully complete the course and get to the finish line that determines the winner. Individual times will often be used for qualification and seeding into heats.

RACING TERMS FOR SNOWBOARD-CROSS

Berms:

Terrain features that are man-made and designed to direct the riders in specific pathways through the course. They are often sloped against the pitch and require the rider to hold a specific line around them. Gates are located on the entrance and exits of the berms.

Hole shot:

Often refers to the rider that gets the best start out of the gates and enters the optimal line first.

Roller or whoopty-doos

Are a series of bumps in a row designed to test a rider's absorption and pressuring skill. Extension/ retraction can be used here and if the rider has the ability, pumping can generate speed.

Step-ups

Are jumps that have a larger knuckle that is often at the same height or higher than the take-off.

Pre-ollie:

Is to ollie before the lip or top of a roller to allow the rider's mass to stay low and project through the course.

PROGRESSIONS

Methods

Funnel turns and change of rhythm turns.

Use GS racing to build starts, line and finishes.

Work on pumping skills.

Pre-ollies and straight airs with grabs (indy) to be compact in the air.

Absorption of jumps to minimise (air time).

Pumping of rollers and berms to generate speed.

Toe to toe for recovery movements.

Enter berms low and high to improve line and control.

Follow the leader and leader changes.

Individually time racers to assess students.

BEST RESULTS

Choosing the correct equipment and having the board tuned with the right wax can greatly improve a rider's time or place.

Having a good course inspection and preparing physically and mentally for the course and races ahead, are critical.

Enjoy the pre-race nerves and hype and once in the gates find your zone.

KEY POINTS WHEN TEACHING RACE TURNS

- **Having the rider get to the front at the start is an important factor, as it allows the rider to get out in front of the other competitors and use the 'optimal line'. This means they can avoid traffic and hold a line through the course. This is known as the 'hole shot'.**
- **The rider will need strong absorption and pressuring skills to complete obstacles such as drops, gap jumps, jumps and berms. The rider will also have to remain low and have aggressive edging skills to adapt to the courses changes and avoid getting knocked over by other competitors.**
- **Review the pumping, dynamic long/short turn progressions and mogul progressions. These can provide a good foundation to work from.**
- **Snowboard-Cross riders need to possess all the skills and knowledge of racing before attempting this style of race.**
- **Often the skill level or the line selection of the other competitors can be poor, causing problems and dangers for everyone involved. Sometimes being out the front and battling for position can cause more harm than good. Maintaining a good line and developing the ability to read opponents weaknesses will allow a rider to overtake at the right time and improve their result.**
- **A rider is not allowed to push another competitor but is able to hold their line and defend their position.**
- **The course is designed to get riders off balance and in the air. By staying low and on the ground as much as possible, the rider will maintain their balance and generate speed.**

COMMON PROBLEMS AND SOLUTIONS

Common problem	Possible Causes	Possible Solutions
Over shooting rolls/jumps.	Taking off late.	Pre-ollies and pops on take-off. Practise down un-weighting take-offs.
Chattering on berms.	Poor line.	Enter berms early and stay high. Develop lines through berms.
Slow.	Poor start/finish. Poor line. Equipment not tuned.	Practise pull start and tuck finishes. Follo Tune equipment. w leader to develop line.

5.7 MINI PROGRESSIONS

3-point turns

What

Riding in one direction the rider turns the board uphill, flattens and re-centres over the board, and rides out in the opposite direction.

Why

Improve stance, rotation and re-centring. To change the edge without having do commit to the fall line and turn. Improves regular and switch riding.

How

The rider remains balanced over the uphill edge in a traverse. The rider then rotates the leading side of the body up the hill to allow the board to slow. As the board slows down, the rider re-centres over the board and anticipates in the new direction. The rider then moves to the new working edge, as they look and rotate to the desired direction. This can be performed from switch to regular or regular to switch.

180's on snow

What

Rotating the board and body 180 degrees on the snow. This can be done across and in the fall line. Rotating from regular to switch or switch to regular.

Why

Improve rotational skills front side and back side. Progresses riders to 180 airs and allows them more versatility around the mountain and on long traverses.

How

Explain the difference between front-side and backside rotations. Full body rotation is used throughout the 180. The tail of the board can be used to guide the board into the fall line or the nose of the board can turn up the hill to aid in speed control.

To initiate the 180 the rider raises their mass to help the board flatten and release the pressure.

As the mass raises a slow constant rotation of the upper body, core and lower body is added to aid in the board's 180. This allows the board to pivot more easily on the snow. As the board crosses the fall line or slope, slowly roll the ankles and mass over the board and sink to regain a platform.

On the front side 180 the head and eyes stay focused ahead, allowing the body and board to rotate together without losing focus on where the rider is heading.

Backside 180's are blind and will require the rider to look back where them came from. As the rotation is completing the rider should slowly look in the direction of travel keeping the muscular core and upper body stable, so not to over rotate the 180.

360's on snow

What

A full body and board rotation completing a 360-degree rotation, backside or front side.

Why

Improve stance, full body rotation, edging and T.A.D.

How

The rider remains centred on the snowboard, which will allow the board to pivot easily through the spin. The use of full body rotation and continually looking around is vital for success. To initiate the spin, the rider rises up to release the edge and rotates in the direction of travel. The tail of the board can be used to guide the board into the fall line. As the board reaches the fall line, the rider mass re-centres over the board allowing the board to flatten. As the board flattens, the rider transitions their mass onto the new working edge as the body continues to rotate.

As the weight is moved onto the new working edge, gentle angulation and rotation is used to complete the next phase. The movements are continued until the full 360 has been executed. The rider must shift their centre of mass to each new working edge as they initiate the rotation and focus should be on flattening the board as it enters the fall line and not across. As movements are developed, the rider will begin to pivot more effectively over the board, increasing the rotational speed and timing of the edge change.

Hockey stops/Pivot slips

What

In a narrow corridor, the board is rotated and the rider sinks to complete and rises to start. Hockey stops come to a complete stop and pivot slips continue to move.

Why

Improve full body rotation, re-centring and flexion extension.

How

The rider rises up to aid in releasing the edge and pivots the snowboard into the fall line. The rider re-centres over the board, then moves their mass into the slope and over the working edge. As the board is turned across the slope, flexion is used to skid the board across the hill until the board stops or slows down. The flexion is used to control the edge angle and in time can be used to develop edging skills by increasing or decreasing the angle. As the rider develops, they can focus on lower body movements to help develop rotational skills and cross-under turns.

Fore and aft movements can be introduced to aid with the initiation and completion.

Toe to toe

What

Toe side turns from regular to switch and back again.

Why

Improve stance, rotational skills and switch riding.

How

Pivot the board (front side) into the fall line until the board is riding flat in the fall line. Execute a toe side turn across the slope. On completion of the turn up un-weighted pivoting the board through the heel side edge then into the fall line (around 270 degrees) until the board is riding flat in the fall line. Repeat a turn on the opposite toe side edge and copy the rotational movements until board has entered the fall line flat again. The use of full body rotation will aid alignment and matching the shoulders to the pitch will aid stance and control.

Flat terrain

What

Riding a snowboard on terrain that is flat or narrow.

Why

Riding a snowboard on flat terrain is not easy and takes time to learn.

Prevent heavy falls and allow riders to negotiate all the terrain.

Beginner areas, cat tracks, lift areas, T-bar/Pomas and beginner parks.

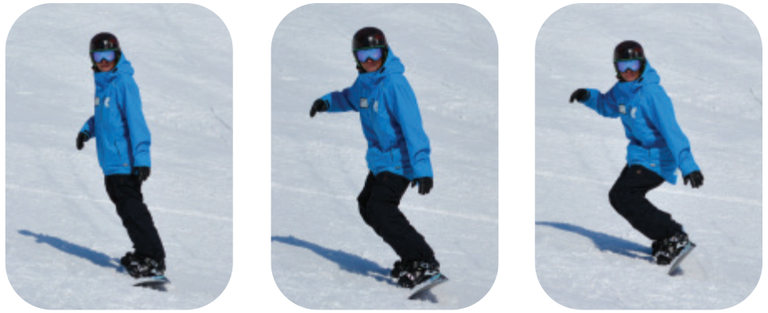
How

The rider should remain flexed in the lower body to allow for finer edging skills to be used. The rider's core strength is used to stabilize the upper body and keep the head and eyes focused. Using the lower body, the board can be rolled from edge to edge slightly, not increasing the edge angle too much causing the board to turn. By gently rolling from edge to edge the rider will be able to adjust their line and balance when negotiating the flats, traffic and narrow terrain. Often terrain is never dead flat and by focusing on the terrain ahead, the rider will learn to read the slope and adjust how long they need to spend on one edge before changing.

Work should be done on green runs with low edge angle, traversing with speed, edge rolls, hockey stops and riding banks.

Riding flat terrain requires respect and time to master.

Edge sets



What

Tilt the edge of the snowboard up and down, increasing and decreasing the edge angle

Why

Improve edging skills and balance.

How

On the toe side, the ankles remain strong as the knees are rolled into the slope. The ankles can be flexed to help fine-tune and adjust the desired angle. The rider flexes in their hips to help balance their upper body and mass over the working edge.

On the heel side, the hips, knees and mass are rolled into the slope with the ankles aiding in finely adjusting the edge angle. The spine is used to aid the hips in moving into the slope and keeping the upper body forward and over the board.

On both edges core strength is needed to stabilise the rider.

Edge rolls

What

Moving from edge to edge quickly, increasing and decreasing the edge angles.

Why

Improve edging skills and 'cross-under' and 'cross-over' movements and feelings.

How

For cross-under edge rolls the rider lowers their centre of mass and flexes in the lower joints.

The ankles, knees and hips are rolled laterally across the board to engage the edge and use of the side-cut will start to direct the board. The upper body and mass is to remain static and over the board for cross-under turns. For cross-over edge rolls, the upper body and mass should move laterally over the board. The speed and angle down the slope can be adjusted to develop edging and timing skills.

Up hill turns

What

Turn the board down the slope and, using the skills, turn the board across and back up the slope.

Why

Improve edging, rotation, blending of skill and symmetry.

How

The rider is centred over the board as it is placed in the fall line. The rider then shifts their centre of mass onto the working edge and into the turn, progressively angulating the snowboard across and back up the slope. Use of rotational skills will aid in shaping and developing the radius of the turns. Throughout the phases of the turns the rider will develop pressure control skills as the forces build on the board. Fore and aft can be introduced to aid in initiation and completion.

Edge hops

What

Riding on an edge performing small hops.

Why

Improve stance, edging and pressure control. Great for freestyle and general riding.

How

The rider balances their mass over the working edge. The rider then sinks down in their lower joints and then extends upwards to pop-off the edge. In the air, the rider slightly retracts to maintain balance. On landing, the lower body extends down to absorb the pressure of landing back on the edge. When developed, the rider can start to increase the speed and pitch and begin to transition from edge to edge.

Edge hops can be performed in a traverse or in a side-slip. When developed, setting the edge when landing will increase skills, balance, strength and timing.

Dolphin turns - (Porpoise turns)

What

Moving forward, and backwards on the snowboard, building and releasing pressure while turning.

Why

Improve pressure control, projection and timing of the skills.

How

On initiation, the rider projects their body forward as the back leg is retracted to aid in pressuring the nose of the board. As the board touches down and the turn is executed, the rider's weight moves through the middle of the board and to the tail. With use of flexion, the rider's weight is moved to the tail of the board and extension of the back leg is used to help projection into the new turn.

Rotation and edging can be used to help develop steering and turn performances.

It is important that the muscular core is used to stabilise the body and continue to aid in the performance.

Peter Bauer - (Inclination)

What

Hard boot edging and body alignment drill named after German snowboarding pioneer, Peter Bauer.

Why

Develop edge awareness and alignment when riding hard boots.

How

On the toe side, the rider stays tall and inclines into the turn. The back hand is raised to aid in alignment and add to the sensation of inclining into the turn.

On the heel side, the rider raises the front hand as they incline into the turn and maintain alignment.

During the transition phase of the turns the arms change to aid in re-centring and balance.

The edge performance can be developed from railed, carved to pure carved.

Blended Peter Bauer - (Angulation)

What

Hard and soft boot skill blending drill named after German snowboarding pioneer Peter Bauer, focused on angulation.

Why

Improve edging, body position and blending of the skills.

How

On the toe side, the lower body is flexed into an aggressive edging position. The hips flex to allow the upper body to lower closer to the board. The front hand is extended towards the heel of the leading foot and the back arm is raised allowing the shoulders to position horizontally to the slope.

On the heel side, the lower joints are flexed and rolled into the slope to allow for greater edging as the mass moves into the turn. The hips are flexed and the mass is lowered closer to the board. The spine is used to help angulate the upper body and the back hand can be used to reach towards the heel edge as the front hand aids in positioning the upper body into an anticipated stance.

The edging movements can be progressive throughout the turns and the timing of the movements can be adjusted.

To develop and manipulate the performance, the riders can sink into the turn quickly or pull themselves down into the turn. During the execution, the rider can extend their lower body to flex the board and build pressure on the edge to increase performance. The completion will be aided by the rebound from the board.

Set-up turns – freestyle

What

Approach a feature with a slight turn or turns to aid in performing a trick.

Why

Aids the rider in developing the correct approach (line) into a feature.

Allows the rider to develop edge awareness and taking-off on the correct edge.

How

On approach, the rider guides the board gently onto an edge letting the board turn slightly. The rider then rolls to opposite edge and starts to load pressure on the edge as the board is guided towards the take-off point. As the pressure builds on the edge it will allow the rider to project off the edge and use the side cut design to aid in moving to desired direction of travel. The rider should remain over the working edge as much as possible and apply pressure down to the edge and snow to avoid over-edging and losing control on take-off or in the air. When using the set-up turn, a terrain inspection is required so the rider projects in the right direction and lands in the landing zone.

Notes

5.8 SKILL BASED EXERCISES

Exercises are a great teaching tool because they can be used as part of the progression or as a correctional device. It is up to the instructor to choose when and where to use a particular exercise. They may require adaptation or modification for some students.

The list of exercises are categorised into areas of the predominant skill. Many will work on more than one skill, although it is suggested that you choose the exercise that is appropriate to the guest's skill level. You need to constantly monitor your exercises to see if they are working.

Try to add to these lists and use them for fun, variety and challenge.

Stance

- Rocking fore and aft/side to side/up and down
- Jumping landing centred
- Straight run
- Straight run with fore-aft/rising and sinking/hops
- Side-slipping
- Falling leaf
- Hands behind back/hands on head/across chest/on shoulders/hands on hips
- Check for change (hands on pockets)
- Three point turns
- Matching shoulders to pitch of slope
- Reverts
- Switch riding
- Turns with straps loose
- Stick training for upper and lower body positioning and race technique
- Edge hops across the slope
- Tail and nose presses

Edging

- Stationary and mobile rolling on and off the edge
- 180's and 360's focused on edge change
- Falling leaf refining symmetry and shape up hill
- Traversing on and off edges (edge sets)
- Garlands holding edge through turn
- Garlands working on the timing of setting the edge – initiation, execution and completion
- Rolling edge to edge in straight run
- Side-slipping with edge sets
- Side-slip edge sets – hopping up the hill and down to set and hold the edge
- Hockey stop, edge only to stop
- Uphill Charlie Chaplin
- Uphill side-step
- Turns across the fall line
- Peter Bauer – single turns, edge rolls
- Progression runs from skidded to steered then carve performance
- Uphill turns holding edge as long as possible
- Edge rolls in fall line and across fall line
- Side-cut turns – railing, carving, pure carving
- Hockey stops with dynamic edge sets
- Hopping from edge to edge while turning
- Uphill carve turns with hops
- Garlands rolling from new edge while across fall line

Rotation

- Jumping around in a circle
- J-turns
- Garlands, full body and lower body steering
- Three point turns
- 180's and 360's on snow in and across the fall line
- Hop 180's and 360's
- Uphill turns
- Linked turns with hands on hips
- Hockey stops, full body and separated.
- Short turns
- Toe to toe turns
- Heel to heel turns
- Rhythm changes
- Jump turns

Pressure control

- Flexing from nose to tail
- Basic turns flexing and extending in traverse
- Gradually pressured garlands
- Gradually pressured uphill turns
- Linked turns focusing on re-centring
- Turning off banks and using terrain
- Over the rainbow (Proposing)
- Charlie Chaplin
- Tail press and nose press
- Ollies and nollies
- Nose and tail rolls then add pops
- Heel side and toe side butters
- Pumping and reverts
- Uphill carve turns adding pops
- Fore and aft turns (bone turns)
- Traversing bumps
- Pumping
- Pumping the side-cut of the board fore and aft
- Dolphin turns

PARTNER RIDING GAMES (reciprocal)

- Follow the leader
- Synchronised riding
- Figure 8's
- Powder 8's
- Ride in line and rotate leaders
- Set a track and follow
- Cat and mouse chase
- 360 whips
- Paired riding, watching and observing
- Game of "SKATE" or "RIDE" challenge.

5.8 Skill Based Exercises

5.9 TEACHING AIDS AND ASSISTING EQUIPMENT

Equipment can be used to aid the lesson or assist the guest and instructor. For many different people from children or adaptive riders, to a timid private student, there can be a variety of options to improve learning and promote a fun environment. Always be aware of the safety of both your class participants and other slope users when using specific equipment. Some types of equipment that may be used include:

Boarder-Kontrol Snowboard

The Boarder-Kontrol snowboard is a new riding and teaching aid.

The aim is to allow snowboarders to progress quickly and safely into snowboarding.

It can aid with:

- Reducing fear/rider anxiety and heavy falls.
- More control and ability to control speed, providing extra stability, bracing and ability to control speed.
- Avoiding long periods of sitting around .

A faster, independent progression to moving down the hill with their leading foot.

The snowboard is designed with a brake on the tail of the board that allows the rider to control their speed or even brake and stop while going down the slope.

A leash is held in the back hand that operates the brake. When the leash is lifted upwards the brake engages and when lowered the brake is released. The brake can be used gently to control speed or applied with more force to slow or stop the board.

When applied down the fall line, the brake engages and slows the board. If the rider is traversing and the brake is applied, more friction on the tail of the board is introduced, which can assist in guiding the nose of the board down the slope to initiate turns.

