

Ski Performance Breakthrough



*The science of skiing
The art of performance*

*by Hugh Monney, Director of **The BASS Network** of elite snowsports schools*

Cover photo: Skier: **James Lamb**, BASI International Ski Teacher, Director of BASS Morzine.
Photo: Buster Cheetham

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I would also like to thank all of my clients. Your ability to change is an inspiration.
Hugh Monney, September 2010.

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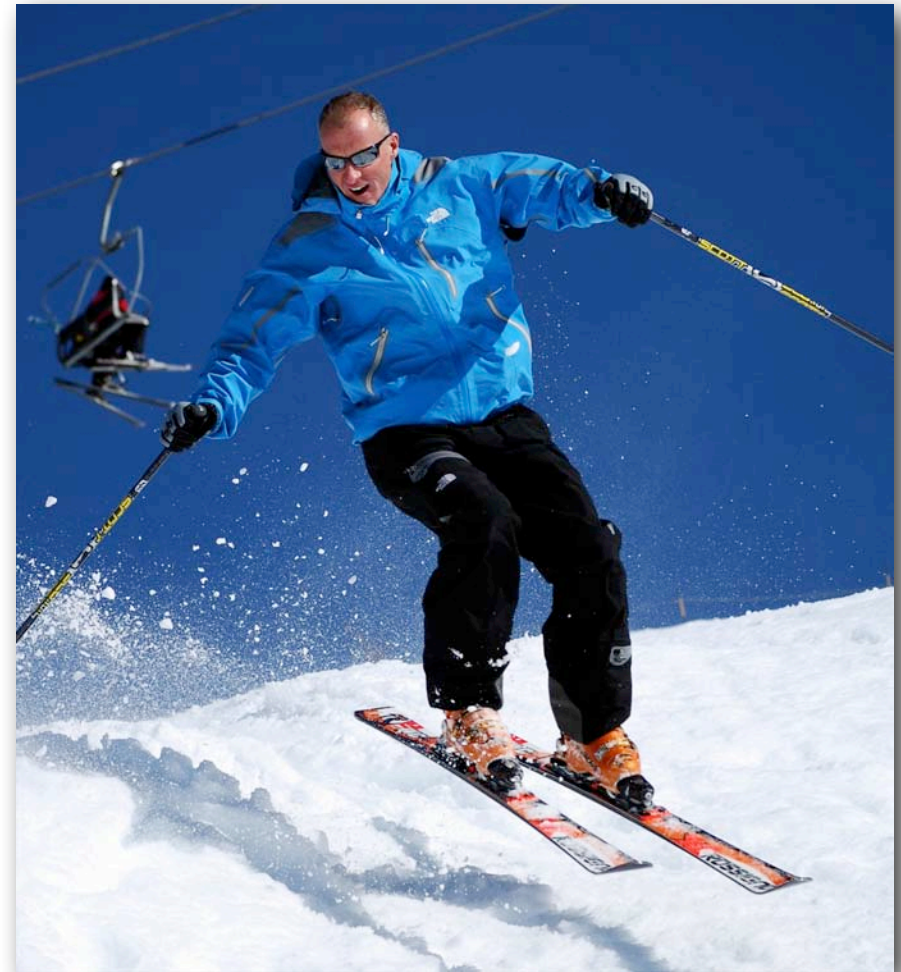
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Ski Performance Breakthrough

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*Freedom. Skier: Andy Jerram. BASI International Ski Teacher.
Photo: Buster Cheetham*

*Overleaf: A cornice in the Chilean Andes.
Photo: Hugh Monney*



Ski Performance Breakthrough



The biggest secret in skiing

Your introduction to Ski Performance Breakthrough



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How this book can help you to improve your skiing performance

Excellent skiing performance - what a beautiful experience! Free and joyful, it is powerful and yet it can appear to be effortless.

Excellent skiers perform each curve intuitively and create unique solutions for the challenges presented at each moment.

Great skiers literally have the freedom to create solutions as they ski.

They earn that freedom by developing accuracy and skill with the key elements of skiing *and* by blending those elements into a sophisticated, coordinated whole, that fits into their environment.

Wouldn't it be great to have a clear pathway to achieving this wonderful experience?

This book sets out to take you directly there.



Powerful and effortless performance. Spring Snow - Off piste in the Andes.
Skier: Gavin Kerr-Hunter, Director of Snowperformance. Photo: Hugh Monney

This book is for you

This book has been written with two groups of people clearly in mind.

Firstly, if you are an enthusiastic skier, you will be able to transform your performance using the principles in this book. The processes are presented clearly, in ways that my clients have shown me to be the most effective.

Confusion will fall away and your understanding will become clear and simple. You will be able to feel your own success and allow your performance to grow and flourish.

You will also discover the principles that allow experts to finesse their performance and you will begin to develop that ability for yourself.

The second group is Professional Ski Teachers and Coaches.

You, too, will be able to transform your performance. Of course, you will be an excellent performer already.

Even so, you will enjoy significant development, because there is no end to the ability of people to develop skill, when given a clear opportunity.

You will also be able to provide your clients with even more effective processes, improving *their* success and *your* professional value to them and to your profession.



Sophisticated balance and coordination.
Skier: Andrew Lockerbie, BASI International Ski Teacher,
Director of BASS Megeve. Photo: BASS Chamonix

The processes described in this book have been used to train many thousands of clients and many hundreds of ski teachers. They are based on three sets of principles.

Firstly, the **principles of physical science** underpin all of the activities and processes here.

There is clarity and accuracy in the application of the physics of Isaac Newton to the physical processes of skiing.

Secondly, the utmost respect is given to the **processes by which people actually learn and perform**, so you will not be asked to understand the science, you will simply improve. The science is hidden deep inside the processes described and so it will work *for* you in a way that will go unnoticed, other than by the quality of the results you achieve.

Thirdly, every process included in this book has earned it's place through **consistent success in the real world**.

These process will work very effectively for *you*,
They have already worked for thousands of others.



A highly cultured performance.

Skier: Ross Nelson, BASI International Ski Teacher. Photo : Hugh Monney

The biggest secret in skiing

In this book, I'm going to reveal the biggest secret in skiing, so that you can learn to use it for yourself.

It is the one principle that will remove most of the obstacles in your way and allow you to become the fluent, effortless skier that you intend to be.

Once you understand this point, your frustrations will disappear and your performance will develop freely.

It is a very simple point, although it has implications that will restructure your skiing from the ground up.

Here it is:

Excellent skiers influence their skis with very subtle inputs.

These inputs are often too subtle to be seen by the untrained eye, but have very clear and obvious consequences.

Most skiers attempt to imitate these consequences, without being aware of the subtle inputs that created them.

This is the source of frustration, fatigue and that 'out of control' feeling.

Once you understand the subtle inputs and use them for yourself, you will begin to create your own, excellent consequences.

At each stage in this book, I will show you exactly



**Skier: Helen Trayfoot, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Hugh Monney**

what these subtle inputs are,
why you need them and
when, where and *how* to apply them.

Just as importantly, I'll show you *how* to control them, shape them, adapt them and adjust them, so that they give you the control that earns you the freedom of the mountains.

Starting on the journey

Don't worry, even though these subtle influences are used by the best skiers in the world, I am certain that *you can* learn to use them quickly and easily.

Firstly, it's important to accept that *you* have a natural gift for learning.

I have great confidence in this, despite not having met you yet, because it has been true for every single person I have ever worked with.

There have been many thousands of skiers that I have helped over the past 30 years, from children to adults, beginners to experts, including many racers and few hundred ski instructors.

Each one has had this innate ability.
I'm convinced that this is our natural heritage. It has been passed on to us, probably by the action of evolutionary forces on the development of mankind over millions of years.



Sophisticated balance and coordination.
Skier: Steve Ricketts, BASI International Ski Teacher,
Director of BASS Val d'Isere. Photo: BASS Chamonix

I have a deep respect for the ability of people to change, to learn and to grow.

I have an equally deep respect for the ability of many people to harness their natural resources in a way that allows them to perform at the highest level.

These important human qualities are fascinating in that they are universal and yet deeply personal. My students have taught me that everyone has a unique experience and that my role is to help each of them to harness their own natural abilities.

So, the ability to learn is one of our natural resources. We still have an opportunity to discover:

How to make the most of our ability to learn.

What to learn.

How to make the most of our ability perform.

And so this book addresses these three key processes.

It shares with you the results of practical experience in performance development for skiers, that has lasted over 30 years and has involved thousands of people.

If there is a mistake that can be made with this process, then I have probably made it. Sometimes twice, just to be sure, but not three times.



Vulcano - Las Lenas, Argentina. Photo: Hugh Monney

So, every single principle or activity described in this book has been through its own process of evolution. Only the successful strategies have been allowed to survive.

As a result, the processes described here have become more finely focused and yet more deeply rooted, in the natural abilities of people to learn, to change and to grow.

Importantly, two of our three processes address qualities that we share as people: *how to learn* and *how to perform*.

This allows us to learn from other activities, where the nature of learning and the requirements of performance can be observed and understood more easily.

The remaining question, “*What to learn?*” is specific to our magnificent sport, skiing.

In responding to this question, an even more rigorous process will guide us.

As before, every process has passed the test of actually helping real people to improve their skiing performance. More than that, each process has passed the very stringent tests of scientific scrutiny and professional application.

The point is, we will be discussing some very clear, specific, accurate and effective techniques and tactics, in answering the question “*What to learn?*”

The three key questions

Finally, in this preface, let's take a slightly closer look at our three key questions.



*Skier: Hannes Webhofer,
Director of Beyond Boundaries Heliskiing. Photo: Hugh Monney*

How to learn?

This is a more complex subject than it first appears.

Firstly, there are different types of learning and we'll be dealing with at least three different types, to help us develop your performance.

Fortunately, we have different types of intelligence that we can apply to different situations, so we need to know which to use and how to make the most of them.

Plus, there are some important psychological issues to resolve, when dealing with learning and change. This can become very personal and challenging, so it's useful to have a way of simplifying the process and avoiding the obvious problems.

This book will give you some key approaches that will accelerate your learning.

What to learn?

The first thing to establish here is your overall strategy.

An experienced bump skier and an experienced giant slalom racer might have different objectives, for example. They would share a great deal of common ground, metaphorically if not literally, but the context would determine some of the content.



There is an art to performance.
Skier: Rebecca Malthouse, BASI International Ski Teacher,
Director of BASS Morzine Photo: Hugh Monney

Despite that, all skiers share six different aspects of performance, each of which has its own content. I'll list them here briefly:

technical and **tactical** factors,
psychological and **physical** factors,
environmental and **equipment** factors.

We will look at each of them in turn, with great care, because these are the issues that will help you to earn your freedom in the mountains.

How to perform?

This is a critical question, which probes very deeply into the nature of what it means to be human.

Clearly, this question is universally applicable, but of course it becomes very personal.