The leash has two settings: one is to allow the brake to be used and the other is to stop the brake from being used, but enables the leash to aid in support of the back arm position.

The leash stops/prevents the rider from over-rotating and moving their backhand and upper body.

The Boarder-Kontrol snowboard can be used with or without the brake making it suitable for multiple levels.

The brake should not be applied when riding switch or on terrain that is too steep.

Progression

Introduce Equipment: As normal lessons, explain boots, bindings and board. Introduce the leash and brake and where the leash can be stored when not in use (such as a pocket in the jacket).

Introduce how the Boarder-Kontrol brake works and the two settings for the leash.

Adjust the leash to suit rider.

Stance: Introduce the stance and the plans of movement from heel to toe, vertically and fore and aft. Explain upper body and arm positioning.

Becoming mobile: Introduce skating and stepping-up the hill without the leash and with the leash. The leash can aid in guiding and lifting the back of the board especially when walking up hill.

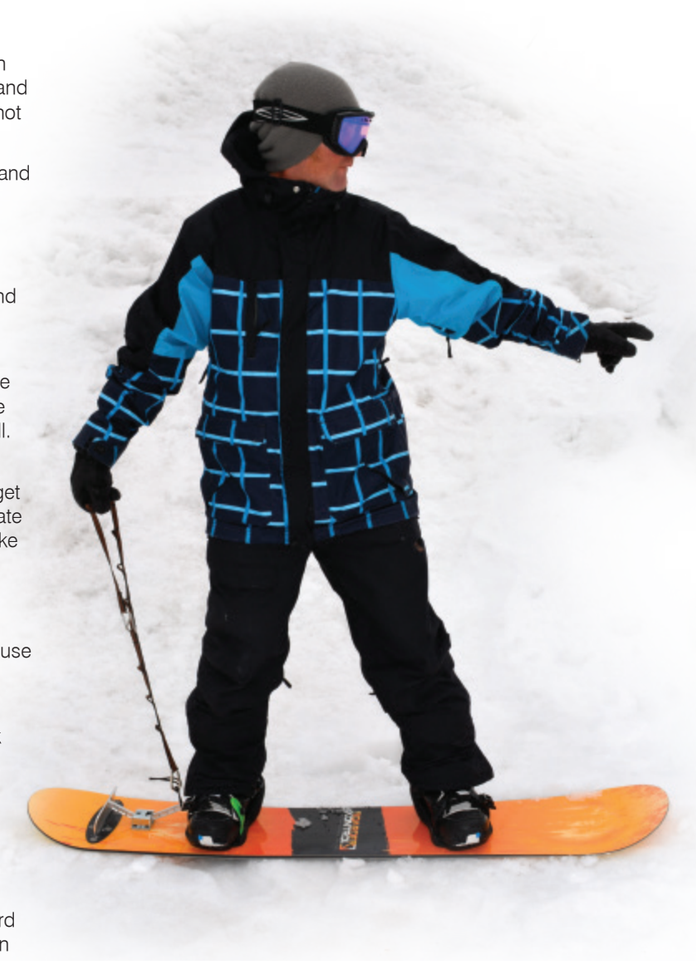
Getting up and started: Explain and demonstrate getting up. Show students how to get in the snowboard standing up and practise. Create platform to balance on and practise working brake while stationary, with both feet in, across a small slope.

Straight glide: From the stationary position across fall line, guide board into the fall line and use the brake to aid in straight gliding.

See-saw straight glide to a turn: As above, guide board into fall line and straight glide. Work on fore/aft movements to develop balance and confidence (see-saw). Emphasis placed on transferring weight onto front foot. At end of straight run complete a direction change to the heel and toe sides.

Single turns: Balance on the up-hill edge in a small traverse, controlling speed. Guide the board into the fall line and complete turn. The brake can be applied at the guest's discretion.

Link turns: Using the brake, begin to link turns. Work on the amount of brake used and the timing of when to apply. Use suitable terrain and appropriate teaching styles.



Side-slipping: Set the leash NOT allowing the brake to be applied. Set the leash in the 'off position', disengaging the brake before introducing this skill.

Begin side slipping to prepare students for steeper terrain. Use the leash to help guests with body position and balance.

Turns without assistance: Introduce the guests to turning drills and turns without the assistance of the leash and brake.

I.e. Direction changes, single turns, garlands and linked turns.

5.9
Teaching Aids and Assisting Equipment
SECTION 5 The Progression

Vests (Kinder vest featured)

When teaching children, the vest aids in teacher assisting. It allows the instructor to better support the child and holds the correct supports instead of trying to hold the hands – which can become tiresome for the child – or part of the jacket. The handle on the back is strong enough to not just support, but also holds the child up if falling and aids in lifting the child up onto chair lifts. The strap at the front allows the instructor to support the child and also move them forward into the toe side if needed. The vest can take some of the back work out of the lesson but should not be incorrectly used.

Balloons

Can be used in decorating an area, identify meeting areas, catching games, place between legs, hold in front, create games and introduce colour to themes.

Cones

Use to build obstacle courses, vary the turns size and radius, mark run-ins and highlight start points, create corridors to help with freestyle and straight run drills and good for class handling.

Dye/food dye

Can mark out an area, draw a track, show a line in moguls and mark take-offs, landing or features that may be hard to see. (Ask for permission from resort before dyeing the snow.)

Frisbees/plates

Use as a steering wheel, playing, catching, mark out a course, or used as obstacles to turn or pop over.

Hula Hoops

As support for the rider. The instructor holds the hoop between themselves and their guest or places guest inside the hoop to support. Guests can use the hoops to aid in rotation drills.

Poles

To aid balance and control when leading a guest down the slopes, create corridors to ride through and support a rider when attempting turns or tricks.

Promote upper body anticipation, angulation, separation and race positioning.

Can aid in Peter Bauer drill.

Ropes/string

To improve coordination and position of the upper body with angulation, race training, good to aid in variation to exercises instead of poles and easy to carry.

Stubbies or brushes

Good for race training to improve coordination, line or as markers. Safer option as they are made out of soft material and easy to see in poor weather.

Balls

Good for catching games, marking out points, popping-over or creating obstacle course

GENERAL KNOWLEDGE

About this chapter

For a guest's experience to truly become a memorable one, instructors often need to go a step further than just creating a professional learning experience.

During and after the lesson you will need to spend some valuable time telling guests about the alpine environment they are visiting. Not everyone will be interested in the same information, but by using your skills of questioning you will find that all people visiting the snowfields show some interest in some area. That interest only needs a little bit of fuelling to help add to a more fulfilling holiday experience.

The challenge for you as the instructor is that you need to have knowledge across many areas. To assist with this, the next three sections cover a variety of topics that you can use to help enhance the guest's experience.

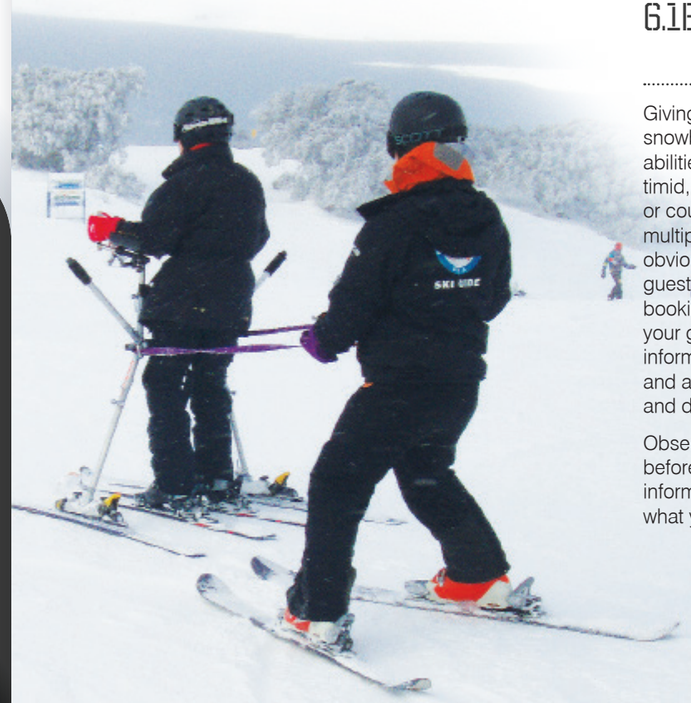
- History Section
- Equipment and Maintenance Section
- Our Environment Section

These sections provide general information about your profession that you can use to help create interesting conversations with your guests. To find out more it is advisable to read other materials (some options are included in the appendix) and ask people around you who have a vast knowledge and experience in these areas.

CHAPTER SIX: Adaptive snowsports

SECTION ONE:

ADAPTIVE SNOWSPORTS



6.1 INTRODUCTION

6.1A WHAT IS ADAPTIVE SNOWSPORTS?

Every guest that visits a snow resort in Australia should have the opportunity to participate in snowsports, regardless of their ability. Adaptive snowsports is skiing and snowboarding for a person with a disability. To make this possible, you can make adaptations to your guest's equipment and surroundings to make the experience more accessible or comfortable. You can also adapt the teaching style and progression you use to suit your guest's needs. The adaptations you make will depend on your guest's ability and their goals. Disabilities your guest may have may be cognitive (affecting their thinking, understanding, learning, memory or social skills), physical (affecting their body movements or abilities), a vision impairment or any combination of the above.

6.1B WHO IS TAUGHT ADAPTIVE SNOWSPORTS?

Giving all our guests the opportunity to ski and snowboard means we have guests with a range of abilities. Our guests may be young, old, fit, unfit, excited, timid, wheelchair users, vision impaired, independent or countless other things. Your guest may have one or multiple disabilities. Some disabilities are immediately obvious, while others will require information from your guest. When your Snowsports School takes your guest's booking, they may receive some information about your guest and their disability. If they have limited or no information, you will need to make some observations and ask your guest some questions about their ability and disability.

Observing how your guest moves and gets around before they even put on boots can give you valuable information about how and what to teach them. Focus on what your guest can do, not what they can't.

Here are some helpful observations to make:

If they are walking:

- **Are they using crutches? Would snowboarding, 3 or 4 track skiing or sit skiing be most appropriate?**
- **How well are they walking? Are they able to use their ankles, knees and hips? Are their legs swinging independently of their body?**

If they are in a wheelchair:

- **Is it an electric or manual wheelchair? If it is electric, a tethered bi-ski may be most appropriate. If it is manual, would a bi-ski or mono-ski be more appropriate?**
- **Are they pushing themselves or is somebody pushing them? This will give you an indication of their independence.**
- **Does the wheelchair give them a lot of support (high backrest, straps, anti-tip wheels at the back) or is it a very manoeuvrable, sporty looking chair? This will give you an indication of their balance and the support required from the sit-ski straps.**
- **How well do they grip the wheels or your hand during a handshake? Will they be able to grip and manoeuvre outriggers and hold themselves up?**

Asking your guest about their disability can be uncomfortable or intimidating for some instructors. Some guests will be accustomed to answering questions about their disability, while others won't be so forthcoming, especially if they have a newly acquired disability. Being respectful and professional will help put your guest at ease and make the exchange normal. Again, focus on what your guest can do, not what they can't. Here are some helpful general questions:

- **"Can you tell me a bit about your disability?"**
- **"Is there anything about your disability that I need to be aware of?"**
- **For physical disabilities – "Can you show me which parts of your body you can move?"**
- **For vision impairments – "Tell me what (colours / how far / how wide) you can see."**

If you've asked your guest questions and they are unable to answer them – often related to a cognitive disability – it can be helpful to ask their carer, parent or partner.

Some of the disabilities you may encounter include:

- **Acquired brain injury**
- **Amputations**
- **Autism**
- **Cerebral palsy**
- **Diabetes**
- **Down's syndrome**
- **Epilepsy**
- **Hearing impairment**
- **Intellectual disabilities**
- **Multiple sclerosis**
- **Muscular dystrophy**
- **Spina bifida**
- **Spinal cord injuries**
- **Vision impairment**

Disabled Wintersport Australia's 'Adaptive Snowsport Guide Manual' is a useful reference for further information about the above disabilities and how they relate to snowsports. It can be found at www.disabledwintersport.com.au. Search the internet for further information on disabilities.

P.E.E.L.

6.1C HOW DO YOU TEACH ADAPTIVE SNOWSPORTS?

Teaching people with disabilities requires a broad range of skills and knowledge about disabilities, equipment and communication. It may seem overwhelming at first, but many of the same techniques and tricks you use for your regular ski or snowboard lessons are applicable to adaptive snowsports. The acronym '**PEEL**' is a useful reminder of what to think about when planning your adaptive lesson.

P – **Progression. Do you need to change or adjust what you are teaching because of the equipment being used or the physical ability of your guest? Remember to keep your expectations of what will be achieved in the lesson in line with your guest's goals and their abilities.**

E – **Environment. Is your guest easily distracted, intimidated, scared or affected by elements in the area you are teaching? Are there environmental factors affecting your guest's ability to hear or see you? Consider noise from lifts, snow mobiles and crowds. Consider bright light from the sun, reflections off the snow and shadows from trees and buildings.**

E – Equipment. Is there equipment that will make it easier for your guest to learn? Do they need assistance making a snowplough? Do they need to sit down to ski? Do they need assistance balancing? Would a Sno-wing aid the guest? Are there any safety factors that need to be considered with the equipment you are using?

L – Learning Style. Is your guest more inclined to be a visual, auditory or kinaesthetic learner? Are there any factors that will make it difficult for your guest to learn in a particular style?

6.2 THE PROGRESSIONS

The following progressions are designed to help you teach people with disabilities to ski and snowboard. Bi-ski and Mono-ski are for people who need to sit down to ski. Three-track and Four-track are for people who can ski standing up but need outriggers to help their balance.

Every guest we teach is different and even more so in adaptive snowsports. Every guest's disability will present slightly differently to the previous one and may even change from the start of the day to the end. These progressions are not designed to be prescriptive. Adjust, add or omit parts of the progression as your guest requires.

6.2A BI-SKI

What:

Bi-skiing is skiing in a seat low to the ground on two skis. The skis are short with a deep side-cut, making it easy to make short, railed turns. Short outriggers can be used to aid balance.

Who:

The bi-ski is designed for people without complete use of their legs and limited trunk and upper limb control. This may include people with higher-level spinal cord injuries, amputations, cerebral palsy or spina bifida.

How:

The bi-ski is turned by tipping the ski over in the direction the skier wishes to go. The 'skis' side-cut allows for railed turns to be made in a short arc. The primary skill used to turn the bi-ski is edging. The bi-ski may be skied independently, on tethers or with assistance with someone holding onto the back of the bi-ski, known as bucketing.

Equipment:

- **The Mountain Man and the Bi-Unique are the two most common bi-skis. The Mountain Man has a small amount of suspension and a higher centre of gravity. The Bi-Unique has no suspension but has a lower centre of gravity.**
- **The seat the bi-skier sits in is often called the 'bucket'. 'Bucketing' is when the instructor holds onto the back of the bi-ski and assists the guest with steering.**

- **Tethers can be attached to the back of the bi-ski bucket. These can be used to give the instructor more control over the bi-skier's speed and turn shape. Aim to keep the tethers relatively taut and stay inside and uphill of the bi-skier's turn. This gives the tetherer greater power and the ability to keep the bi-ski under control.**
- **Fixed outriggers allow a guest with very limited upper body control to ski with a small amount of independence. Fixed outriggers can be fitted to both types of bi-skis but the Mountain Man fixed outriggers are much more stable. The bi-skier can shift their weight left and right to tip the bi-ski onto the outriggers. Fixed outriggers give great stability making it harder to tip over, however they greatly increase the turning radius of the bi-ski and make them difficult to stop. Tethers with a wrist strap or loop must always be used when fixed outriggers are in use. A fixed outrigger bi-ski must never be bucketed. Additionally, the fixed outriggers must be removed each chairlift ride for the safety of those loading and riding beside the bi-ski.**
- **Each type of bi-ski has a different type of chairlift loading mechanism. Ensure you know how the mechanism works before using the chairlift.**
- **Most bi-skis will require some manual lifting to ride the chairlift. If you have an assistant use them to help load the bi-ski. If you don't have an assistant you can ask a lift attendant to help you lift the bi-ski onto the chair. In both instances, ensure you communicate where to hold the frame, what the countdown will be and who will be in charge. Ask the lift attendant to slow the lift down and for a 'pull back'. A 'pull back' is when the lift attendant comes behind the chair you are loading and, when you have lifted the bi-ski up, pulls the bi-ski securely back onto the chair using the handle or strap. When lifting, ensure you keep your back straight and lift from your knees. A retention strap should be attached to the back of the bi-ski to allow the bi-ski to be attached to the chairlift.**
- **When unloading the chairlift ask the lift attendant to slow the lift. When the bi-ski reaches the unload line, tilt the bi-ski forward and slide it off the chair. Safely ski the bi-ski away from the unload area and, if necessary, ensure the loading mechanism is disabled.**
- **A draglift requires a rope that loops around the front of the bi-ski. The skier or lift attendant hooks the rope around the Poma or T-bar. The lift then drags the bi-ski along with it. The skier should**

slide their outriggers along the snow to maintain balance. Once the bi-ski reaches the end of the lift, the skier can unhook the rope using a release system, or when there is slack in the rope. The instructor can ride with the bi-ski by wearing a climbing harness and attaching themselves to the bi-ski with a karabiner.

- Outriggers should start shorter for beginners and lengthen as the guest improves, to be skied more like a mono-ski.
- The brake bolt on the outriggers can be lengthened to allow the claw to engage earlier and create more friction, or shortened to allow the outrigger to slide more freely.
- A fixed handlebar can be attached onto most bi-skis to allow a skier with mobility control difficulties in one or both arms to keep their arms in an anchored position.
- Tetra gloves are gloves made of Velcro that allow a skier's hands to be fixed to the handlebar or outriggers if they have difficulty gripping.
- It is a good idea to plan for some time out of the bi-ski to prevent pressure sores developing.

Method for teaching bi-skiing:

- Check for correct set up. Ensure there are no large gaps between the seat and the body which would allow the hips to move separately from the bi-ski. Ensure there are no pressure points or tubes being blocked. Ensure legs are bent comfortably.
- Equipment familiarisation. Show how bi-ski tips to turn, how chairlift loading mechanism works and operation and function of outriggers.
- Stationary, introduce the correct stance. Sit up straight, look ahead, comfortable leg bend, elbows slightly bent, outriggers directly out from hips or just in front (depending on comfort), even pressure on both outriggers.
- Flat land exercises. Pushing forwards and backwards. Pushing up and twisting. Leaning left and right.
- Getting up after falling over. Align the skis across the fall line. Let go of the inside outrigger and place hand on the snow for stability. In crutch mode, place other outrigger's claw in the snow next to the hips. Push up until inside outrigger can be held and balanced on. Return both outriggers to the outside of the body. Some guests may require help from the instructor. Pull on the bi-ski rather than the guest's arm.
- Straight runs. Ski down a gentle slope with a good run-out, practising a good stance and testing balance by lifting up outriggers. Drop elbows downwards and push hands forwards to engage claw on the back of the outriggers.
- Turns to one side. On a gentle slope with a good run-out, turn to one side by tipping hips in the direction you want to go. Maintain balance with the inside outrigger. Start with slight turns and gradually increase size of turns. Try to the other side.
- Linking turns. On a very easy beginner run, turn to one side. Once the ski is almost across the fall line, bring balance back to the centre. A push-off, the inside outrigger can assist this movement. Start tipping hips in the opposite direction. Maintain contact with the snow with both outriggers.
- Work on steering. Once your guest is ready to move to steeper beginner runs and intermediate runs, introduce rotation from the body from as close to the snow as possible.

Common Problems	Cause	Solution
Washing out the back of the skis after the fall line	Insufficient inclination to ensure sufficient edge from articulated system	Tipping lower body (as much as possible) while keeping upper body upright
	Weight too far forward	Check chest/shoulder straps firm
	Outriggers too long	Shorten outriggers
Can't link turns	Over-rotation	Start into new turn sooner
Regularly falling over using handheld outriggers	Insufficient strength/mobility	Use fixed outriggers
Outriggers skipping or pulling arm back	Outrigger too long	Shorten outrigger
	Too much outrigger brake	Shortened outrigger brake

6.2B MONO-SKI

What:

Mono-skiing is skiing in a seat which is attached to a shock absorber and one ski. The ski is generally a regular alpine ski. Outriggers are used to aid balance.

Who:

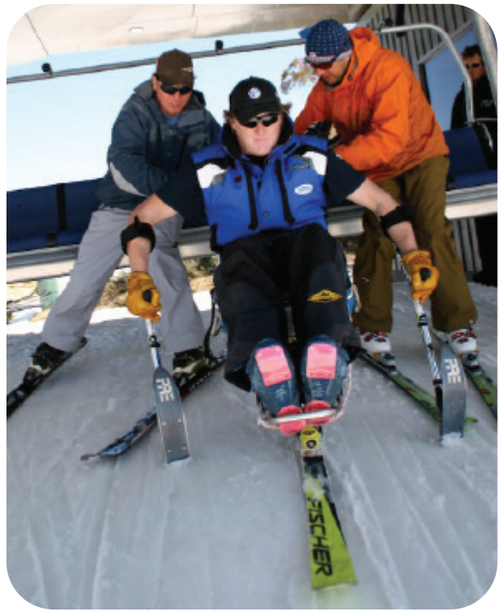
The mono-ski is designed for people without complete control of their legs and reasonably good trunk and upper limb control and strength. This may include people with lower level spinal cord injuries, amputations, cerebral palsy or spina bifida.

How:

Blending all four skiing skills turns the mono-ski. Movements should be made by the skier's body from as low to the snow as possible.

Equipment:

- A dual-ski is the same as a mono-ski but has two alpine skis, providing more stability. It should be taught the same as a mono-ski.
- There are many different types of mono-skis. When choosing a mono-ski for your guest you should consider bucket size, leg angle and position, loading mechanism and comfort (See Notes)
- Outriggers should start longer for beginners and shorten as the guest improves.
- The brake bolt on the outriggers can be lengthened to allow the claw to engage earlier and create more friction, or shortened to allow the outrigger to slide more freely.
- Each type of mono-ski has a different type of chairlift loading mechanism. Ensure you know how the mechanism works before using the chairlift.
- Depending on the guest, some mono-skiers will require some manual lifting to ride the chairlift. If you have an assistant use them to help load the mono-ski. If you don't have an assistant you can ask a lift attendant to help you lift the mono-ski onto the chair. In both instances, ensure you communicate where to hold the frame, what the countdown will be and who will be in charge. Ask the lift attendant to slow the lift down and for a 'pull back'. A 'pull back' is when the lift attendant comes behind the chair you are loading and, when you have lifted the mono-ski up, pulls the mono-ski securely back onto the chair using the handle or strap. When lifting, ensure you keep your back straight and lift from your knees. A retention strap should be attached to the back of the mono-ski to allow the mono-ski to be attached to the chairlift.



- **When unloading the chairlift, ask the lift attendant to slow the lift. When the mono-ski reaches the unload line, tilt the mono-ski forward and slide it off the chair. Safely ski the mono-ski away from the unload area and, if necessary, ensure the loading mechanism is disabled.**
- **A draglift requires a rope that loops around the front of the mono-ski. The skier or lift attendant hooks the rope around the Poma or T-bar. The lift then drags the mono-ski along with it. The skier should slide their outriggers along the snow to maintain balance. Once the mono-ski reaches the end of the lift, the skier can unhook the rope using a release system, or when there is slack in the rope. The instructor can ride with the mono-ski by wearing a climbing harness and attaching themselves to the mono-ski with a karabiner.**
- **It is a good idea to plan for some time out of the mono-ski to prevent pressure sores developing.**

Method for teaching mono-skiing:

- **Check for correct set up. Ensure there are no large gaps between the seat and the body which would allow the hips to move separately from the mono-ski. Ensure there are no pressure points. Ensure legs are bent comfortably.**
- **Equipment familiarisation. Show how alpine ski works, how chairlift loading mechanism works and operation and function of outriggers.**
- **Stationary, introduce the correct stance. Slightly rounded back, look ahead, comfortable leg bend, slightly bent arms with outrigger ski tip between knees and feet, even pressure on both outriggers.**
- **Flat land exercises. Pushing forwards and backwards. Pushing up and turning on the spot. Leaning left and right. Lifting the bucket into chairlift mode.**
- **Getting up after falling over. Align the skis across the fall line. Let go of the inside outrigger and place hand on the snow for stability. In crutch mode, place other outrigger's claw in the snow next to the hips. Push up until inside outrigger can be held and balanced on. Return both outriggers to the outside of the body. Some guests may require help from the instructor. Pull on the mono-ski rather than the guest's arm.**
- **Straight runs. Ski down a gentle slope with a good run-out, practising a good stance and testing balance by lifting up outriggers. Drop elbows downwards and push hands forwards to engage claw on the back of the outriggers.**
- **Turns to one side. On a gentle slope with a good run-out, turn to one side by twisting body from as low to the snow as possible. Emphasise the need for a flat ski. Small amount of edge will be engaged as the ski leaves the fall line. Start with slight turns and gradually increase size of turns. Try to the other side.**
- **Linking turns. On a very easy beginner run, turn to one side. Once the ski is across the fall line, bring balance back to the centre. Start twisting in the other direction from as low to the snow as possible.**
- **Work on steering.**

Common Problems	Cause	Solution
Having trouble with turns to one side	Inclining the ski thus engaging edge	Equal pressure on both outriggers, promoting a flat ski
	Centre of gravity too far back	Shift weight forward. Perform dowel test, adjust set-up accordingly
	Insufficient rotary force	Bring outside shoulder all the way through turn – extend outside outrigger forward
Back of ski washing out, turning too far up hill	Over-rotation	Promote counter-rotation by starting next turn sooner after crossing fall line
Outriggers skipping/bouncing, shoulders being pushed back	Too much brake/claw	Shorten brake bolt

6.2C THREE-TRACK

What:

Three-track skiing is on one leg while using two stand-up outriggers.

Who:

Three-track skiers are people who have had a leg amputated or have no use of one leg.

How:

Turns are made blending all four skiing skills. Movements should primarily come from the skier's leg. The outriggers can be used to assist with these movements.

Equipment:

- **Outriggers should start longer and shorten as the guest improves.**
- **Skiers who have a lower limb amputation can tire easily. A portable chair with you on the snow can give your guest a chance to sit down and rest.**

Method for teaching three-track skiing:

- **Equipment familiarisation. Show how alpine ski works and operation and function of outriggers.**
- **Stationary, introduce the correct stance. Even flex in ankle, knee and hip, almost straight arms with outrigger ski tip in line with front ski binding.**

- **Flat land exercises. Pushing with outriggers. Pushing up and twisting ski. Keep these to a minimum as guest may tire quickly.**
- **Straight runs. Ski down a gentle slope with a good run-out, practising a good stance and testing balance by lifting up outriggers. Drop elbows downwards and push hands forwards to engage claw on the back of the outriggers.**
- **Turns to one side. Start by turning in the direction of the big toe. On a gentle slope with a good run-out, turn to one side by twisting leg in a smooth motion. Emphasise the need for a flat ski. Small amount of edge will be engaged as the ski leaves the fall line. Start with slight turns and gradually increase size of turns. Try to the other side.**
- **Linking turns. On a very easy beginner run, turn to one side. Once the ski is across the fall line, bring balance back to the centre, feeling for a flat ski. Start twisting leg in the other direction.**
- **Work on steering.**

Common Problems	Cause	Solution
Stance too far forward	Outriggers are too short	Lengthen outriggers
	Anxiety	Move to easier terrain. Increase outrigger brake
Stance disrupted when moved to steeper terrain – usually inside shoulder is 'bucked' and pulled back	Outriggers too long	Shorten outriggers as you move to steeper terrain. Aim to use the ski as much as possible, rather than the outrigger

6.2D FOUR-TRACK

What:

Four-track skiing is on two legs while using two stand-up outriggers for support.

Who:

Four-track skiers are people who have a limited or altered use of their legs. This may include people with incomplete spinal cord injuries, hemiplegia, cerebral palsy, amputations but are using prosthetic legs.

How:

Turns are made by blending all four skiing skills. As it is not always possible for a four-track skier to make the ideal skiing movements, moving different parts of the body should be encouraged and experimented with to achieve the desired skiing outcome. The outriggers can be used to assist with these movements.

Equipment:

- **Outriggers should start longer and shorten as the guest improves.**
- **Four-track skiers can tire easily. A portable chair with you on the snow can give your guest a chance to sit down and rest.**
- **A Snow Slider is a walking frame on skis. It can provide support to a skier on easier terrain. The Snow Slider is rigid so can tip over on steeper terrain. The Snow Slider should always be tethered by the instructor.**

Method for teaching four-track skiing:

- **Equipment familiarisation. Show how alpine ski works and operation and function of outriggers.**
- **Stationary, introduce the correct stance. Even flex in ankles, knees and hips, almost straight arms with outrigger ski tip in line with front ski binding.**
- **Flat land exercises. Pushing with outriggers. Pushing up and twisting ski. Keep these to a minimum as guest may tire quickly.**
- **Straight runs. Ski down a gentle slope with a good run-out, practicing a good stance and testing balance by lifting up outriggers. Drop elbows downwards and push hands forwards to engage claw on the back of the outriggers.**
- **Turns to one side. On a gentle slope with a good run-out, turn to one side by twisting legs in a smooth motion. If guest doesn't have ability to twist legs, move up the body until you find a body movement that makes the skis turn. Twisting the outriggers in the direction of the turn can help to get this movement started.**
- **Linking turns. On a very easy beginner run, turn to one side. Once the skis are across the fall line, bring balance back to the centre. Outriggers may be helpful for maintaining balance. Start twisting skis in opposite direction using most effective part of body.**
- **Work on steering.**

Common Problems	Cause	Solution
Unable to turn	Insufficient turning force	Use another part of the body. Use outriggers to create friction turn

6.2E VISION IMPAIRMENTS

What:

Skiing and snowboarding with a vision impairment involves riding with a guide who gives the skier/rider directions.

Who:

Less than 10% of people with a vision impairment have no light perception (completely blind). Skiers and snowboarders may have peripheral vision, tunnel vision, blurred vision or any other combination.

How:

A guide gives the skier or rider with a vision impairment information about the changing terrain and directions about when, where and for how long to turn. These directions should encourage progressive, round turns. Many skiers and riders with a vision impairment still have some level of vision. The guide should wear coloured clothing that allows the skier or rider to follow them.

Equipment:

- **High visibility vests may allow your guest to see you more easily. Check with your guest for which colour is easiest for them to see. This may sometimes mean dark, contrasting colours.**
- **Bamboo or SPM poles are useful for instructor and guest to ski side by side, have physical contact, but still allow for some space.**
- **Ski poles can be used to create a horse and cart set-up.**
- **A Sno-Wing can be used with a snowboarder to give the instructor some control over the rider, while maintaining the feeling of independence.**

Method for teaching people with vision impairments:

- **The progression for teaching a guest with a vision impairment is the same as an able bodied guest. Analogies, feelings, touching (with guest's permission) and tactile hand movements will be very useful in place of demonstrations.**
- **Aim for a round turn shape. "Left/Right" commands result in Z-shaped turns. Practice and have in your bag of tricks different commands that promote a good rhythm and turn shape. Check with the guest for a preferred guiding method. Counting can be effective. For example, 'turn, 2, 3, 4...turn, 2, 3, 4'.**
- **Work with the guest to establish a reference position to aid navigation, such as a clock face or degrees on a compass.**
- **Experiment with guiding from the front, the side and behind your guest. There are many pros and cons for each.**
- **Keep language simple. Using 'and' as a precursor to the next turn. For example, 'turn…and... turn…and... turn'.**

6.2F COGNITIVE DISABILITIES

What:

Teaching someone with a cognitive disability to ski or snowboard can be approached like any other lesson but in some cases learning may take longer than usual.

Who:

People with cognitive disabilities may have full use of their body but may have difficulty understanding and processing instructions given to them. These disabilities may include autism, Down's syndrome, acquired brain injuries and learning difficulties.

How:

Teaching someone with a cognitive disability will often require patience and imagination. Equipment can also be used to develop muscle memory and aid balance.

Equipment:

- **Ski bra/tip clamps are attached to the tips of the skis to keep them together, making it easier to create a snowplough. Guests must always ski forwards when using a ski bra.**
- **A spacer bar, attached between the boot heels and rear binding, when used in conjunction with a ski bra will keep the skis in a snowplough position.**
- **Tethers can be attached to the outside of the ski bra or underneath the boots to allow the instructor to control the guest's speed and turn shape.**
- **Bamboo or SPM poles are useful for instructor and guest to ski side by side, have physical contact, but still allow for some space.**
- **A Sno-Wing can be used with a snowboarder to give the instructor some control over the rider, while maintaining the feeling of independence.**

Method for teaching people with cognitive disabilities:

- **The progression for teaching a guest with a cognitive disability is the same as other ski and snowboard lessons.**
- **More patience is required to find the approach that works best for your guest, and repeating it multiple times once you've found the best approach.**
- **Use your imagination to create a story, analogy or theatrical move for each skill that needs developing.**
- **If your guest has a parent, carer or partner available, find out from them what will help your guest communicate and learn.**
- **Some guests with cognitive disabilities may not understand all the concepts of danger or cause and effect. Repetition and focus on safety is very important.**

6.2G ADAPTIVE SNOWBOARD

What:

Teaching someone with a disability to snowboard can be approached like any other snowboarding lesson, but in some cases will take longer than usual or different equipment may be necessary.

Who:

Anyone who has the ability to stand up has the opportunity to learn to snowboard. People with physical disabilities such as amputations, incomplete paraplegia, hemiplegia and acquired brain injuries are examples of people who may learn to snowboard.

How:

Depending on your guest's ability, teaching a person with a disability to snowboard may follow the same progression as a usual snowboard lesson or may require adaptations to the progression or equipment.

Equipment:

- **A Sno-Wing can be used with a snowboarder to give the instructor some control over the rider, while maintaining the feeling of independence.**
- **Poles or outriggers can be used in place of a leg for a guest with a lower limb amputation.**
- **Snowboarders who have a lower limb amputation can tire easily. A portable chair with you on the snow can give your guest a chance to sit down and rest.**
- **Amputees require a small stick or wedge under the heel of their boot to 'cant' them forward in the binding. This can be slightly rotated to also cant the knee inwards if required. This can aid in balance and edging. NOTE: It does not apply to all, but should be tested by all.**
- **Bindings, stance angle and leg design all play an integral role and it's important the new adaptive rider understand that the journey of learning is heavily dictated by the journey of adjusting and improving equipment.**

Method for teaching adaptive snowboard:

- **Start by following the usual snowboard progression.**
- **If your guest requires more support or assistance add equipment, such as a Sno-Wing, as appropriate.**
- **Promote progressive movements to create turns.**
- **The Sno-Wing can be used in multiple ways:**
- **Control speed by holding onto the back of the Sno-Wing and sideslipping behind the rider.**
- **Control speed by holding onto the front of the Sno-Wing and blocking the descent.**
- **Control direction by gently turning the Sno-Wing in the desired direction.**
- **Control edge and direction by pushing or pulling on the centre of the Sno-Wing to adjust the rider's hip position.**
- **Some guests with limited movement or reach may not be able to do up or undo their bindings so assistance (ski pole or simply a hand tow) may be needed in lift lines.**
- **Amputees need to stop and dry off their stump as sweat and moisture build up and loosen the connection.**
- **Helping guest in lift line will conserve their energy.**

Common Problems	Cause	Solution
Instability/balance issue in stance	Weakness in one side of body	Sno-Wing can provide stability with lateral or fore/aft support
Inability to rotate trunk	Lack of co-ordination	Sno-wing can initiate rotary movements
	Inflexibility due to injury	Sno-wing can initiate rotary movements
Inability to move heel side to toe side	Insufficient coordination or balance	Sno-wing can initiate weight transfer to heel or toe

Common problems NB: If the solution for these problems can be achieved without the use of the Sno-Wing, use the solution that is most effective and requires the least amount of equipment.

GENERAL KNOWLEDGE

About this chapter

For a guest's experience to truly become a memorable one, instructors often need to go a step further than just creating a professional learning experience.