For example, consider an individual at the top of a steep bump run, feeling anxious and intimidated, unable to perform.

Sometimes, there might be a *technical* or *tactical* problem, which prevents the skier from performing. These issues can be addressed on easy pistes and then transferred to the challenging bump run at a later stage.

Sometimes though, the skier has all the technical and tactical tools available to him, or her, and yet feels unable to perform freely.



Freeride off piste, St Anton, Skier: Paul Morris,, BASI Ski Instructor

Photo: Hugh Monney

Perhaps the run really is too complex for the skier's ability and experience, so there is more work to do on learning how to *apply* techniques and tactics, before tackling very challenging slopes.

Quite possibly, some work on *physical conditioning* might be required, to improve strength and agility.

And yet, even with all of this in place, the skier might still not be able to produce a successful run.

So we are left with a very interesting question.

If performance is not just the result of a list of qualities that have been prepared beforehand, then what is it?

We have all seen individuals who have excelled in difficult circumstances. We have also seen competition favourites who have been unable to fulfill their promise.

Both of these situations can be experienced by the same person, at different times.

So, I am led to a simple conclusion:

There is an art to performance.

It can be trained for, but, even at the highest level, the outcome is never certain. It is elusive, and all the more



**Skier: Peter Kuwall, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Hugh Monney**

valuable for that.

Yes, it does require a thorough preparation of the component parts of the performance.

More than that, though, it draws on qualities such as belief and freedom, creativity and joy, focus and determination.

We can take inspiration from the achievements of truly great performers, and learn many important lessons from them.

There are some very specific things you can do that will allow you to perform better, all of the time, and perform exceptionally, some of the time.

This book will show you how!

We will take advice from the great Leonardo da Vinci:

“Study the Science of Art and the Art of Science.”



In the zone. Skier: Ross Nelson, BASI International Ski Teacher
Photo: Hugh Monney

In this book, we will discover the science and the art of:

centered balance and athletic movement
steering your skis
mastery of your speed and line
mastery of your body

managing the forces of the performance
making adjustments for the snow and the terrain.

psychological and **physical** factors affecting performance,

environmental and **equipment** issues,

performance breakthrough - performing at your best, even when the going gets tough,

being an effective learner - the key skill, that allows everything else to happen for you,

how to liberate your performance, so the you experience the most elusive performance quality of all: **Freedom.**

Each has a role to play, in helping you to achieve your **Skiing Performance Breakthrough.**



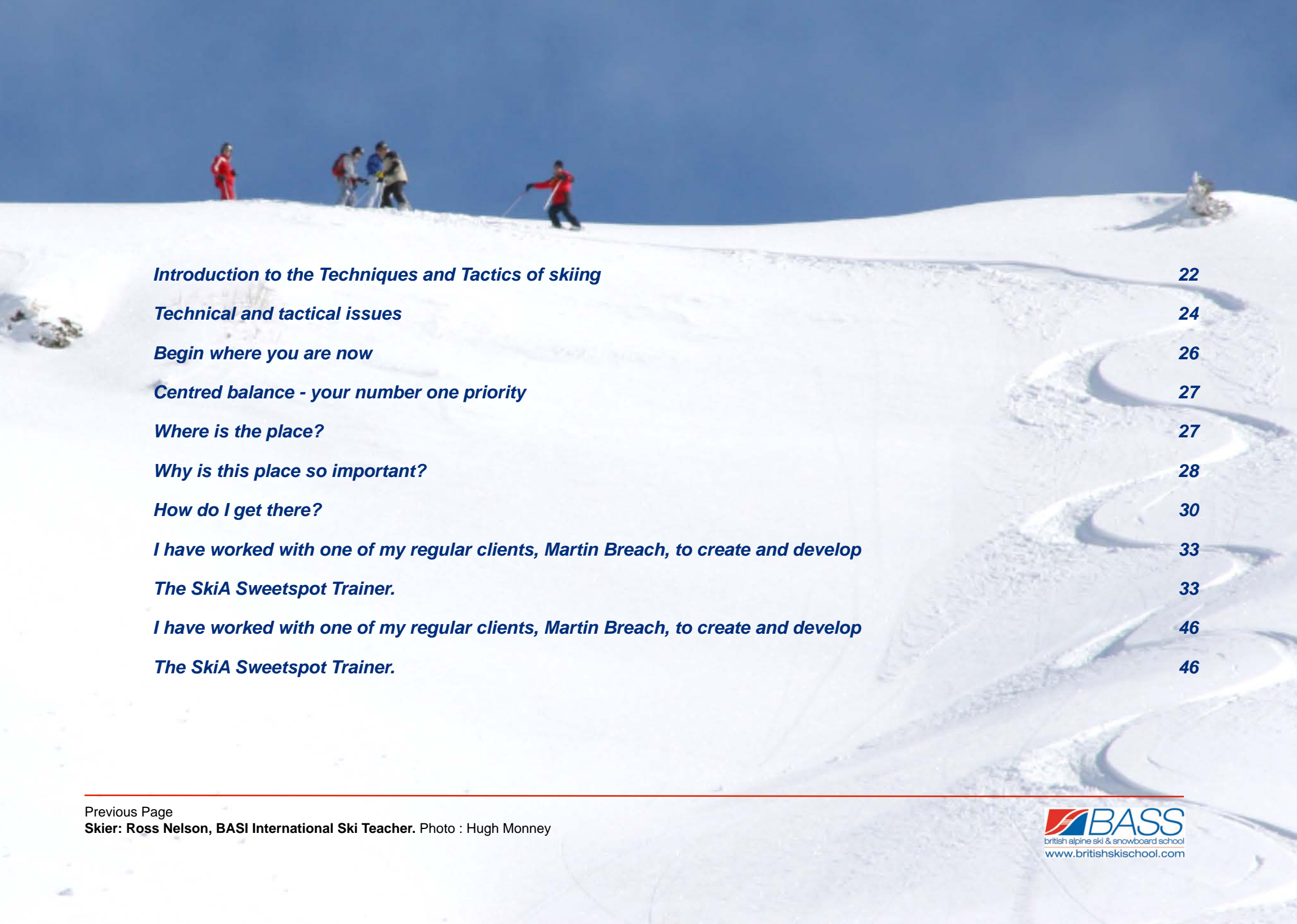
Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Peter Kuwall