During and after the lesson you will need to spend some valuable time telling guests about the alpine environment they are visiting. Not everyone will be interested in the same information, but by using your skills of questioning you will find that all people visiting the snowfields show some interest in some area. That interest only needs a little bit of fuelling to help add to a more fulfilling holiday experience.

The challenge for you as the instructor is that you need to have knowledge across many areas. To assist with this, the next three sections cover a variety of topics that you can use to help enhance the guest's experience.

- History Section
- Equipment and Maintenance Section
- Our Environment Section

These sections provide general information about your profession that you can use to help create interesting conversations with your guests. To find out more it is advisable to read other materials (some options are included in the appendix) and ask people around you who have a vast knowledge and experience in these areas.

CHAPTER SEVEN: General Knowledge

SECTION ONE:

HISTORY

7.1.1 A BRIEF HISTORY OF SNOWBOARDING

WW1: Soldiers based in Europe during World War One claim to ride the first winter wave by riding wooden slats of a barrel down a snow covered slope.

1929: A letter sent to Transworld snowboard magazine by a Mr. M.J "Jack" Burchett documents how in 1929, he fashioned a sled out of plywood, attached his feet with horse reins and clothes line and rode it like a snowboard.

1963: Tom Sims designs a "ski board" for an eighth grade school project while in South New Jersey. It was designed to skate the streets during winter and was not much more than 35 inches long.

1965: On Christmas day 1965 in Muskegon Michigan inventor Sherman Poppen screws two skis together and fashions a surfboard for the snow for his daughter. Poppen would experiment with his design and come up with the 'Snurfer', a sled with an up-turned nose and handle made of plywood.

1966: The Snurfer was later licensed to The Brunswick Corporation debuting in 1966 for $15.00 and in the 1970s more than a million would be sold. The Snurfer came in two models, the standard and the competition and is documented as being the first snowboard type device and was indeed the experimentation model for many of today's leading snowboard designers such as Jake Burton and Tom Sims.

1968: The first Snurfer competition is held at the Blockhouse Hill Ski Area Michigan on February 18th. This competition will be held annually for the next 10 years.

1969: During the winter of 1969/70, Dimitri Milovich devises a concept of riding a sled standing up similar to that of surfing. He made prototypes that weighed as much as 40 pounds.

The mono-ski is invented by Mike Doyle, a hint of the beginning of the alternative ski concept.

Bob Webber attempts to obtain a patent for his "Skiboard" design.

1971: Dimitri Milovich obtains a patent for the "snowboard" so he can market his ideas to ski companies. His patent doesn't expire until 1988 but is never enforced against competing companies.

1972: A patent is obtained by Bob Webber for his "Skiboard" design.

1975: Dimitri Milovich creates Winterstick Snowboards. He experimented with early side cut innovations and realised that a snowboard should be designed like a ski so it could store energy and accelerate. It was at this time that he also developed the swallow-tail design.

1976: Dimitri Milovich obtains a patent for a double edged snowboard design.

1977: Jake Burton begins production of the first Burton snowboards in Londonderry, Vermont. Dimitri Milovich obtains a written confirmation from Petit-Morey and Kendall insurance (the insurance brokers for American ski resorts) which states that snowboards are in fact covered under the regular ski liability.

Bob Webber approaches Sims Snowboards to license his plastic "Skiboard" nicknamed the "Yellow Banana". Sims tacks a Lonnie Toft skateboard deck to the top of it and produces them.

Mike Olson of Gnu Snowboards builds his first snowboard.

1978: Richard Palmer, Nat Young and Ti Deaton experiment with snowboarding equipment in the NSW Snowy Mountains. This is to be the first snowboarding documented in Australia.

In Santa Barbara, California Chuck Barfoot and Bob Webber develop fibreglass prototype snowboards and test them in Utah.

1979: At the annual Snurfer competition, Paul Graves puts on the first freestyle display and wows the crowd. Jake Burton turns up on his own equipment and after protests from Snurfer riders an open division is created which Jake wins.

Although Dimitri Milovich never sold his designs to ski companies, the Hexel Ski Company produces a double edged ski and a swallow-tail ski. This is the first evidence of a ski company copying snowboard designs.

Mark Anolik discovers the first half pipe behind the Tahoe city dump that is still frequented today.

1980: Stratton Mountain in Vermont U.S.A would finally open its lifts to snowboarders. Following their decision during the early 1980s, Jay Peak, Sugarbush, Stowe and Killington, Vermont soon follow suit.

Both Burton and Winterstick introduce p-tex on their prototype boards.

1981: Chuck Barfoot leaves Sims Snowboards to start his own company.

Modern competitive snowboarding begins with a small contest at Ski Cooper in Leadville, Colorado.

1982: The Suicide Six ski area in Woodstock, Vermont holds the National Snow Surfing Championships where slalom and downhill are contested. It is the first time that competitors from all over the U.S come together to compete and the last time snurfers and snowboarders compete together.

1983: Jake Burton organises the National Snowboard Championships in the spring at Snow Valley Vermont.

Tom Sims then heads home and holds the inaugural World Snowboarding Championships at Soda Springs Ski Bowl in the Lake Tahoe area. This is the first event to contest the half pipe.

Chuck Barfoot produces the first snowboard movie in 16mm and performs what may be the first road gap on a board.

The first European Snowboard Company, Hooger Booger, produces their first model named the 'Flash'.

1984: Jeff Grell invents the high back to assist with support and edging on hard pack conditions and especially on the heel-side edge. They first appear on Flite Snowboards.

The founders of Flite Snowboards, Dave and Steve Derrah first worked with metal edges.

Mike Olson starts Gnu Snowboards and experiments with side cut and camber eventually perfecting it and building the first carving boards.

The sport of snowboarding emerged in Australia, pioneered by Geoff Sawyer after he visited the USA.

1985: This year would mark the beginning of the snowboarding boom with the release of the first snowboard specific magazine titled Absolutely Radical. The name was later changed to International Snowboarder Magazine to help dispel some of the negative images that snowboarding was sending at the time.

Metal edges are introduced in the Burton Performer and Sims 1500 FE.

Production high backs designed by the creator of the high back, Jeff Grell, are produced by Sims snowboards and Sims also produces the first signature model bearing Terry Kidwell's name. It is also the first freestyle board with a round tail.

The Bond movie, A View To A Kill features snowboarding, with stunt double work performed by Tom Sims and Steve Link. Geoff Sawyer featured in an Australian movie called 'Beyond the Snowy River'.

Thredbo became the first Australian resort to allow snowboarding

1986: Regional events in Europe begin with the Swiss Championships in St Moritz. A European racer by the name of Jose Fernandes travels to America and brings the first asymmetrical board made by Hooger Booger.

Stratton Mountain in Vermont offers the first organised snowboard instruction and the first instructional snowboarding video is released by Jeff Grell.

In late 1986/87 and with a lace up ski-boot inner bladder, Burton produces what will become the standard for soft snowboard boot design.

Geoff Sawyer's passion and vision of snowboarding in Australia saw the inaugural Australian Snowboard Championships held at Guthega.

1987: The first PSIA Snowboard manual is developed by a host of riders including Dave Alden.

Transworld Snowboarding and Snowboarder magazine are first released.

Europeans host their own World Championships in Livignio, Italy and St Moritz, Switzerland (not to be confused with the World Championships held in Breckenridge, Colorado later the same year).

The day after the World Championships in Breckenridge, Paul Alden and a collection of riders form the North American Snowboard Association (NASBA). The main goal of the association was to work with the Snowboard European Association (SEA) to create a unified World Cup tour.

Chuck Barfoot introduces the first freestyle shape with a symmetrical nose and tail. The board is designed by Canadians Neil Daffern and brothers Ken and Dave Achenbach.

The United States Ski Association is banned by the snowboard community for their slow organisation of an acceptable U.S Olympic Team as well as for reportedly accepting millions from Jim Henson Productions of The Muppet Show for having Animal as the official team mascot.

As snowboarding continued to grow in Australia, Geoff Sawyer, proceeded to write the first snowboarding manual in Australia with help from Paul Bow and Don McInnes.

1988: In January 1988, Time magazine is quoted as saying snowboarding is the "worst new sport" and to the traditionalists, "the breezy fad is a clumsy intrusion on the sleek precision of downhill skiing."

The USASA is incorporated aided by a $500.00 donation from Transworld Snowboarding and becomes the first governing body exclusive to amateur snowboarding.

The Ocean Pacific Surf Company begins to develop their own line of snowboard specific clothing.

A court battle between Sims and Burton Snowboards sees Craig Kelly ordered to ride only equipment bearing the Sims label. Kelly then begins to ride equipment with no label, eventually signing a long-term deal with Burton Snowboards.

All Victorian resorts removed lift restrictions for snowboarding and held its first state championships.

1989: Major U.S ski resorts such as Vail, Colorado; Mammoth Mountain and Squaw Valley, California; Sun Valley, Idaho and Snowbird, Utah, finally open their doors to snowboarding.

1990: Jake Burton buys the patent for the "Skiboard" from Bob Webber on August 17th. Burton's lawyers send out a letter asking every snowboard company for three percent of their total sales. The companies dared Burton to enforce the patent and Jake eventually backed off.

Vail, Colorado attempts a bold new concept called the snowboard park and other resorts soon follow in their footsteps.

The International Snowboard Federation is formed after the collapse of the North American Professional Snowboard Association.

1991: The O.P Winter Surf Contest held in February pits pro surfers against pro snowboarders at Huntington Beach and Big Bear Mountain, California. Gary Elkerton scores a win proving that it is a lot harder to learn how to surf than to learn to snowboard.

1992: The United States Ski Association becomes involved with snowboarding. The USASA and USSA try to merge but talks fail.

1993: The ISF hold the first official Snowboarding World Championships in Ischgl, Austria where Kevin Delaney and Michelle Taggert take out first place in the men's and women's categories.

The FIS vote to recognise snowboarding at their June meeting.

Snowboarder TV first appears on ESPN becoming the first serialised snowboard specific show.

1994: On May 6th 1994, Ride snowboards goes public on the NASDAQ and their float on the first day reaches $5.75 million. The original 500,000 units sell out in the first 2 weeks and another 75,000 units are released. The early stock multiplies almost 6 times.

In June of 1994 the FIS votes to include snowboarding as a discipline under its jurisdiction. July of the same year, ISF President Ted Martin asks the IOC to recognise the ISF as the governing body of international snowboarding. In a three sentence reply letter, the IOC recommends that the ISF approach FIS to ask about getting ISF athletes into the Olympics as "the FIS is the governing body of that discipline". Ted Martin now works for FIS.

In Lillehammer, Norway, the host country of the Winter Olympics hopes to host a "cultural exhibition" of snowboarding as a demonstration but the FIS gets wind of this and forces its cancellation.

1995: Burton Snowboards and the Ski Shop Santa Cruz are deemed not responsible for the death of a snowboarder as the rider signed the liability waiver when he purchased the board.

An IOC meeting in Karuizawa, Japan, on December 5th announces snowboarding's inclusion in the 1998 Nagano Winter Olympic Games. Giant Slalom and the Half Pipe for both men and women will be contested.

1996: The run is over and the Japanese snowboard market is flooded with 80,000 boards in inventory. The world market is also flooded and a global effort to consolidate following industry pressure is undertaken.

Snowboarder numbers are estimated globally at 20-30 percent of total mountain users.

1997: Snowboarding continues to be the fastest growing winter sport in the United States with more than four million riders, up 32.5 percent from the previous year.

1998: Snowboarding debuts as an Olympic sport at the Winter Olympics in Nagano Japan.

Half Pipe

Men: Gian Simmen (SUI)

Women: Nicola Thost (GER)

G/S

Men: Ross Rebagliati (CAN)

Women: Karina Ruby (FRA)

Rebagliatti has his medal removed as a result of a 12 to 13 vote for testing positive to marijuana. He claims that it was second-hand smoke from a party that he attended. His medal is eventually returned following rumors of a biased testing process.

2002: Snowboarding is again represented at the winter Olympics in Park City, Utah where half pipe and parallel giant slalom events are held.

Half Pipe

Men: Ross Powers (USA)

Women: Kelly Clark (USA)

G/S

Men: Phillipp Schoch (SUI),

Women: Isabelle Blanc (FRA).

2006: Olympic gold results Turin, Italy:

Half pipe

Men: Shawn White (USA)

Women: Hannah Teter (USA)

G/S

Men: Phillipp Schoch (SUI)

Women: Daniela Meuli (SUI)

Snowboard Cross

New event for snowboarding in Olympics.

Men: Seth Wescott (USA)

Women: Tanja Frieden (SUI)

2007: Australia's Torah Bright becomes TTR and Burton Global Champion

2009: Torah Bright wins Winter X Games half pipe and third US championship.

2010: The Olympic gold medal results Vancouver, Canada:

Snowboard Cross

Men: Seth Wescott (USA)

Women: Maelle Ricker (CAN)

G/S

Men: Jasey jay Anderson (CAN)

Women: Nicolien Sauerbreij (NED)

Half Pipe

Men: Shawn White (USA)

Women: Torah Bright wins Australia's first gold medal in snowboarding! Well done Torah.

2011: Australian Nate Johnston wins FIS world cup in half pipe. Australian Alex "Chumpy" Pullen wins FIS world cup in Snowboard-X

Aspen Winter X Games.Torstein Horgmo performed the first Triple cork in X Games history.

2012: Shawn White scores the perfect run in X-Games, 100 points in half pipe.

2013: Alex "Chumpy" Pullin wins his second World Cup FIS title in snowboard cross.

2014: Olympic gold medal results Sochi, Russia:

Snowboard Cross

Men: Pierre Vaultier (FRA)

Women: Eva Samkova (CZE)

G/S

Men: Vic Wild (RUS)

Women: Julia Dujmovits (AUT)

Half Pipe

Men: Louri Podladtchikov (SUI)

Women: Kaitlyn Farrington (USA)

New event for snowboarding in the Olympics.

Slope Style

Men: Sage Kotsenburg (USA)

Women: Jamie Anderson (USA)

Torah Bright wins the silver medal in half pipe and completes in three disciplines, HP/BX/SS.

7.1.1

7.1.2 A BRIEF HISTORY OF THE APSI AND APSI SNOWBOARDING

The Australian Ski Instructors Association (ASIA) was founded in August 1974. The ASIA was formed to improve working conditions for its members. There were 25 founding members who appointed a committee of eight to represent them. They were:

President: Graham Bookallil

Secretary: Peter Clare

Treasurer: Victor Dalziel

Public Officer: Rod Dunning

Committee Members: Geoff Meredith, Bill Foster, John McDonald and Jim Rose.

In September 1975, the first certification course was held in Perisher Valley. Thirty five candidates attended the course, of which 14 were successful. It was not until 1977 that Australia produced the first group to hold Full Certification. These were George Perry, Nick Dean, Peter Egger, Craig Stewart, John McDonald and Max Parker.

During 1976 the association divided to form NSW and Victorian divisions. The Victorian division, under John Whitehouse, formed the Australian Professional Ski Instructors (APSI) and largely through his efforts, the APSI gained government and importantly, international, accreditation for its exams.

The International Ski Instructors Association's (ISIA) recognition of the APSI forced these two factions of ski instructor training to unite. At a meeting held in Albury in 1978, John Whitehouse was elected President and Nick Dean, Vice President. Over the next few years Australians earned examiner status at both junior and senior levels – although courses were still run by Europeans and Americans.

The Australian Ski Areas Association (ASAA) disputed the credibility of the existing association and continued to run training courses in Victoria under the name ASAA Ski Instructors Division (ASAA – SID).

The amalgamation of the APSI and the ASAA was a long drawn-out procedure, this process was further disrupted when the office based in Melbourne caught fire in 1984 and many records were destroyed. It was not until 1985 that these two associations merged and Bruce Hawkins was elected as APSI President (Brad Spalding as Vice President). This body was now responsible for training and accrediting all Australian instructors.

After the turmoil of the previous years the APSI was under new leadership and totally focused on the training and accreditation of Australian instructors by Australian trainers. Support and confidence in the system equaled greater support and funding from the ASAA. Within three years some of the larger schools had Australian directors; the growth in the ski industry saw approximately the same number of imported instructors in the system as the new Aussies filling the gap. The APSI still called on talented trainers from overseas when necessary.

The ASAA have contributed to the further development of the association with the funding of a Training Coordinators role. Don McInnes assumed the role of inaugural Training Coordinator, travelling to all resorts to ensure continuity of training.

Interski has played an important role in the continuing development of the APSI method. These congresses have enabled APSI to share and gather information and importantly to showcase our skills. Our first attendance was at Sesto, Italy in 1983, then Banff, Canada 1987, St. Anton, Austria 1991 (first time with a full team with Matt Gilder representing snowboard), Japan 1995, Norway 1999, Switzerland 2003 and Korea 2007.

In 1995 APSI was the first organization from the southern hemisphere to gain representation and voting status on the Interski board.

The role of the APSI continually evolves to meet the needs of the snowsport industry. The following is a short timeline of snowboarding within the APSI.

1988: Geoff Sawyer conducts the first ever APSI approved snowboard instruction course, known as the 'APSI Proficiency in Snowboarding'. The first courses are held in Thredbo and Falls Creek. During his time Geoff was crowned Australian Champion on five occasions. Geoff truly is the Godfather of Australian snowboard instruction.

Early 90s: The teaching manual has its first major overhaul, something which now happens every four years. The technical director, drawing on the experiences gained from Interski and the past few years, ensures the APSI technical content has evolved to represent a truly Australian method.

The first Red Book is developed through the efforts of Roger Byrnes and his team.

1991: Geoff Sawyer, Mat Gilder, Ash Muller and Selena Webber discuss the inclusion and affiliation of snowboard with the APSI.

1992: The first official APSI snowboard level one exam is held at Thredbo and Falls Creek.

1993: Snowboarding is welcomed into the APSI.

Matt Gilder is elected Chief of Exams snowboard, and the first ever snowboard technical committee is formed including: Selena Webber as technical director and Craig Mason, Ashley Muller and Brett Leask. Joined later by Mike Diver and Shannon O'Brien.

Dennis Cummings is elected the first ever Snowboard Representative to the APSI board.