Chapter 1

Centred Balance and athletic movement



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Introduction to the Techniques and Tactics of skiing

We have raised three key question, already:
What to learn? How to learn? and How to perform?

This section addresses one of those key questions:

What to learn?

In this section we're going to take a look at several factors that influence your skiing performance. Many skiers, even experienced professionals, tend to focus on ski technique in an attempt to find answers and solutions. This is understandable but can often be too narrow a focus to provide all the opportunities for development.

Ski technique is one of the very important factors that underpins excellent performance, but is not the only issue.

So, in this section will take an in-depth look at *ski techniques and tactics*.

Other sections will deal with:

psychological factors, including perceptual and awareness issues

physical factors, including conditioning and energy levels

environmental factors, including snow and terrain and *equipment issues*.



Centred, athletic skiing. Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo : Hugh Monney

Each of these issues has an influence on the others and it can be a little artificial to separate them completely.

The strength of our systematic approach, though, is that it allows us to look at a broad range of factors, plus the ways in which they interact with each other, to give us a thorough and systematic treatment of a complex subject.

This allows us to identify very many opportunities for development and improvement.

A skilled professional can blend this range of factors into an effective series of coaching sessions, or even a long term training programme.

Let's start with the technical and tactical issues.



A highly cultured performance. : Skier: Andrew Lockerbie, BASI International Ski Teacher, Director of BASS Megeve. Photo: BASS Chamonix

Technical and tactical issues

In this section we are going to take a close look at four different areas of the technical and tactical aspects of ski performance. They are:

centered balance and athletic movement
steering your skis
mastery of your speed and line
mastery of your body

As you get into each of these areas, you will see that they each combine several factors.

These factors are called *technical elements*, on the professional training courses where this material is taught to ski instructors.

The important lesson here is that

organising information, in particular ways, can reveal patterns that were otherwise hidden.

By the time you reach the end of this book,

you will understand a great deal about the nature of skiing performance,

and how the component parts blend together to help you achieve the ultimate expression of skiing: *Freedom*.



Off piste in the Andes. Skier: Gavin Kerr Hunter, Director of Snowperformance.
Photo: Hugh Monney

Notes for your own Ski Performance Breakthrough:

Begin where you are now

You are already skiing, linking turns and controlling your speed.

In this section, we will build on your existing skills and help you to reapply them with more accuracy and with a much clearer plan than you have at present.

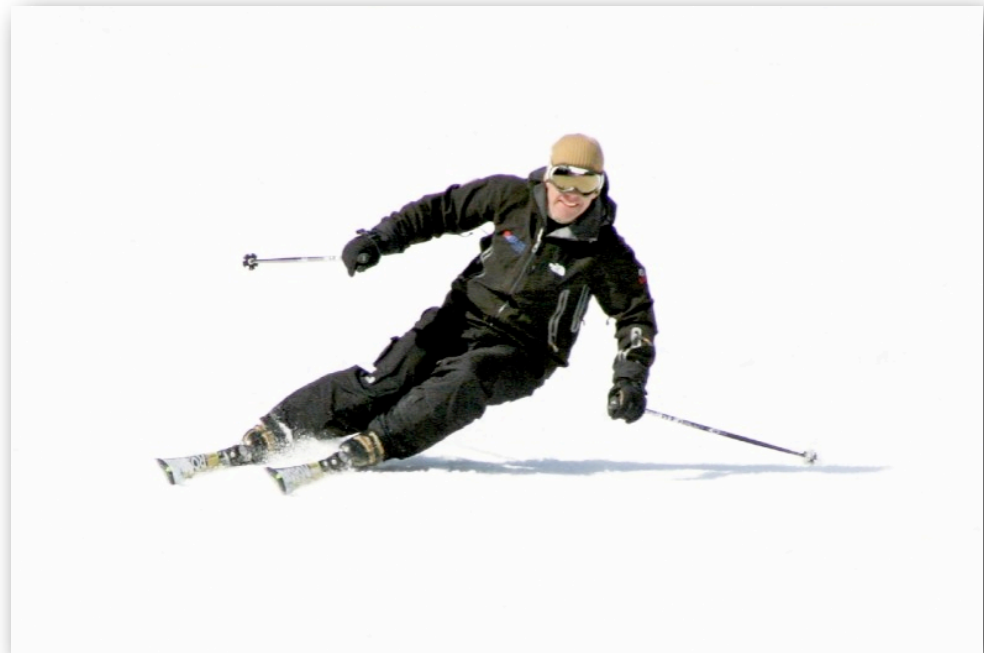
Before we can begin to investigate other Technical and Tactical issues, we need to refine some aspects of your existing performance:

your balance, posture and movements.

They are major subjects in themselves and are covered in much more depth in the section *Master your body*.

For the time being, here are some key principles of Body Management, that will help you to improve the accuracy, consistency and versatility of your existing performance.

They will help you to make your performance much more stable and reliable, so that the work on other Technical and Tactical issues can have its effect for you.



Centred and relaxed. Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo : Hugh Monney

Centred balance - your number one priority

There is a sweet spot on each ski, a place to balance, a place to *be*.

Your number one priority, as a skier, is to find this place on each ski, so that you can become familiar with it, balance upon it, press through it and pivot about it.

There are three questions that will help us get to grips with this issue:

Where is the place?

Why is this place so important?

How do I get there?

Where is the place?

If you take a look at your ski, you will find that there is an index mark, either on the sidewall, or on the top surface, somewhere near the point where the centre of your boot would be.

This is the place. Let's take a moment to define that place more clearly, for you.

Your bindings have been mounted on your skis very carefully. A jig is clamped to your ski in a particular place, so that an index mark on the jig lines up with the index mark on the ski. Holes are drilled through templates on the jig, so that the bindings can be mounted in the correct places.

When your ski boot is placed in your bindings, an index mark



Photos: Alasdair Monney

on your ski boot lines up with the index mark on your ski.

So here's the key point for skiers, **the index mark on your ski is a very important place**. It lines up under a very particular part of your ski boot, which is **near the centre of the arch of your foot and is highlighted by it's own index mark**.

Why is this place so important?

A ski is a compound spring, just like a modern archer's bow.

The front portion of the ski is longer, more flexible and more easily twisted than the rear portion of the ski, which, of course, is shorter, stiffer and less easily twisted than the forebody.

A modern ski is very carefully designed so that these qualities balance each other, to give very efficient, effective and predictable results. The index mark shows the effective centre of this compound spring.

The target point is also at the narrowest part of the of the ski, at the heart of the ski's sidecut shape.

When a skier is able to manage his or her pressure control so that the centre of pressure is positioned

under the middle (nearly) of the arch of the foot, directly through the index mark of the ski boot, and so, directly through the index mark on the ski,



Centred, accurate, precise. Skier: Ross Nelson, BASI International Ski Teacher
Photo : Hugh Monney

**then the ski will be stable, so you will feel safe
and yet it will turn easily, so you will feel in control.**

There are two other critical advantages from which you benefit, by balancing through the target points on your skis (and so the balance points on your feet).

1. Your boots will flex correctly.

This is not as simple as it appears to be. Ski boots are complex and the human body is much more complex still. If you balance through the middle of the arches of your feet, it is much more likely that your bending and stretching movements will work *with* the design of your ski boots.

If you balance elsewhere, you will be fighting against your boots, every turn, all-day, everyday.

Removing this major obstacle, is reason enough, on its own, to adopt your new balance targets.

2. Your body will balance and move much more effectively.

A major principle in this book is that we all have natural abilities, handed down to us over millions of years, by evolutionary processes.

Finding the balance points under your feet, by checking the index marks on your ski boots and then feeling for those points as you ski, will allow you to make use of your natural athletic ability.

If you balance elsewhere on your feet, your body will be



Powerful, balanced, athletic. Skier: Glen Radford, BASI International Ski Teacher
Photo : Hugh Monney

fighting just to remain in balance. You will be obliged to make literally hundreds of adjustments and corrections on each run and you will feel strained and fatigued very quickly.

Fortunately, this is *not* how skiing is supposed to be.

There is *much* more on this subject in *Chapter 6*, but for the time being, the process of feeling for these balance points and finding them, will open up many opportunities for you.

How do I get there?

The first step is to check the index marks on your ski boots and then **feel for those points as you ski**. Let's give these places the attention they deserve.

What's going on?

Many skiers are so busy doing what they do, that they neglect to feel what is actually going on. So, as you ski, ask yourself one of these questions "Can I feel the middle of my feet? Am I in the middle? Where am I?"

When you notice that you are there, you will also notice that your skis respond easily, which will allow you to use the rest of the Technical and Tactical principles in this book.

So, now that you know where you want to be (balancing on the target points under your feet), let's highlight the process of getting there.

Many skiers, probably most skiers, really get in the way of their natural balancing reflexes and their abilities to move



Centred, effective skiing. Skier: Andrea Boin, BASI Ski Instructor.

Photo : Hugh Monney

NB: "Centred posture" is only vertical, if the skier is on perfectly horizontal terrain. Andrea is in the acceleration phase of his curve and is balancing accurately, perpendicularly to his plane of support. Is this the origin of the "lean forward" myth?

athletically. This is likely to be true of you, unless you are already well-trained,

The good news is that this is very, very easily changed.

You just need a better plan and the freedom to use it.

We'll take a look at the latter point at a later stage (psychological factors affecting performance), so for the time being, let's identify the way ahead for you, very clearly.

Let's consider two different ways of standing.

In the first case, think of a guardsman on parade duty, standing to attention.

Believe it or not many skiers subconsciously use this method while they ski, and of course it prevents them from skiing well, by blocking effective movement and natural use of their balancing reflexes.

Of course, it's not their intention to stand to attention. They're just trying to *stand up*, and that is their undoing. *Up* is the wrong direction and it misleads them. They need another way.

Get down

Now think of a tennis player about to receive serve, or a football goalkeeper about to face a penalty shot, or a swimmer on the blocks, ready for the start signal.

Or a skier, who is moving continuously, linking curves, steering, changing direction, adapting to snow and terrain.



Athletic balance and movement.