Children's specific training is first included in the snowboard level one.

1994: The first snowboard rookie selection is held in June.

The first ever National level two snowboard course is held at Mt. Hotham.

1995: The ASAA funded Alpine Training Coordinator role is merged with the APSI Technical Director's position, to create a National Training Coordinator and Chief of Exams position.

Shannon O'Brien and Mike Diver travel to Interski Japan, Shannon assumes the responsibility of snowboard technical director for the event.

1996: The first alpine to snowboard x-over course is held.

1997: The APSI name is changed to "Australian

Professional Snowsport Instructors Incorporated" to reflect the diverse nature of the industry. The first snowboard National level three is held at Mt. Hotham, run by Matt Gilder. Advanced teaching methods include: half pipe, advanced moguls and hard boot racing.

1998: Dean Hill becomes Technical Director and Brett Leask is appointed Chief of Exams.

1999: Snowboarding is recognised as an equal discipline at Interski in Beitostolen, Norway. Australia is represented by snowboard captain Adam Webster, Ashley Muller and Dan Monaghan.

As with alpine in 1995, an ASAA funded position of Snowboard National Training Coordinator is created with Phil Tahmindjis taking on responsibility.

2002: The first APSI office is established in Wodonga, Victoria with Claire Stanton as the first full time employee.

2004: Andrew Rae is appointed in a full time position that expands the role of National Training Coordinator and represents all disciplines of the APSI.

Jason Clauscen is appointed as Snowboard Technical Director, Chief of Exams and National Training Coordination.

2005: Dean Hill becomes the first ever Snowboard Life Member of the APSI. Followed by Dan Monaghan, Matt Gilder, Selena Weeber, Geoff Sawyer, Tim Stuart and Jason Clauscen over the next few years.

2007: Interski is held at Yong Pyong in South Korea and Snowboard is represented by Jason Clauscen, Tim Stuart and Dan Monaghan.

2008: The children's certificate becomes the entry level certification, allowing the public to becomes certified for the first time.

2010: The APSI office is relocated to Jindabyne, NSW.

The APSI certification system changes from a three to a four level system.

2011: Snowboard cross is added to the level four as a possible choice of race component with G/S. A freestyle component is included as part of the level three and four certification.

2013: The first ever level one snowboard coach course is run, in partnership with Ski and Snowboard Australia (SSA).

APSI Honour Roll

Year	President	AASA Training Director	Alpine Technical Director	Snowboard Technical Director/Chief examiner	Alpine Chief examiner	Administrator
1976	John Whitehouse					
1977	John Whitehouse					
1978	John Whitehouse		Jorge Dutschke		Jorge Dutschke	
1979	John Whitehouse		Michael Porter		Michael Porter	
1980	John Whitehouse		Michael Porter		Michael Porter	
1981	John Whitehouse		Michael Porter		Michael Porter	
1982	John Whitehouse				Michael Porter	
1983	Henke Tuppe				George Pimoser	
1984						
1985	Bruce Hawkins		Peter Reynolds		George Pimoser	
1986	Bruce Hawkins		Peter Reynolds		George Pimoser	
1987	Bruce Hawkins	Don McInnes	Peter Reynolds		Brad Spalding	
1988	Bruce Hawkins	Don McInnes	Colin Baldock		Brad Spalding	
1989	Bruce Hawkins	Don McInnes	Colin Baldock		Brad Spalding	
1990	Bruce Hawkins	Don McInnes	Tom Peters		Brad Spalding	
1991	Tim Cokrhill	Don McInnes	Tom Peters		Brad Spalding	Les Tokolyi
1992	Tim Cokrhill	Don McInnes	Roger Bynes		John Fahey	Les Tokolyi
1993	Kerry Lee-Dodd	John Fahey	Roger Bynes	Selina Webber	John Fahey	Les Tokolyi
1994	Kerry Lee-Dodd	John Fahey	Roger Bynes	Selina Webber	John Fahey	Les Tokolyi
1995	Kerry Lee-Dodd	John Fahey	John Fahey	Selina Webber	John Fahey	Les Tokolyi
1996	Kerry Lee-Dodd	John Fahey	John Fahey	Selina Webber	John Fahey	Robyn Bowen
1997	Kerry Lee-Dodd	John Fahey	John Fahey	Selina Webber	John Fahey	Robyn Bowen
1998	Kerry Lee-Dodd	John Fahey	John Fahey	Dean Hill	John Fahey	Robyn Bowen
1999	Kerry Lee-Dodd	Ian Bruce	Ian Bruce	Dean Hill	Ian Bruce	Robyn Bowen
2000	Kerry Lee-Dodd	Ian Bruce	Ian Bruce	Dean Hill	Ian Bruce	Robyn Bowen
2001	Dave Anderson	Ian Bruce	Ian Bruce	Dean Hill	Ian Bruce	Robyn Bowen
2002	Dave Anderson	Ian Bruce	Ian Bruce	Dean Hill	Ian Bruce	Claire Stanton
2003	Dave Anderson	Andrew Rae	Ian Bruce	Dean Hill	Andrew Rae	Claire Stanton
2004	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Andrew Rae	Claire Stanton
2005	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Andrew Rae	Claire Stanton
2006	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Andrew Rae	Claire Stanton
2007	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Richard Jameson	Claire Stanton
2008	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Richard Jameson	Claire Stanton
2009	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Richard Jameson	
2010	Tony Smyth	Andrew Rae	Andrew Rae	Jason Clauscen	Richard Jameson	Donna Poulos
2011	Tony Smyth	Andrew Rae	Richard Jameson	Jason Clauscen	Richard Jameson	Donna Poulos
2012	Mark Dixon	Andrew Rae	Richard Jameson	Jason Clauscen	Richard Jameson	Alexia Colville
2013	Mark Dixon	Andrew Rae	Richard Jameson	Jason Clauscen	Richard Jameson	Alexia Colville
2014	Mark Dixon	Andrew Rae	Richard Jameson	TBA	Richard Jameson	Alexia Colville

CHAPTER SEVEN: General Knowledge

SECTION TWO:

EQUIPMENT AND MAINTENANCE

7.2.1 TYPES OF SNOWBOARDING EQUIPMENT

Whether you are a first timer, instructor or elite athlete, having the correct equipment has a huge effect on your snowboarding experience.

There are three major components of a rider's equipment:

1) **Boots**
2) **Bindings**
3) **Board**

It can have a huge impact on a rider's ability if their equipment is set up of fitted incorrectly. It affects the rider's ability to learn, control their equipment and ride efficiently. It is not uncommon for a rider to come to a lesson with their equipment set up incorrectly. It is important that we are able to recognise this and adjust the equipment so the student is set up for success. Instructors should use their equipment correctly to reinforce the importance of the recommended set up when educating others. Your equipment should allow you to perform effectively and maximise performance.

Boots, bindings and snowboards are graded with a flex pattern from one to ten, with one the softest and ten the stiffest.

Finding the right combination and balance of your equipment and flex patterns can be tricky. Often choosing soft flex patterns enables the rider to have greater forgiveness either when beginning, riding bumpy terrain or learning new manoeuvres. Stiffer flex patterns allows for greater control and support at speed with more performance and pop. Stiffer set-ups are often less forgiving and require developed skills.

1 —— 5 —— 10

Soft **Medium** **Stiff**

BOOTS

Boots are one of the most important parts of the rider's equipment and serve several functions. They connect the rider to their equipment and provide support for the foot and ankle. The lower leg and shin should be supported but still allow easy ankle flexion and movement in the toes.

Each rider has different shaped feet and those that suffer from constant pain may require foot beds to help keep their feet aligned in the boots. Foot beds also increase the contact of the foot to the boot making the boot and therefore the snowboard more responsive.

Boots designed for freestyle are flexible which can allow the rider to move more freely when performing tricks and riding features. Free riding boots offer more support, are stiffer to assist with balance and reduce the amount of effort required to tip and turn the snowboard. Boots now come in a number of lacing options. For example; traditional lace systems, pull systems and wind up options like the boa system.

Boots made for step in binding systems also come in these two styles although generally they are more rigid, especially in the sole and ankle of the boot, to compensate for not have a binding that surrounds the boot.

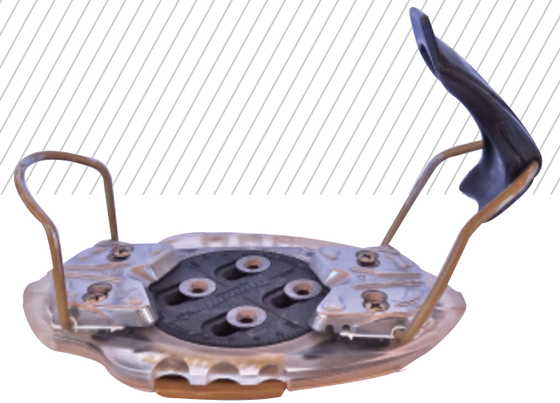
Hard shell boots are very rigid and offer the rider a lot of leverage, but this can reduce the range of movement. Hard shell boots should only be used on the correct style of board and binding. When learning they can restrict ankle flexion. Be sure to loosen off the top buckles, which allows the boot to be more forgiving and gives better ankle flexion and control. Avoid ski boots, as they are not designed to keep correct alignment. It is imperative to have the correct stance and an all-round board when learning with hard shell boots.

BINDINGS

Bindings come in several varieties including; freestyle, freeride, rear entry, step in and race or plate bindings.

The minimum requirement for a binding that will work effectively are that it offers adjustable stance widths and angles, adjustable forward lean with the high backs, heel cup adjustments and straps that can be adjusted for support and comfort. The forward lean setting should be adjusted to assist control. This will provide support and edge control on your heel side and may also reduce fatigue. If the forward lean is too aggressive the ankles can be over flexed causing a lack of movement and discomfort. The ankle and toe straps should be centred over the rider's feet and can stretch over time. A visual check of your student's bindings is advisable at the start of the lesson.

Freestyle and freeride bindings have two straps, one for the ankle and one for the ball of the foot or toes. These straps also have a range of flex patterns and designs catering for each style. Freestyle bindings generally have softer ankle straps with options from toecaps, split toe straps and regular straps that go over the ball of the foot to aid with flexing the feet for greater feel and control. The binding itself is lightweight and often softer and more forgiving when doing tricks. Free-ride bindings are generally stiffer than a freestyle binding and are mostly used for all-mountain riding. The base plates and high back are more rigid allowing for greater stability and leverage.



The plate binding is much more rigid and is used with a hard boot. They offer greater leverage but can limit the range of flex and movement to the rider. Plate bindings use metal bail, to hold the rider securely and also come with a step in option, for quick entry and release. Safety leashes must be worn with these bindings.

The step in binding is more common in the rental market place as people are searching for the easiest way to connect to their equipment. Although many of the systems offer adequate support and comfort, over time the support can fade and should be avoided if possible. To ensure safety, the attachments and boots should be in good working order and not worn or broken.

Rear entry bindings allow the high back to be lowered so the foot can enter the binding without having to release the straps or tighten them. There is often one complete strap that covers the boot or two straps to hold the boot in place. It is important that the high back mechanism is locked back into place before riding.

Setting up the bindings correctly has a large impact on whether riding will be efficient and effective or time consuming and tiring. Body type, ability level and style of riding (e.g. freestyle or racing) affect how the individual's bindings should be set up.

The information below will help guide you in setting the bindings as close to the correct width on the board as possible. The stance width is measured in inches from centre to centre of the binding discs.

The binding angles affect the width and balance points on the toe and heel side.

The recommended angles are +15 to +21 front foot and +3 to -6 back foot and it is also important to centre and position the bindings correctly over the heel and toe edge.

Even if only a small adjustment is needed, finding the correct position will make a huge difference to the guests' enjoyment.

SNOWBOARDS

Snowboards come in three main style categories: freeride, freestyle and race. Although, within those categories there are many options available. When choosing equipment it is important to pair the snowboard you choose with your boots, bindings and your preferred riding style.

Freestyle boards are engineered with a twin tip shape or directional twin, where the board is the same shape at both ends. They often have a single radius side cut that is centered or set slightly back. This allows riding in either direction regular or switch, making them very versatile. The flex patterns are usually softer and similar throughout the board to allow for consistency when riding in both directions and performing tricks.

When the bindings are positioned, stance angles can vary from anywhere between +12 to +24 degrees on the front foot and -18 to +3 on the back foot. This is known as 'duck stance'. (Page 23)

Freeriding boards are engineered with a directional shape. A distinct nose and tail with a side cut that is set back more towards the tail. They often have dual or multiple side cut radius designs to allow for optimum performance when turning. This will increase the board's stability and also help the rider perform varying turns and turn radiuses. They come in a range of flex options from softer to stiffer.

These boards can be ridden switch but will perform differently than they would when ridden in the preferred stance of the rider.

When the binding are positioned, stance angles can very between +12 to + 30 on the front foot and -6 to +12 on the back foot. (page ref 23)

Race boards come in two main varieties. Hard boot boards (alpine) and snowboard cross boards.

Alpine racing boards have a narrow design with a narrow waist width, which makes them quicker from edge to edge. This, combined with a stiffer flex makes them ideal for racing. They are also used with plate bindings and hard boots. Because they are stiff they carve and grip the snow very well but are not as versatile as other sorts of equipment. Hard boot equipment requires the rider to manipulate their stance and skills in order to perform correctly. Hard boards require strong edging skills and can be hard to ride at low speed and skid due to the lack of forgiveness in the equipment.

The stance angles can vary when it comes to alpine boards to design and waist width. Some common angles can vary between +40 to +55 on the front foot and +30 to +50 on the back foot.

Snowboard cross boards have a cambered flex pattern that stiffens from the nose to the tail. This allows for forgiveness during the initiation of turns and becomes stiffer through the middle and tail of the board for greater drive, stability and speed. The nose and tail of the board are flatter to avoid being caught or clipped during racing. This allows for less drag and greater aero dynamics. They have multiple side cuts to cater to the varieties of turns and features.

Stance angle vary from +30 to +18 on the front and +15 to -6 on the back.

Positioning of the bindings

Setting up the bindings correctly has a large impact on whether riding will be efficient and effective or time consuming and tiring.

Every body is built differently whether it is height, weight, athletic ability, body shape or the length of one's limbs.

It takes time to develop one's riding and skills.

This can vary depending on the style of riding, beginner to advanced, free ride to free style or even racing.

Below is a guideline to help direct guests and instructors to aid in setting the bindings close to the correct width on the board. (These can vary.)

The binding angles can affect the width and balance points on the toe and heel side.(page?)

The recommended angles for these widths are +15 to +21 front foot and +3 to -6 back foot.

The stance width is measured in inches from centre to centre of the binding discs.

Whether it is .25 of an inch or more, finding the correct stance will greatly help the guests experience and knowledge.

Through experimentation and developing one's eye, over time finding the correct stance will aid in progressing guests and instructors towards their goals.

It is also important to centre and position the bindings correctly over the heel and toe edge.

(Refer to binding angles: Page 23)

SIZING CHART

Riders Height (cm)	Binding Width (in)	Binding Width (cm)
110 to 120	16 to 17.5	40.5 to 44.5
120 to 130	17 to 18.5	43 to 47
130 to 140	18 to 19.5	45.5 to 49.5
140 to 150	19 to 20.5	48 to 52
150 to 160	20 to 21.5	50.5 to 55.5
160 to 170	21 to 22.5	53.5 to 57
170 to 180	21.5 to 23	54.5 to 58.5
180 to 190	22.5 to 24	57 to 61
190 to 200	23 to 24.5	58.5 to 62.5

7.2.2 SNOWBOARD PERFORMANCE FEATURES

There are many other features and characteristics that make up a snowboard and all of these affect the feel and performance of how the board rides. These include:

BOARD LENGTH

A snowboard is measured in centimetres from the tip of the nose to the tail and is one of the most important considerations when choosing a board. If a board is too small it will not support the rider's weight and be unstable at speed. A larger board will be more difficult to maneuver and cumbersome. The board length should suit the rider's size, weight, style and level of experience.

WAIST WIDTH

It is important that the rider can fit their feet across the board without hanging over the edge or being too far inside from the edge. The correct waist width also allows the rider to balance over the edge and have sufficient leverage to tip the board up onto the edge.

WEIGHT

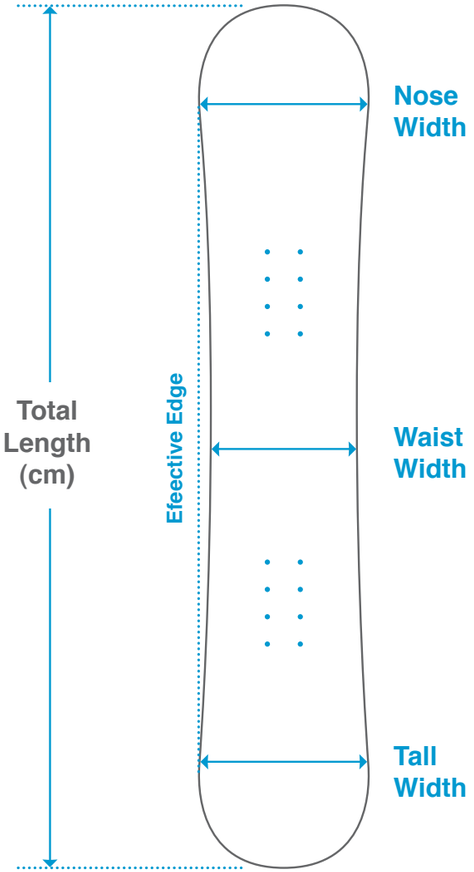
Weight is an important point to consider as riders are always looking for equipment that is lighter and more manoeuvreable for freestyle. Lightness will affect the stability and also the durability of the board, as they tend to bend more easily and can be prone to snapping. Heavy boards can cause fatigue and make it hard to manoeuvre.

EFFECTIVE EDGE

Is the amount of edge that comes in contact with the snow when the board is tipped. The effective edge is used to make the board turn. A board with a large effective edge has greater stability. A board with less effective edge can be manoeuvered more easily.

SIDE CUT

The waist of the snowboard is narrower than the nose and tail of the board. This curved shape is known as the side cut. The side cut directly relates to the side cut radius (page 104). There are many different types of side cut designs ranging from single, dual and multiple side cuts. The depth of the side cut can affect the radius of turns.



CONTACT POINTS

When the snowboard is placed flat on the snow, and there is no pressure or weight being applied by the rider, the areas touching the snow are known as the 'contact points' [indicated with a blue dot •].

This can vary with different cambered boards.

CORE PROFILES

The latest changes in core profiles have seen many variations in the way boards ride, perform and respond. It is important to work out what you are looking for in the board you use.

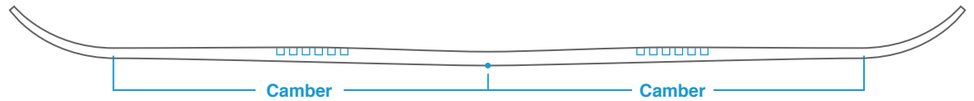
When you stand on a board, it is worth thinking about how the core profile, flex and side-cut work together. These core profiles are referred to as camber.

Positive camber

This is the bend in the board when it is placed flat on the ground. The nose and tail of the board touch the ground and the waist or middle of the board is off the ground. Camber helps to keep the whole board on the snow to improve the grip of the edge. Softer boards tend to have less camber and stiffer boards more. For example an alpine board racing board would have a lot of camber. There are two contact points.

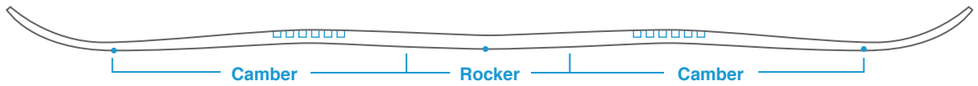
Reverse camber/ rocker(banana boards)

This style of camber is designed so the waist or middle of the board is touching the ground when flat and the nose and tail of the board are off the ground. This allows the board to pivot easily between the feet but can require greater fore/ aft movements to the tip and tail to gain grip whilst turning. There is one contact point.



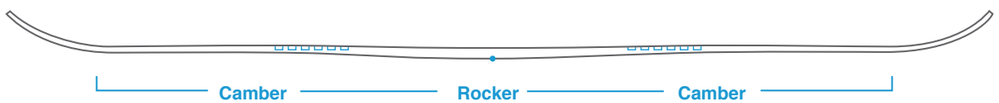
Dual/double camber (hybrid)

This board is a combination of camber and reverse camber technology. The board has contact points in the middle and ends of the board while under the feet the camber is off the surface. This allows for greater contact points on the snow but can provide a slight inconsistency in the flex of the board when pressuring or running the board flat. There are three contact points.



Gullwing/ V-rocker

A combination of reverse camber and double camber. The board has one contact point in the middle of the board with double camber towards the ends. The overall flex pattern is reverse camber that still allows for the nose and tail to have a camber performance. There is one contact point.



Flat/zero camber/flat rocker

This style of board has no camber allowing the board to remain flat to the surface. The board can maintain a consistent contact with the snow but lack some rebound when performing certain manoeuvres. There is one large contact point.

Cam-rocker

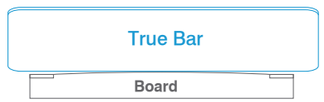
The design of the board has a positive camber between the feet with rocker at the nose and tail of the board. The contact points are on the nose and tail and with the rocker design allow for less resistance on the ends of the board. There are two larger contact points.

S-camber

These styles of boards have a positive camber towards the back foot, which allows for the rocker to extend from the front foot to the nose of the board. This camber allows for greater float and stability in the powder. There are two contact points, the nose is larger.

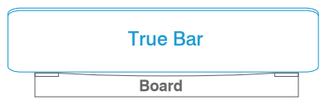
Base high

These boards have higher base than the edge. This means there is a small bevel between the base and edge, allowing the board to roll slightly from the centre of the board to the edge before it engages. Beginner and powder board can have this design.



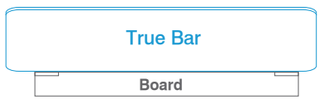
Magna-traction

The edge of the snowboard has a wave-like design along its length to help with the board grip on the snow. It is most commonly used on reverse chamber and dual camber boards to compensate for the flex patterns.



Construction materials

Snowboard construction materials affect how the snowboard bends, turns and feels on the snow. Materials such as wood, fiberglass, carbon fibre and Kevlar® are some examples of the inner workings of a snowboard core. Other materials used in constructing a snowboard might include plastic, resin, wood, steel or metal.



Construction type

As with the materials used, the way they fit together affect the ride. There are a number of engineering factors that go into the construction of a snowboard. The two common construction methods are cap and sandwich construction. These refer to how the materials are constructed over the edge of the board.

Torsional and longitudinal flex

The materials used and the way the board is constructed will give the board its flex. When a snowboard bends lengthways it is known as longitudinal flex. When a board is flexed sideways or twisted it is known as torsional flex. A stiffer board is less forgiving than a softer board. Some board designs allow for greater use of torsional flex improving the rider's feel for releasing and engaging the edges.

Women specific boards/ bindings/ boots

There is a wide range of equipment specifically designed for women. The designs range from lighter materials, boards with a range of flex patterns and waist widths. Boot and foot beds designed to fit women's feet. Bindings that correctly fit women's boots and graphics that cater specifically to women.

7.2.3 TUNING SNOWBOARDS

From the first time rider to a world cup athlete, everyone will find it easier to ride safely and to their potential if their board is kept in good condition. As professional instructors, we need to maintain our equipment.

The following are some ideas and guidelines to keep your board in good shape. Remember, if you have limited experience at tuning your board, be careful, as it is easy to either damage your board or suffer an injury. Unless you have someone to teach you to tune, it is suggested to leave this to the professionals.

Reasons for tuning your equipment include: enhancing performance, making carving easier, extending the life of the board and saving energy. Remember, a sharp tool is a safe tool and can save time and energy when tuning your equipment.

HOW OFTEN SHOULD I TUNE?

This depends on the snow and conditions of the mountain. If you are riding in powder regularly then it won't need to be done as frequently. If the snow is hard pack and icy then you may need to tune around the edges daily and the base up to three times per week.

How to tell?

There are a number of ways to tell whether the board needs a wax:

- **The board is not gliding across the snow or is running inconsistently.**
- **If the base of the board looks dry, white or discoloured.**
- **If the board feels rough or furry.**

If the edges need to be tuned, you can look for;

- **Rust or tarnish on the edges.**
- **If it doesn't seem to be running straight or won't stay flat when in a straight run or on a T-bar track.**
- **If there are burrs or sharp, inconsistent damage along the edge.**
- **Not gripping on the snow or ice.**

The best test is if you have forgotten when you last had a tune, then it is time to get one!

Steps for tuning

All board work should be done on and in correct snowboard vices so that the board does not move. Movement can affect the end result and increases the chance of causing an accident while tuning.

The base

The two common styles of base construction are extruded and sintered.

Extruded construction uses a less expensive method of base material and construction. These materials are heated, pressed and moulded to help create the base. Sintered construction uses more expensive materials and uses heat and compression to create the base.

GRINDING BASES

If the board base is badly damaged, base high or edge high, you may need to start your tune with a base grind. It is almost like starting all over again as it gives you a flat working surface. This does not need to be done for every tune. By using a true bar or metal scraper and holding the board up to some light, you will be able to tell what work is needed. A flat base is ideal for beginning a tune. The diagram below shows three very different board bases:

- **Edge high or concave is where the edges are higher than the base causing the board to run straight and making turning more difficult.**
- **Base high or convex will cause the board to wander and make it difficult to put on edge.**

Some new boards are designed with variations in the base. Be careful not to grind the board performance away.

Base preparation

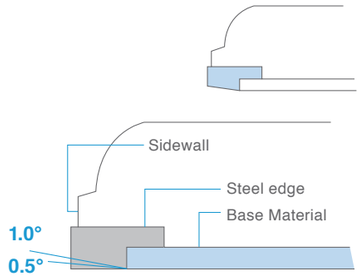
- **Clean the board and check the base for deep gouges.**
- **Fill these gouges with P-tex (light using matches or a lighter until it burns by itself).**
- **Hold P-tex candle low and close to the base so that the flame burns blue.**
- **Drip molten P-tex into holes to fill them.**
- **Once holes are filled and P-tex has cooled, scrape excess off with a sharp metal scraper.**

Note: to sharpen the metal scraper, lay a file flat on the bench and push the scraper toward the tail of the file. Repeat until the scraper is sharp.

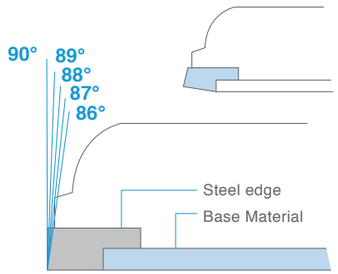
New snowboards can be coated with a base preparation wax to help clean and prepare the base.

Structure

The structure of a base refers to the small lines or grooves in the base that help stop suction. The grooves also disperse water and make the board slide more easily. Stone grinding is the best way of achieving a good structure. You can also run a metal or coarse brass brush longitudinally along the base to form these channels. The wetter the snow, the coarser the structure needs to be. It does not need to be done for every tune but does help improve the overall speed of the board. Softer brushes can be used to clean the existing structure and remove imperfections.



Base Edge Bevel usually 0.5°–1.0°



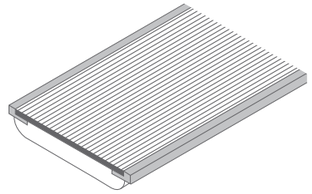
Side Edge Bevel

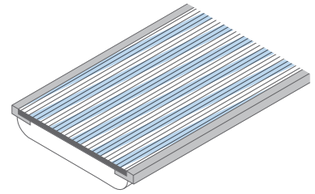
De-burr edges

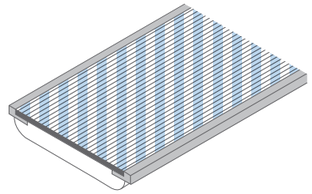
This is done to help remove hardened steel and burrs and to get the board smooth and ready for sharpening. Use a diamond file or stone to avoid damaging your files. It also protects the iron and allows the iron to glide easily for consistent waxing.

Base edge bevel

If your base edge is perfectly flat edge-to-edge, the board will be hard to steer and feel like it is catching. By placing a true bar on the base edge you can see the approximate degree of bevel. Use a file with a guide to angle the base edge to between 0.5 and 2 degrees. 0.5 to 1 degree is good for general teaching, however, degree of bevel is a personal preference. Place the file flat on the base and pull toward you with light downward pressure. A larger base edge angle under the base of the board can also be preferable for a board that is used specifically for rail slides.


Linear Structure


Cross Structure


Broken Structure

Side wall removal

If the board has vertical sidewall or the edge has worn away, you will need to remove the hard sidewall material (just above the side edge). This is done so that the file has clean contact with your edge and does not become clogged with the sidewall and hard to use. To do this you can use a special sidewall removing tool, a rasp, and the end of a file or a sharp metal scraper. Cut the sidewall back to the desired angle consistent with the original degree. Be careful not to remove too much sidewall, as this will make the board harder to release from the edge. It also exposes the edge to potential damage.

Side edge filing

To penetrate ice an edge needs to be 90 degrees or less. If the point of your side edge is round, you will skid on ice. The more acute the edge angle the easier it will be to cut into the ice, although this will cause the edge to damage more easily. If you have a 1 degree base bevel, you will need to side file at least 89 degrees. The sharper the edge the easier it is to cut the snow, but the harder it is to steer. Using a file guide, attach the file and pull with long smooth strokes until the edge becomes clean and sharp. Avoid filing one area or the edge can become wavy. Remember not to push files, rather pull towards you.

De-tuning and polishing

Your edge should now be sharp. However, the filing leaves microscopic burrs which need to be taken off. Use a gummy or soft stone and rub it along the edge once or twice. Using a fine diamond or ceramic stone you will be able to polish the edge. This will keep the edge sharp but not too grabby. After stone grinding, check the tip, and tail of your board and with a stone or diamond file round the edges slightly where they do not touch the snow. This will prevent the board hooking and catching especially in bumps and ruts. If you feel you have to de-tune your tips and tails much more than this, the board may be too long for you or check if it is edge high. At the start and finish of the effective edges use a hard gummy stone or fine diamond stone to de-tune the edges, especially for beginners with new boards. This will aid allowing a little forgiveness when turning on new or just tuned equipment.

Waxing

If the base of your board is dirty, clean it with a base cleaner or you can use a quick hot wax and scrape. By scraping the wax off while hot, the dirt becomes trapped in the wax and cleans the base. It is best to iron in wax to protect the base of the board. Wax that is ironed in is also longer lasting. To wax the board, lay the board base up. Heat the iron to approximately 120 degrees and drip wax onto the base. If the wax starts to smoke the iron is too hot. Iron wax in constantly by moving the iron along the base until the wax starts to stay molten for 5 to 10 seconds. Allow the wax to dry and cool. Leave the board this way to store and transport between seasons. Hard/cold waxes last longer but will be slightly slower when the temperature is warm. Soft/warm waxes wear off faster and will be extremely slow when snow is fresh and cold. Before waxing, loosen the binding screws as it will lessen the chance of creating dimples in the base of the board. New snowboards can be waxed two or three times before use to saturate the base and help prolong the performance of the board.

Scraping/ brushing

The wax in the base pores is what protects and makes your board go fast. Scrape the excess wax off the base and side edges with a plastic scraper. Using a nylon or horsehair brush and brushing the wax out of the structured grooves will improve speed. To sharpen the scraper, push it along a file or use a scraper sharpener.

After a little practice, tuning will become easier and faster and you will notice a huge difference in your riding.

Other ways to maintain your equipment:

- **Wipe your board down after every use. This will help prevent rusting along the edges of the board.**
- **Carry a basic tuning stone and smooth your edges daily. It will save the side of your jacket too!**
- **Seal the bases and edges of your board with storage wax at the end of every season to keep them from oxidising and rusting.**
- **Use a protective carry bag when travelling and don't leave your board un-supported or on the ground.**

TUNING KITS

Start with a basic kit and add to it slowly. It takes time and money to build up a really good kit. Clean your tuning equipment to help with longevity and optimal tuning performance.

Basic kit

- **Mill bastard file 20cm**
- **Gummy or soft stone**
- **File**
- **Plastic scraper**
- **Hard stone for de-burring (diamond stone preferably)**
- **89-88 degree, file guide and clamps**
- **P-tex candles and lighter**
- **Universal wax**
- **Iron (the ones with no holes are best)**

Upon winning the lottery

- **Various files and gauges**
- **Different angle file guides/ adjustable roller guide**
- **Base file guides (0.5 to 2 degree)**
- **Sidewall remover**
- **File card to remove filings from file**
- **Nylon, horse hair and brass brushes**
- **True bar**
- **Wax selection for different temperatures and racing**
- **Structure tool**
- **Waxing iron (A real one that you didn't steal off mum)**

CHAPTER SEVEN: General Knowledge

SECTION THREE:

OUR ENVIRONMENT

7.3.1 THE AUSTRALIAN ALPS

All ski resorts on the Australian mainland are found within the southeast area of the Great Dividing Range. This mountain range extends along the east coast of Australia.

A new Alpine National Park, which includes Kosciuszko National Park in NSW and most of the Victorian ski resorts, now makes up the largest national park in Australia.

Ski resorts make up a very small portion of the Alpine National Park. As our chosen sport and profession takes place in this environment we must respect the 'leave no trace' code and promote the idea of minimising impact in the park through recycling and not leaving rubbish on the slopes.

The climate of the high alpine regions of southeastern Australia is common with mountains elsewhere in the world: colder, wetter and generally more unpredictable than the weather patterns at lower altitudes. Average rainfall is high, up to and greater then 2000mm annually, and much of this falls as snow during the winter months. At this time snow covers a large portion of the area above 1500 metres and can often fall much lower.

In summer the rainfall is fairly low and weather generally fine and warm, although summer snowfalls and thunderstorms are not uncommon. Rain and snow, when it arrives, will often clear away overnight although, in winter and early spring, it can persist for many days. Unseasonable weather rarely lasts more than a day or so and in general, fine weather prevails for much of the warmer months.

The main vegetation pattern of the Alpine Region can be loosely grouped into three zones: alpine, sub-alpine and mountain forests. The altitude of the tree line is controlled by air temperature that falls as altitude increases. The extent of the tree growth is generally lower on the cooler southern slopes and it decreases in altitude in the southern latitudes. The tree line can vary from 1500 metres in Victoria to 1900 metres in NSW.

The alpine zone is bare of trees but has low stunted vegetation which, due to exposure to high wind, forms close, ground-hugging mats or tussocks. There are many small wildflowers within this region and their blooms appear soon after the snow disappears in late spring. The flowering season continues through to late summer but it is usually best towards the end of December.

Another common feature of the alpine zone is large bog areas that are kept permanently wet by springs and ground water. These bogs can be up to two metres deep and consist of both living and dead vegetation but mainly sphagnum moss. This acts like a sponge, absorbing

water from rain and melting snow and releasing it slowly throughout the drier periods of the year.

The sub-alpine zone is characterised by snow gum forest, the under-storey of which is fairly open. Moss and lichen grow on the trees and the smooth bark assumes bright colours ranging from grey through green to red, especially noticeable in the late autumn. Many of the alpine zone species of smaller plants grow in the snow gum forest but they are more upright and larger than their alpine relatives. The undergrowth in these forests varies from alpine grasses to native broom and alpine pepper.

The mountain forest consists of a far greater range of trees, the snow gum being replaced by taller, straighter species such as alpine ash, woollybutt and stringybark.

At lower altitudes on the southern side of the Great Dividing Range, the world's tallest flowering plant, the mountain ash, can be found. The eucalypt forests in the Alpine National Park are also among the best examples of mountain forests in the world and offer a unique skiing experience.

The Alpine National Park also contains many sites of interest such as the Snowy Mountains and Kiewa Valley Hydro Schemes, the historic town of Kiandra and remaining huts of the high country.

The Snowy Mountains Scheme is one of the most complex integrated water and hydro-electric power schemes in the world. The scheme collects and stores water that would normally flow east to the coast and diverts it through transmountain tunnels and power stations. The water is then released westward into the Murray and Murrumbidgee Rivers for irrigation. The scheme took 25 years to build and was completed in 1974 with the help of more than 100,000 people from more than 30 countries.