Skier: Peter Kuwall, BASI International Ski Teacher, Director of BASS Chatel,

Photo: Hugh Monney

All of these people are taking another approach to posture and balance. How would you describe it?

Certainly they are flexing, *down* towards their feet. They are prepared for athletic movement and they have engaged their natural balancing reflexes.

I'm sure that you recognise all of these qualities.

It's convenient for us to give this process a name, so I will call it *crouching, ready to spring*, or just *crouching*, for short. Please understand that when I use this term, I am referring to these specific qualities.

So here it is:

crouching down towards the centre of your feet will liberate your balancing reflexes, will allow you to move athletically, and will help you find the balance points under your feet.

From here, everything is possible.

While, if we do not start from here, most of our options are closed to us.

A final point, there are two aspects to this process:

direction, i.e. towards the balance points of your feet,

and **quantity**, i.e. how much crouching?



Everything is possible from here. Skier: Ross Nelson, BASI International Ski Teacher
Photo: Hugh Monney

A little can be fine in easy circumstances, while, in more demanding circumstances, you will usually find it more effective to crouch lower.

So, in summary, *crouch towards the balance points, in the centre of your feet and use as much of this process as you need to be effective.*

You can save energy in easier circumstances by being *subtle* with this process, which is not the same as not using it.

Now that we have identified some key Body Management principles, you need to integrate these principles in your skiing performance.

This will radically improve your effectiveness, and will prepare you for the for the other Technical and Tactical issues described in this section.

I have worked with one of my regular clients, Martin Breach, to create and develop

The SkiA Sweetspot Trainer.

It's a superbly effective balance trainer for skiers, which guides you to the sweetspot of your ski boots *and* helps you to retrain your movement patterns.

It's been trialled in ski schools across Europe and it has accelerated the learning of skiers from beginners to professionals. [You can get hold of it here!](#)



"The BASS Network endorses the use of The SkiA Sweetspot Trainer as a highly effective performance development aid for skiers."
[You can get hold of it here!](#)

Here's what to do!

Here is a simple, clear structure to the process of introducing new content to your skiing performance:

Have a clear objective.

Have a clear process for achieving the objective.

Start in a simple place.

Set up simple activities that allow early attempts to succeed.

Notice your results.

Allow your performance to adapt.

Groove your new performance.

Set up a series of more complex activities that challenge the new performance and require it to adapt further.

Move to a slightly more demanding place and repeat this process.

And so on.

Let's work this through for your *centered balancing*, using the process of *crouching, ready to spring*.



Off Piste in St Anton. Skier: Paul Morris, BASI Ski Instructor

Photo: Hugh Monney

Have a clear objective

You are trying to change your posture and balance, so that you can feel the balance points under your feet.

Have a clear process for achieving the objective

Use the crouching process, *feel* where you are actually balancing and allow your body to adjust until you can feel that you are using the target balance points underfoot.

Start in a simple place

You need to choose a simple slope, and by that I mean either a green run, or an easy blue run, that has been well prepared. This simple *performance environment* removes many of the variables that would otherwise confuse your early attempts.

It also allows you to feel very comfortable about experimenting with new ideas.

So it's important, even for advanced skiers (in fact, especially for advanced skiers), to find a simple, inviting slope where you feel happy to experiment.

Set up simple activities that allow early attempts to succeed

You need to choose something simple to attempt, so that you have the best opportunity to experiment with the new ideas that you are trying to develop.

One of the best ways is to use simple, rhythmic medium radius turns, controlling your speed with each turn.



First tracks on a remote glacier, in Greenland. Photo: Hugh Monney

If you do not have your *Eureka* moment, if you do not feel the results that you're aiming for, it's possible that the crouching process is throwing you off-balance, rather than bringing you into balance.

Remember that using the athletic crouching process is designed to bring you to the target balance points underfoot, directly on the index mark of your ski boot.

Sometimes, skiers miss-coordinate the bending movement and end up out of balance, on their heels instead.

Sometimes, though less frequently, coordination errors leave skiers out of balance *in front* of the target balance points.

So please remember your intended targets, notice your actual results and change if you need to.

That process, more than any other, will ensure your success as a skier.

The corollary is also true. **The absence of that process will inhibit your development more surely than anything else.**

For example, there are many enthusiastic and committed skiers who are so earnest in the application of *ideas that they believe to be true*, that they do not notice their actual results and so cannot adapt their performances.



Patagonian powder. Skier: Alan Dupont. Photo: Hugh Monney

Letting go of the tyranny of the ego, allowing your body to do its work, is an important part of the process of growth and development.

When you have integrated these principles of Body Management into your skiing performance, you will have really improved your effectiveness, and you will be ready for the other Technical and Tactical issues described in this section.

Balance drills

Now that you understand this process, here is a series of development drills for you to use.

The series begins with the medium radius corridor that we discussed above, and then moves on to introduce more variables, so that your performance develops more fully and becomes more versatile.

You may find that you can deal with the first couple of drills, but that the later drills are too complex.

Don't worry, it may mean that you need other techniques, perhaps from the Steering or Body Management sections, to succeed with the more complex drills.

Everyone is on the same journey.

There is a combination of the complexity of the drill and the complexity of the environment that challenges even the most highly trained skiers. That is the point.