- **Kiandra was not just a town for gold miners and a residence for the Snowy Scheme; it was also the birthplace of skiing in Australia.**

As miners tended to be transient, little remains of the Kiandra settlement except some remnants of the mining works, the cemetery and some interpretive displays.

- **Huts of the high country have been built and lost from the area as far back as the 1830's.**

Most were originally built for high country grazing and many of the remaining huts are now a major part of our local history. Today, the majority of remaining huts are used for emergency shelter for snow travellers and bushwalkers. Unfortunately many have been destroyed in bushfires.

Please remember that the Alpine National Park is an area where we practice our profession. It is of utmost importance that you, your group or other users treat this area with care. As a caring snowsports instructor and citizen, further reading on the ecology/geography and issues facing the alpine area in Australia is recommended. Get to know the place where you teach and ski.

It is of great benefit to yourself and to your clients to know a little about your immediate and surrounding alpine environment. Know a few of the closest most prominent peaks near your ski resort. Find out some interesting facts about how they were named or how high they are. Did you know that Club Lake and Blue Lake in the Snowy Mountains contain the freshest water in Australia (lowest salt content)? Did you know that skiers used to run downhill races on some of the back country slopes behind Charlotte Pass?

For further reference one of the better texts to reference is *The Australian Alps* by Deirdre Slattery, 1998.

7.3.2 CLIMATE

The weather can change very quickly in the mountains. Meteorological forecasters study the movements of large masses of the atmosphere but deeply cut mountain ranges create eddies in the atmosphere that cannot be accurately predicted. As a result, the mountains produce their own weather. It should be noted that with advances in forecasting techniques the weather reports give reasonable accuracy for the whole region. Just be prepared for a change and that way you can always be prepared to enjoy the mountains.

Precipitation

In the winter months there is generally a strong westerly airstream over southern Australia, bringing orographic precipitation as the result of moist air rising over the mountains and cooling, which then falls as either rain, snow, ice, hail or mist.

It should also be noted that different parts of the alpine region receive varied amounts of precipitation due to their location, however, you can expect more consistent rainfall at the highest parts of the mountain range. The eastern side of the mountains tends to be in a rain shadow where less rainfall is produced (i.e. along the Monaro Plains/Snowy River valley and the Omeo valley).

Snow

The snow that falls in the alpine areas tends to stay for many weeks of winter mostly above about 1400-1500 metres with the most usable depth for snow sport enthusiasts above 1600 metres.

Snow depths for the Kosciuszko National Park have been measured since 1954 along Spencer's Creek, near Charlotte Pass, due to the lack of snowdrifting in that area. Average snow depths tend to be more than one metre during the period of July to mid-October, although this varies from year to year. One of the highest snow depths recorded was 3.6 metres.

Temperature

Average daily temperatures in the mountains range from about -5°C to about 5°C in the winter, to a summer average of 5°C to 20°C.

The thing to remember though, is that the temperature falls on average by about 7 to 8 degrees for every 1000m in altitude increase. The tree line on the mountains is there because the average temperature becomes too cold for trees to grow at that altitude. It is worth noting that some valleys of the sub-alpine zone will also lack trees. Known as an 'inverted tree line' it is caused by cold air pouring down off the high country.

Wind

In winter, the prevailing winds are westerly and quite often very strong. Gale force conditions are not uncommon and winds have been regularly recorded above 100km/h.

Warnings about the possibility of dangerous weather

Temperatures that are below freezing are very common and can happen at any time of the year in the high country. Anyone parking a car overnight should use antifreeze in their car to avoid unwanted complications.

Clear, sunny skies combined with cold temperatures can disguise the risks of high intensity sunlight, especially the ultraviolet component. As a result, it is your responsibility as an instructor to promote the Australian 'Slip, Slop, Slap and Wrap' cause to reduce the probability of skin cancer.

Heavy rain and the possibility of lightning are ever-present in the alpine environment. The height of lift towers and the surrounding peaks make a good conductor of electricity, so it is always safer to be inside in these conditions.

The combination of cold, wet, windy weather (classic Australian high country conditions) is the exact catalyst for producing hypothermia in the under-prepared snowsport enthusiast. Be aware and be prepared for any changes.

7.3.3 AVALANCHE AWARENESS

Avalanches do happen in Australia and they do kill.

'7.20am 12th of July 1956, tragedy struck as an avalanche raced down the slopes of Mt. Clark in the Kosciuszko main range area, wiping a small eight-bed prefabricated lodge off its foundations. It instantly killed one of the occupants'.

The path of this avalanche was no more than 50 metres across. It was the result of a heavy snowfall on previously icy conditions, something that is not uncommon in Australia.

Other small slips or avalanches have been sighted over the years in many of the resorts including Mt. Hotham, Mt. Buller, Mt. Nelse and even Smiggins Hole.

This section of the manual is by no means intended to make you an expert on avalanches. It aims to help you to gain an awareness of the natural warnings and a respect for the dangers of avalanches.

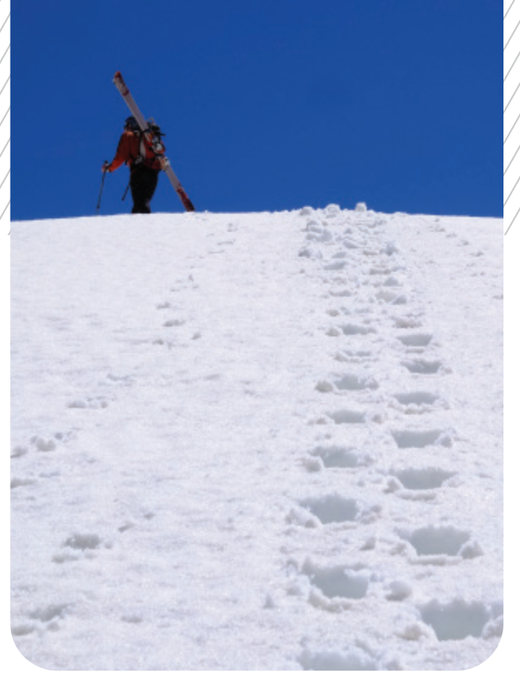
Factors

Many things can cause the snow to weaken, become unstable and fail to hold to the mountain.

Snow pack that has been affected by the wind, sun, temperature and amount of snow is a major factor. What makes it dangerous is when the weight of the snow pack exceeds the force to hold it in place on the slope. The steepness of the slope and its orientation (the direction it faces) and even what the snow is laying on, e.g. rock, can also affect the way snow is deposited and therefore its load capability.

Triggers

- Rapid loading of snow slopes by additional snowfall, rainfall or wind drifting of snow onto the leeward slopes
- A sudden temperature rise
- Long cold periods
- Explosions or a sonic boom (watch out for the air force training in the mountains)
- A snowsports enthusiast (their additional weight on the snow surface is the most common trigger of all).



Important to also be aware of:

- **Most fatalities are caused on slopes of 30-40 degrees. If it looks like fun to ski, then it will probably be steep enough for an avalanche.**
- **Topography, in other words the lay of the land. Gullies are very common in our mountains and can be nasty terrain traps. Look out for signs such as a cornice at the top or wind scouring on the top of the hill that deposits snow on the leeward slope.**
- **In 2008 an avalanche fatality occurred and was triggered by someone standing on top of a cornice and it collapsing underneath him. If possible, steer clear of cornices because when they break they bring down a lot of weight and can trigger a slide much bigger than the cornice itself. This avalanche was around 50m x 50m and several metres deep.**

Types of avalanches

- Loose snow: typically start at one point and grow in size as they descend.
- Slab avalanche: readily identified by the well-defined fracture line where the moving mass of snow breaks away from the rest of the snow pack. Slab avalanches come in many forms, wind slab, wet and soft and as a result they can be quick or slow release (wind slabs are very common in Australia and can be the most destructive type of avalanche).
- Climax avalanches occur when many snowfalls or even all the full season's snow can come off the mountain at once.
- Ice avalanches happen as a result of an ice wall on a cliff or seracs come loose causing many tonnes of ice to come crashing down.

Hazard evaluation and critical factors

(from *Avalanche Safety for Climbers and Skiers*, by Tony Daffern)

1. COULD THE SLOPE PRODUCE AVALANCHES?

Is the slope steep enough to slide?

- **slopes greater than 30°**
- **convex rollovers are more likely to fracture and create a slide**
- **cliff band**

What is the orientation of the slope to wind?

- **lee slopes face away from the wind. Is the wind or recent wind blowing snow onto this aspect and loading it up with layers of snow?**

What is the orientation of the slope to the sun?

- **northerly facing slopes exposed to lots of sun. (causing large temperature changes as the sun heats the snow during the day).**
- **first major thaw of spring.**

What is the nature of the slope?

- **open slopes**
- **thin forest**
- **confined slide path**
- **gully or bowl**

2. IS THE SNOW STABLE? COULD IT FAIL? HOW DEEP IS THE SNOW PACK? ARE THERE ANY SIGNS OF AVALANCHE ACTIVITY?

What layers are there in the snow pack?

- **very hard or soft layers**
- **weak bond between layers**
- **30cm or more snow above a weak layer**
- **wet snow**

How much fresh snow has fallen?

- **snowfall greater than 2cm per hour**
- **new snow depth greater then 30cm**
- **slow settlement of new snow**
- **very light or heavy new snow**
- **heavy stiff layer above a light weak layer**
- **heavy rain**

Wind

- **moderate or strong wind**
- **cracking and settling of snow**

Air Temperature

- **rapid rise in temperature**
- **above freezing temperatures**
- **sun on slope under consideration**
- **sun with hazy sky**
- **temperature inversion**

Humidity

- **high relative humidity during snowfall or periods of moderate and strong winds.**

3. WHAT WILL HAPPEN TO ME IF THE SLOPE AVALANCHES?

Depth of snow

- **deep weak layers in snow pack**
- **foot penetration greater than 60 cm**

Type of avalanche

- **stiff slab above weak layers**
- **heavy wet snow**
- **slope not avalanched recently**

Terrain

- **long open slope above**
- **restricted deposition zone**
- **drop off below**
- **trees to wrap around**

4. WILL CONDITIONS GET WORSE?

- **continuing snowfall**
- **increasing temperature**
- **strong wind**

Rescue

As a snowsports instructor both in Australia and more often overseas, you may be asked to assist in a rescue. In most cases people with more experience will usually be called upon first, although in a ski resort, employees are a good source of volunteer help if an avalanche has caught a victim.

Apart from ski patrol, other search personnel may include members of the VicWalk Bushwalkers Search and Rescue, SES, and State Police Search and Rescue squads.

There are a few pieces of equipment and terminology that you may come across during a search that you will need to be able to recognise and understand the purpose of so you can be of help:

- Fast surface search: in most cases the best thing to do is to make a quick surface search of the area as victims will often only be partially buried. Finding some small part of them sticking out of the snow can dramatically improve the chances of survival;
- Probes are used to stick down into the snow to feel for hard objects that may be victims who are trapped. A well-organised search line works best by probing in a systematic search pattern, even if there are only two searchers. If you don't have a probe, use a ski pole;
- Avalanche search beacon or transceivers are devices that transmit and receive signals. The key here is both victim and searcher need to be carrying one. When enjoying snowsports in avalanche prone areas such as the bac kcountry or heli-skiing throughout the world, carrying a transceiver is a necessity;
- Avalanche shovel is simply a lightweight, large bladed shovel that can be carried by a back country traveller. If you don't have one, use your hands for digging;
- Helicopters are often used to transport injured people from the scene of an avalanche. It is worth noting that a helicopter has a blind spot that covers all of the back of the craft around the tail blades, so you should always approach a helicopter in the pilot's field of vision;
- Avalanche rescue dogs are often used in a search situation as their keen sense of smell can be of great benefit when looking for victims. A few things to remember if helping in a search where dogs are being used:

1. Always keep the probe lines moving. Do not wait for the dog team unless instructed by the dogs' master.
2. Never contaminate the search zone with food scraps, urine, cigarette butts etc.

Risks

When evaluating the risk of an avalanche, the smart way of making decisions in the mountains is based on many factors, not just one test. Assess factors such as recent weather, a variety of tests, field observations and good guiding procedure (one person exposed at a time) before going near avalanche risk terrain.

There are always inherent risks associated with action sports such as the snowsports we partake in. The instructor though, like a super hero, seems to feel that the chance of hitting an obstacle (for instance) is very small. However, we cannot control an avalanche. The risks involved in riding an area where snow may slip are very high and should be taken very seriously.

If your job allows you to enjoy a northern winter in areas where avalanches are more prevalent, then you should do everything in your power to keep furthering your knowledge when it comes to the dangers of avalanches. Be prepared to avoid a bad situation, as avoidance is the only cure.

Some interesting websites to reference include:

http://www.fsavalanche.org/slideguide/new_slides/slide1.html

http://www.ananova.com/news/story/sm_1261997.html?menu

SECTION 8: REVIEW

Section 1 - History

1. **In which NSW town was the first Australian ski club formed and in what year?**
2. **The APSI was formerly known as which association and in what year was it founded?**
3. **What year were Snowboard events included in the Olympics?**
4. **Where and when was the first Interski held?**
5. **In which years did the following disciplines join the APSI:**
   a) snowboard
   b) telemark
   c) Nordic

Section 2 - Equipment

1. **What is the most versatile snowboard for a guest and instructor to use?**
2. **What might an instructor need to be aware of when demonstrating on new equipment?**
3. **What are some reasons for tuning your snowboard?**
4. **Descrive good stance angles for beginner snowboarders?**
5. **What is the responsinility of the instructor if you notice your guest has an equipment issue.**

Section 3 - Our Environment

1. **The weather can change very quickly in the mountains. Which factors of the Australian alpine climate should we be careful about?**
2. **What types of avalanche can occur in the Australian Alpine Environment and briefly describe each?**
3. **Explain the environmental philosophy of the "leave no trace" code.**
4. **Vegetation in the alpine region can be grouped in which three zones?**
5. **What's the best time of year to look at wild flowers?**
6. **Explain a fast surface search?**

APPENDIX

1. MEDICAL CONDITIONS AND ENVIRONMENTAL INJURIES

MEDICAL CONDITIONS

The following information is taken from "Coaching Athletes with Disabilities: General Principles."

Asthma

Definition: A condition in which the bronchial tubes become unusually sensitive to a variety of different "trigger factors" that can stimulate a narrowing of the bronchial tubes making it difficult to inhale and take oxygen into the body, and/or exhale in order to expel carbon dioxide.

Symptoms: The most common symptoms are coughing, wheezing, chest tightness, difficulty in breathing, fast heartbeat, anxiety and tiredness.

Symptoms may cause a sudden attack that may last anywhere between a few minutes to hours.

Precautions: The common trigger factors are:

- **Animal fur or hair**
- **Colds, sore throat or influenza**
- **Exercise**
- **Cold weather or wind**
- **High or low humidity**
- **Sudden changes in weather or temperature**
- **Some foods**
- **Smoke or fumes**
- **Some emotional reactions e.g. laughing, crying or excitement**

Management: The basic approaches to managing asthma are avoiding the trigger factors and taking medication. Students with asthma will be exposed to some of the trigger factors when skiing. However, they should not be disadvantaged due to their condition. Your awareness of the condition and a management plan will ensure that they are at minimal risk.

The most common methods of administering asthma medication are the 'dose inhale', a puffer (which may best be used with a spacer) and the nebuliser (inhaling through a mask attached to a small compressor). In our situation the most common is a puffer. Ensure you know of any children (or adults) in your group that may have asthma and that they have a puffer with them at all times.

Dealing With An Acute Asthma Attack

1. **Allow the student to use prescribed medication as soon as possible.**
2. **NEVER encourage the person to try to keep going through the attack.**
3. **Help the student to relax by keeping calm and avoiding panic. The anxiety of your student will increase if those around them are not calm.**
4. **If the symptoms do not respond after 4 doses of mediation, seek medical help.**

Diabetes

Definition: A disease characterised by insulin deficiency. Insulin helps to regulate blood glucose concentration and how glucose enters the cells of the body. If insulin supplies are deficient, then the energy that glucose provides does not reach the cells and the body cannot function properly.

Symptoms: Hyperglycaemia (High Blood Glucose):

- **Excessive urination and thirst**
- **Itching skin**
- **Slow healing sores and cuts**
- **Blurred or reduced vision**
- **Increased appetite with weight loss**
- **Tires easily, drowsiness, fatigue**
- **Headaches**
- **Nausea and sluggishness**
- **Unconsciousness**

Hypoglycaemia (Low Blood Glucose):

- **Hunger, pallor, weakness and perspiration**
- **Mental confusion**
- **Muscle spasm/tremor (the shakes)**
- **Nausea**
- **Changes in behaviour (aggression or unusual quietness)**
- **Loss of balance**
- **Blurred or jumpy vision**
- **Fits**
- **Sleepiness**
- **Coma**

Any student who displays any of the above symptoms should follow the guides described below.

Precautions: In most cases, diabetes presents no real problem in terms of being able to learn to ski. However, the increase in the intensity of exercise, the climate and altitude change will affect the balance of diet and medication.

Management: Treatment is usually based on 2 -4 injections given by the student (or their parents) per day. To balance the insulin, regular meals and snacks containing slowly absorbed sugars (complex carbohydrates such as bread or pasta) should be taken.

Dealing with diabetics in emergency situations

Usually the diabetic will be able to tell you that they require rest. If this does not occur and the student collapses, if needed, move them to a safe place and keep them warm.

If the student is conscious:

- **Give them glucodin tablets, if not available then sugar. This can take the form of a sweet drink (not diet drink), barley sugar, jelly beans or honey.**
- **Follow with complex carbohydrates such as a sandwich or cracker biscuits.**
- **Observe the student until they recover completely.**

If the student is unconscious (fortunately this is rare):

- **Place the student in the coma position and send for help immediately.**
- **Do not give them any fluid or tablets as they may choke.**
- **Observe the student until medical assistance arrives.**

Epilepsy

Definition: This term is interchangeable with seizure disorders and convulsive disorders and refers to a condition that results in the temporary breakdown of the central nervous system. Breakdowns can range from a few moments of inattention to unconsciousness. They may have uncontrolled contractions of the limbs and body lasting up to five minutes or more. It is not contagious, nor does it indicate any intellectual disability.