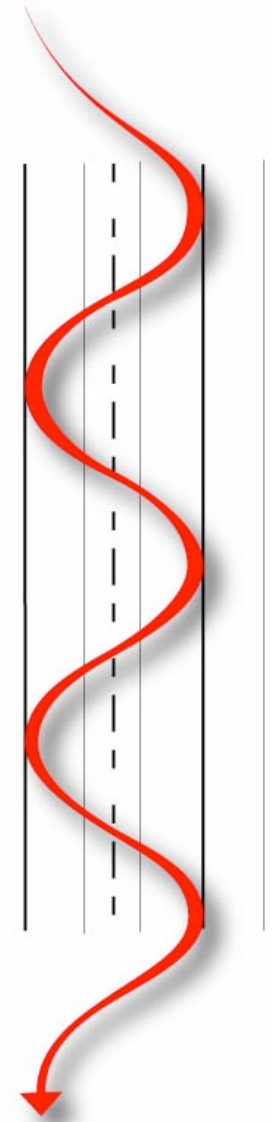
Remember, in all these drills, your objective is to use the



Powder Nirvana. Skier: Rick Kohn. Photo: Hugh Monney

athletic crouching process to help you find the target balance points under your feet. Can you feel them?

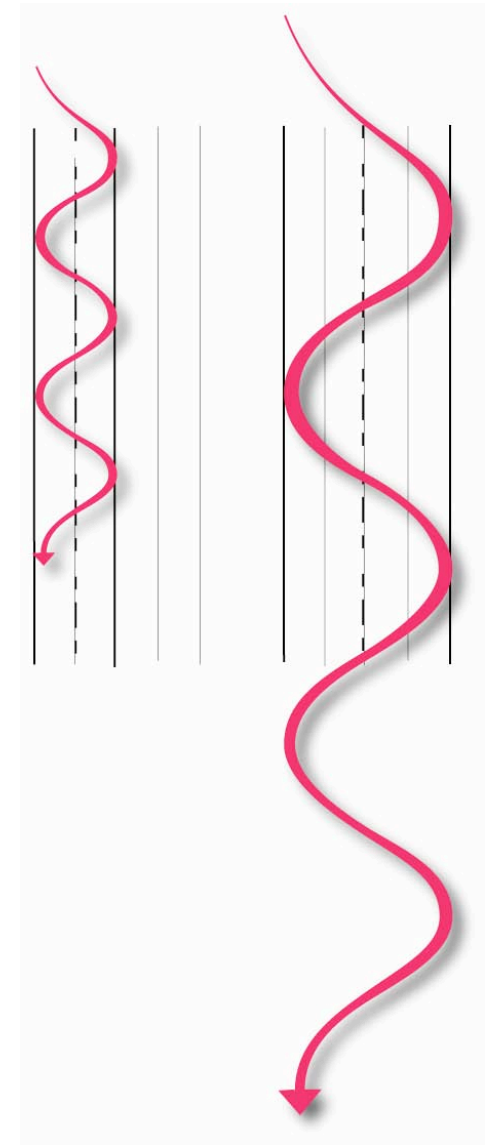
1. Medium radius turn corridor - an easy structure to allow early success.



Illustrations: Tim Hall, Sweetimage.co.uk

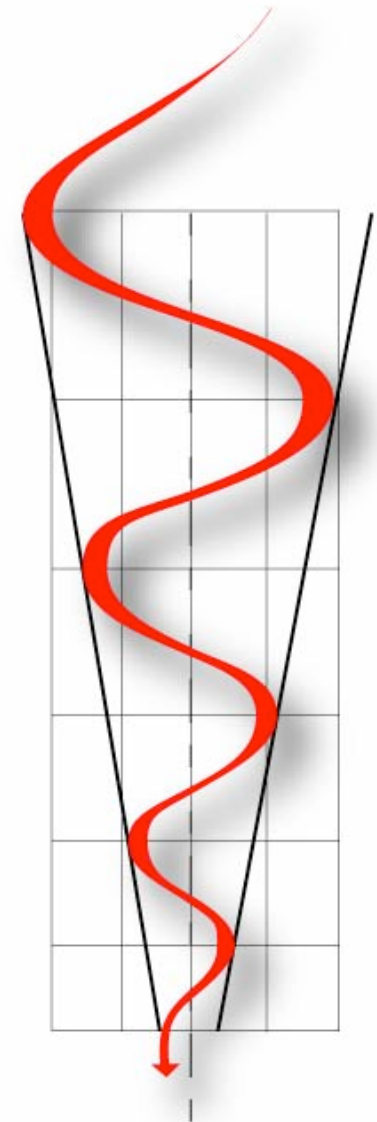
2. Shorter radius turn corridor. This challenges the coordination of your new skills. The tempo of movement and rate of steering are increased.

3. Longer radius turn corridor. This drill challenges your balance and smoothness. Timing, balance and coordination all need to be finessed to do well at this drill.



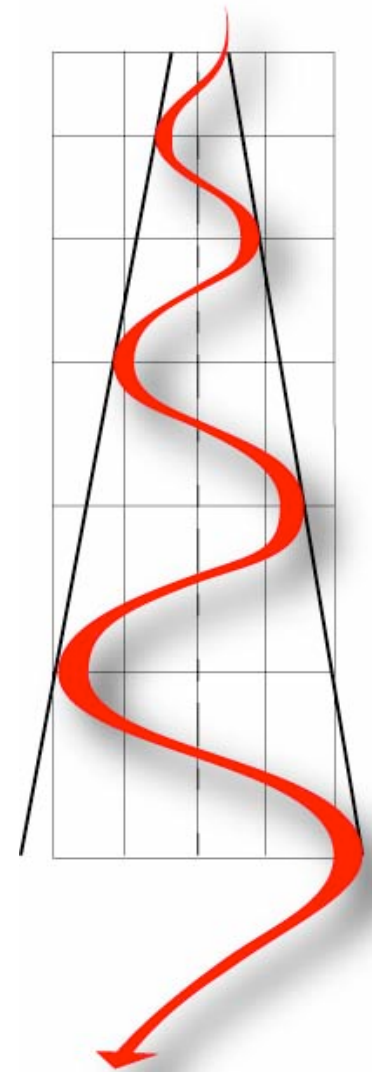
Illustrations: Tim Hall, Sweetimage.co.uk

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4. Ski a converging corridor (sometimes called a funnel), from medium radius turns to shorter radius turns. This requires that you change every turn, providing a challenge for coordination and steering.