Symptoms: As seizures range from moments of inattention (Petit Mal) to fits (Grand Mal), the symptoms also are varied. They may include:

- **Twitching of the eyelids or eyebrows**
- **Ceasing activity**
- **Staring vacantly**
- **An "aura" or sensation may occur prior to a fit**

Precautions: Students on medication may show effects such as drowsiness or inattentiveness or lose concentration during an activity. Avoid rapidly changing environments, flickering lights, flashing or strobing lights. Flat light or tree skiing may activate a seizure.

Management: Most students will have a medication program and will inform you of their condition. If you suspect a student has epilepsy you should monitor for signs or symptoms.

Dealing With A Seizure Or Fit

1. **Do not restrain the student.**
2. **Do not put anything in their mouth.**
3. **Let the seizure take its course.**
4. **Make the environment safe.**
5. **Clear the area around them and if possible place a jumper or pillow under their head 6. When the seizure has subsided, turn them on their side and keep them warm and calm.**

Seek Medical Assistance Immediately If:

1. **A seizure continues for more than 10 minutes.**
2. **Seizures continue one after the other.**
3. **The person injures himself or herself.**
4. **The person is not a known epileptic.**

ENVIROMENTAL INJURIES

Exposure

Exposure can be fatal. It is the rapid failure of the body to conserve heat. Watch out for the warning signs – weariness and reluctance to carry on, clumsiness, loss of judgement or collapse. Shivering may be absent. The combination of fatigue, poor insulation (from wet or thin clothes) and cold, wet, windy conditions can lead to death.

Cold Kills

The moment you begin to lose heat faster than your body produces it, you are undergoing exposure. Two things happen; you voluntarily exercise to stay warm and your body makes involuntary adjustments to preserve normal temperature in the vital organs.

A decrease in body core temperature to a point at which normal muscular and brain functions are impaired is known as hypothermia. If the core body temperature falls, muscle, brain and circulatory failure occurs.

Physiological mechanisms act to maintain body temperatures in a cold environment by:

- **Constriction of blood vessels in the skin and extremities. This will result in a decrease in blood flow, which leads to a decrease of temperature in the skin to a level close to the environment. This will help reduce heat loss.**
- **Shivering which helps produce heat but it burns up more energy and leads to exhaustion.**

Stages of Hypothermia

Mild

Sensation of numbness, shivering, minor impairment in muscular performance

Slight muscular un-coordination, weakness, slow stumbling pace, confusion, and apathy

Gross muscular un-coordination, stumbling, mental sluggishness, slow thought and speech

Shivering stopped, severe muscular un-coordination, unable to walk, incoherence, confusion, irrationality

Muscular rigidity and semi-consciousness
Unconsciousness

Death

Severe

Prevention

Hypothermia is easy to prevent. When it occurs it is usually from lack of prevention rather than unavoidable circumstances. These simple measures will prevent the likelihood of hypothermia:

- **Adequate protection from cold, wind and moisture.**
- **Regular intake of food and non-alcoholic drinks.**
- **Sound planning, training and experienced leadership.**

Be alert for early signs and symptoms:

- **Fatigue**
- **Shivering**
- **Forgetfulness**
- **Stumbling**
- **Slowness**
- **Paleness**
- **Slurred speech**
- **Behaviour change – unusual or irrational**
- **Apathy**
- **Weakness**
- **Person feels 'cold' or 'strange'**
- **Confusion**
- **Careless about protection against the cold**
- **Lack of coordination**
- **Exhaustion**

Treatment:

- **Remove from cold environment**
- **Remove wet clothing**
- **Body heat – body-to-body contact/huddle together. This is the best way.**
- **Use blankets**
- **Insulate body, especially head**
- **Hands in armpits**
- **Give a conscious and alert person sips of lukewarm drink and something to eat**
- **Seek medical aid**

DO NOT rewarm person rapidly – it may cause shock or death.

DO NOT put body parts in water.

DO NOT give alcohol or cigarettes.

DO NOT massage or rub extremities.

DO NOT encourage exercise if tired.

DO NOT expose person to hot air or radiant heat as it may cause burns.

Things to remember

- **The majority of heat loss is through the head.**

Young children have a larger head in proportion to the body compared to adults; therefore a greater percentage of heat is lost through the head.

- **Wind chill.**
- **Wet clothing: children have more surface area to volume compared with adults.**
- **Redness will return and a person will feel pain as warming occurs.**

Heat Exhaustion

Heat exhaustion can occur in the alpine environment. For example, somebody wearing too many clothes while using considerable energy can overheat.

Signs and Symptoms

- **Perspiration**
- **Person feeling thirsty**
- **Dizziness**
- **Nauseated**
- **Fatigue**
- **Weakness**
- **Feels hot**
- **Redness, pale**

Treatment

- **Remove excess clothing**
- **Rest**
- **Give drink, not too much at a time**
- **Too rapid a decrease in temperature can result in shock or hypothermia**
- **Seek medical aid**

2. GLOSSARY

Active Absorption

A contraction of the lower body and/or stomach muscles allowing a flexion of the body as the legs are pulled upwards, resulting in the same position as passive absorption, but activated by muscular effort.

Alignment

Refers to the way our musculoskeletal system is positioned in relation to the external forces in snowboarding i.e. how the joints, leg bones and ankle line up.

Angulation

Refers to the movement of certain body parts (ankles, knees, hips, spine and upper body) to increase the edge angle without changing the amount of inclination of the centre of mass. It also helps you to balance over the edge.

Anticipation (In Stance)

Refers to the upper body facing more towards the direction of travel. It allows an increased range of movement of the lower body, which allows greater angulation. Occurs naturally as the upper body aligns with the eyes and angle of the leading foot.

It allows you to distribute your weight fore and aft through using the ankles as they are designed rather than flexing them laterally and losing your skeletal/muscular position and power.

It allows your upper-body to stay open in the direction of travel assisting flow of the centre of mass through turns and down the hill with gravity. It also allows you to stay more centred and still gain the benefits of fore/aft movements.

Ultimately it creates a happy medium between 0/0 angles and high angles allowing the benefits of both these set-ups.

Anatomy

The scientific study of the body's structure.

ATP

Australian Teaching Philosophy.

Apex

Is the highest point that the rider reaches in the air. The peak of the air. The widest point of a turn or the arc.

Backside Rotation

Spinning with your leading shoulder moving towards the toe side edge. The back of the rider's body leading the rotation.

Banking

Leaning into a turn without angulation.

Balance

The cancellation of forces by equal or opposing forces, a state of equilibrium.

Biomechanics

The study of how to move the body into the best position to make and deal with the forces that we encounter when riding.

Blind in stance

Not being able to see in the desired direction of travel.

Blocked

Lack of rotating the upper body through a phase in a turn, restricting the body and boards path.

Berm

A man made feature sloped or banked into the hill into the shape of a turn.

Burr

Damage to the edge of the board. An inconsistent knick of steel that is perturbing along the edge.

Cab

Performing a front-side rotation when riding switch.

Canting

Canting is a term used to describe the method used to mechanically alter the way we align. This is done to the bindings or boots.

Centrifugal Force

The imaginary force pulling a rider to the outside of the turn.

Centripetal Force

The force that causes a rider to turn (follow a curved path) by pushing the base of the board around the turn.

Counter-rotation

The small amount of turning force applied to the board in one direction by a fast twisting action of the upper body in the opposite direction.

Centre of Mass

The point at the centre of a body's weight distribution where gravity can be considered to act.

Closed Question

A closed question is one that limits the response to one or two words. This question is useful when you need some definite answers from your students without lengthy discussions.

Cross-over

Movement of the centre of mass across the path of the board during turn transition. Typical in carved and pure-carved turns.

Cross-under

Movement of the legs side to side, under the body, while keeping the centre of mass undisturbed. Seen predominantly in edge rolls and short turns.

Customer Service

Customer service is an attitude to the way you do business and includes all the points of chapter one.

Down un-weighting

Reducing pressure on the board by fast flexion of the legs thereby lowering the centre of mass at the edge change.

Driving (the board)

Using the lower body, legs and muscular core to shift the board forward. Pronation of the front foot, supination of the back foot.

Dumping

Flexing quickly into a turn with no progressive movements.

Edging

Adjustment of the board's edge angle with the slope.

Edge Angle

The angle between the base of the snowboard and the slope.

Edge Change

Changing from one edge to the other.

Extension

Straightening the leg or legs either to maintain snow contact, as in moguls, or raise the centre of mass, as in up un-weighting or re-centering. Can assist flattening of the board. Independent leg extension controls weight shift.

External Customer

These are the guests who come to your resort for a snow vacation. They are customers in the traditional sense of the word because without them, there would be no sales, no business and no ski resorts to work at.

Fakie (switch)

Riding in the opposite direction to your preferred stance, switch riding. The 2014 manual in reference has moved from fakie to switch.

Fall-line

An imaginary line perpendicular to points of equal altitude. Such as, if a ball was placed on a slope, it will roll down the fall line.

The fall line often varies over the slope.

Fan Progression

A succession of single turns, starting after the fall line, each one increasing the amount of direction change. Often used to work on turn completion.

(Reverse) Fan Progression

Same as fan progression but begins at the fall line and finishes in a full turn. Like an upside down question mark it is often used to work on turn initiation or turn transition.

Flexion

Bending the legs either through muscular effort or by applied external forces.

Free-riding

Using the natural terrain and features to ride down the hill, with flow and style.

Freestyle

Performing tricks on the mountain or the freestyle park.

Front side rotation

Spinning with the leading shoulder moving towards the heel-side edge. The front of the rider's body rotating in the direction of travel.

Funnel turns

Changing the size, radius, symmetry of turns when riding. This can looks like a cross-section of a funnel, where the turns become increasingly shorter or reverse funnel from short to long. Can also be combined into an hour glass shape long, short, long and so on.

Garlands ('chicken out' turns)

Turns linked diagonally across a slope. A tool for working on repeated turn initiations or completions. Also good for losing altitude on steeper slopes with less talented students.

Ideal Performance State (IPS)

This is the optimal state of physiological and psychological arousal for performing at your peak, and can be likened to the feeling of being "unbeatable", "in the zone" or "on a roll" etc.

Inclination

Moving the body's centre of mass to the inside of the turn. Must exist in every balanced turn.

Internal Customer

The internal customer is everyone who works inside the company and the resort. More directly, everyone working for the Snowsports School.

Isometric

Muscular effort with no change of muscle length.

Isotonic

Muscular effort with changes in muscle length.

Mass

A measure of the quantity of matter in a body.

Mental Imagery

Mental imagery (also known as mental rehearsal or visualisation) involves using all the senses to recreate or create an experience in the mind. It is a mental technique that programs the mind and body to respond optimally.

Open Question

An open question is used to start a discussion and gain more general information about your students.

Optimal line

The fastest path a rider takes down a racecourse. The most efficient line to maintain or build speed and amplitude in the half pipe.

Passive Absorption

Flexing the lower body and legs as a result of external forces. Like a bump or turn dynamics.

Physics

Snowboard physics is the study of the forces that we encounter when riding. Understanding the forces helps us understand the mechanics of riding which in turn helps us teach the sport more simply and clearly.

Pivoting

Rotation around a central axis. Occurs on a flatter board. Also represents the action of applying pressure on the bindings to cause the board to rotate around a vertical axis. The muscles of the body create this pressure.

Platform Angle

This is the angle between the rider's resultant line of force and the base edge of the board. If this angle (underfoot) is less than 90 degrees the board will slip. When this angle is 90 degrees or greater the board will rail (no sideways slipping).

Pressure Control

The umbrella term that describes the movements made to manage, control and manipulate the changing pressure involved in riding to avoid the disruption of balance. Pressure changes come from two sources: movements made by the rider and variations in terrain and snow condition.

Professionalism

This encompasses everything instructors and all resort employees should excel at to ensure the guests' experience in the snow is a great one (see section one).

Projection

Movement of the body towards the centre of the new turn to get inclination. May include forward movement to pressure the nose of the board at the start of a turn. The amount of projection required is related to the speed of the rider and pitch the turn is being performed on.

Re-bound

All snowboards have the ability to flex or bend, when a force is applied to it, the boards tendency to go back to its original shape can be thought of as a 'stored energy'. This stored energy can help to propel the rider from one turn to the next.

Re-centring

Returning to the body's natural position, aligning both the skeletal and muscular systems between each turn over the board. Aids in creating a stable platform for the start of the new turn.

Retraction

Pulling the legs towards the stomach using muscular effort.

Rise line

A point directly above the turning gate in a racecourse.

Rotation

The reaction to a circular movement around a vertical axis to create a change in direction of the snowboard from muscular input.

Set point

In a racecourse it is the point in a turn where the board is put on its edge. Generally occurs midway between the completed and new turn in the initiation phase.

Separation in stance

Isolating the upper body from the lower body using muscular effort. The main muscle group used is the core region.

Scooch Snowboarding (Scooching)

Cross country snowboarding. Beware of scooch leg.

Single turns

Single turns usually start in or after the fall line and finish by taking the rider slightly uphill. Good for working on turn completion.

Skidding

A combination of the board sliding forwards whilst slipping sideways. A result of not having the board sufficiently edged. Depending on the rider's ability, it may be considered good or bad and may require encouragement or correction.

Stacking (the body)

Aligning the bodies' skeletal and muscular system.

Stance

Should incorporate flexed ankles, knees and hips, the body centred over board with the torso and shoulders relaxed and anticipated slightly in direction of travel. This should be a natural, comfortable and relaxed position and a structurally aligned way of standing.

Steering

The act of guiding the board through a smooth, round turn with an appropriate amount of edge grip. The edge grip happens early and gradually increases through the turn (progressive edging). To do this requires an appropriate blend of a good stance with turning, edging and pressuring. Generally we refer to the beginner to intermediate turns as being steered.

Stubbies

Short race training markers made from rubber, that are drilled into the snow

Switch (fakie)

Riding in the opposite direction to your preferred stance, switch riding. The 2014 manual in reference has moved from fakie to switch. Switch was formerly known as changing the bindings on a board so the rider could ride a directional board in the opposite direction.

Torque

To twist, a rotary force affecting turning or steering.

Traverse

To move across the slope with greater edging and an anticipated stance.

Terrain un-weighting

The un-weighting affect that occurs in variable or bumped terrain where the un-weighting effect is assisted by re-bound from terrain features and assists with edge change.

Turning Effort

Internal forces needed to turn the snowboard.

Un-weighting

Decreasing or eliminating pressure on the board.

Up-un-weighting

Extension of the lower body and legs at the completion of the turn that moves the centre of mass vertically achieving a lighter weight on the board during the edge change and transition.

Velocity

The speed of motion of a body.

3. SNOWBOARDING TERMINOLOGY FOR CHILDREN

Bolts: To land a trick cleanly with style.

Bone Out: Straighten out a leg when jumping.

Bonk: To tap/ bounce off an object with the nose or tail of the board.

Booter: A large jump

Buttering: Balancing on the tail or nose of the board while spinning around.

Cruise: To ride slower than normal.

Duckfoot: Stance like a duck. The toes on both feet turned outward.

Food Tricks: Airs named after food items. E.g. Stale fish is grabbing the backside edge between the bindings with the rear hand. Others include roast beef and chicken salad.

Fresh Tracks: To make turns in fresh powder.

Gnarly: Radical or difficult.

Goofy: Right foot forward stance.

Grab: Jumping holding the edge or ends of the board.

Grind: Slide across an object.

Halfpipe: U-shaped feature in the ground where tricks are executed in a sequence.

Hit: A jump.

Indy Grab: To grab the toe edge between the bindings with the backhand.

Jib: performing tricks, slide or hit on objects.

Kicker: A jump.

Natural: Left foot forward stance.

Nuclear: Backhand grabs the nose.

Mackerel: A crash where you catch the heel-side edge, fall backwards onto back, knock the wind out of yourself and smash your head on the ground. So named because it looks like a dead fish at market.

Manual: While riding down the slope lift one end of the board off the snow.

Method Grab: Front hand grabs the heel-side edge while the board is lifted up behind the back.

Mute Grab: To grab the toe edge between the feet with the front hand.

New School: Skateboarding based riding style includes jibbing, bonking, one-foot airs, twin tip boards.

Nollie: Using the spring from the nose of the board to jump or pop.

Nose Grab: Front hand grabs the nose.

Lip: The finish point of a jump or top of the half pipe.

Nose/Tail Spin: Spinning around the nose or tail of the board.

Ollie: Using the spring from the tail of the board to jump or pop.

One-Foot Airs: Jumping with the back foot out of its bindings.

Poach: To get first tracks in powder before the area is open to public.

Pop: To get air or increase air of the snow or a feature

POW: Short for powder snow, fresh snow, light, dry champagne powder snow.

Press: To flex and hold the tail or nose on an object.

Rag Doll: A big fall when the head and feet flip over one another.

Regular: Riding with the left foot in front.

Revert: Riding up a bank or wall forward and coming down switch.

Ripping: Riding well.

Rocket Air: The front hand crosses over and grabs the nose.

Sketchy: Riding slightly out of control or describing bad terrain

Scorpion: Crash where you catch the toe edge, fall forward onto your chest and hit yourself in the back of head with board.

Session: Repeatedly ride a jump or area.

Shred: Ride.

Sick: Awesome.

Slashing: Surf like manoeuver with the tail kicked out for spry. Slashing the bank.

Snake: To cut someone off or drop in before your turn.

Solid: Riding with a good stance and skills.

Spins: 180, 360, 540, 720, 1080, etc.

Stale-Fish: Backhand grabs the heel edge behind back binding.

Stiffy: Straighten out both legs when jumping.

Stinky: Squat stance.

Stomp: Landing a jump or trick in a good position and riding away.

Switch: Riding with the opposite foot forward.

Tail Grab: Backhand grabs the tail.

Vert: Pitch of wall.

Wheelie: While pointing down the fall line lift one end of the board off the ground. .

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The Internet also provides a broad range of up-to-date information on relevant topics.

AUSTRALIAN PROFESSIONAL SNOWSPORT INSTRUCTORS

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