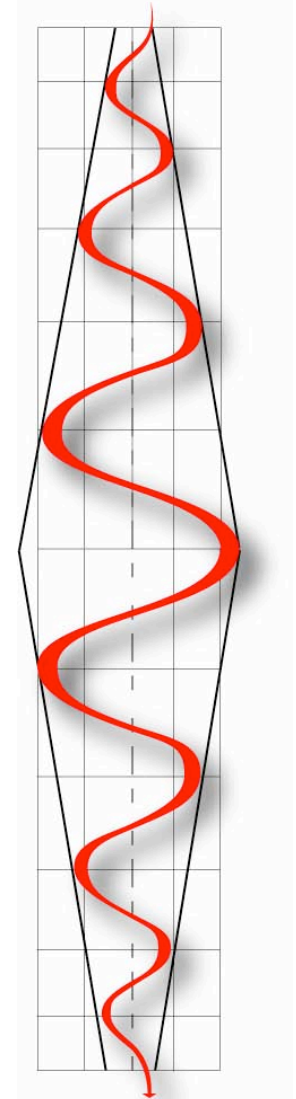
Illustrations: Tim Hall, Sweetimage.co.uk

-
5. Ski a diverging corridor (sometimes called an inverted funnel), from shorter radius turns to medium radius turns. Again, this requires that you change every turn, providing a challenge for your coordination.



Illustrations: Tim Hall, Sweetimage.co.uk

-
6. The Blender. On a longer run, ski a series of repeating funnels, from short radius turns, to medium radius turns, back to short radius, and so on. This is a fantastic workout for your coordination and steering.

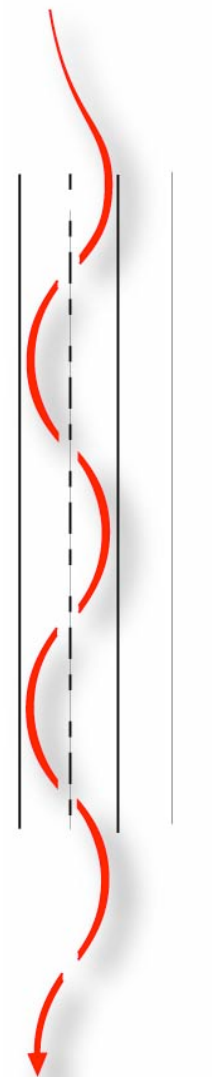


Illustrations: Tim Hall, Sweetimage.co.uk

All of the above drills are appropriate for skiers from early intermediate experience onwards. Finally, here are two drills for advanced skiers and experts only.

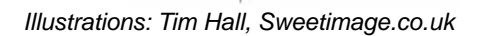
7. On a gentle slope, ski a narrow corridor, use very open arcs and very direct exit lines.

It's a great extension of this drill to work in a rebound reaction from the skis, to propel you into the next turn.



Illustrations: Tim Hall, Sweetimage.co.uk

It's a great extension of this drill to work in a rebound reaction from the skis, to propel you into the next turn.



I have worked with one of my regular clients, Martin Breach, to create and develop

The SkiA Sweetspot Trainer.

It's a superbly effective balance trainer for skiers, which guides you to the sweetspot of your ski boots *and* helps you to retrain your movement patterns.

It's been trialled in ski schools across Europe and it has accelerated the learning of skiers from beginners to professionals.

This is a great way for skiers to develop balance and coordination, through the Summer months.

It also improves performance when used just before a session on snow. The user manual incorporates the principles used throughout this book.

The idea for the SkiA Sweetspot Trainer came about as a consequence of the work we were doing on centred balance, on Ski Performance Breakthrough clinics.

[You can get hold of it here!](#)





Chapter 2

Steering your skis - part 1



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Steering your skis - part 1

This subject relies on the work in the previous chapter, *Centred balance and athletic movement*, and works hand-in-hand with the chapter, *Master your speed and line*.

The immediate effect of this section, will be to give you much more control, precision and sensitivity as you steer your skis in the snow.

You'll be able to apply yourself to the strategies described in *Master your speed and line*.

You will be able to use the design qualities of your skis to your advantage and you'll develop a versatile approach to using those design advantages.

The three steering elements

There are only three factors that influence the behaviour of your skis in the snow.

Each of these factors is a *steering element* and, if you can blend them skillfully, you will be able to steer your skis effectively in all circumstances.

The three steering elements are:

pressure between the ski and the snow
edge application
and **pivoting**, or rotating the ski.



Curves of different shapes and sizes. Off piste tracks in the Andes.

Photo: Hugh Monney

There are many different ways to coordinate and blend the three steering elements and that gives you an opportunity to create different types of curves in the snow.

For example, it is important for you to be able to choose between **skidding** your skis around the curve, and **carving** them, because this versatility gives you safe, effective options for control in many different situations.

It is possible to choose between different intensities of skidding and there is more than one way to make the skis carve. It's important for you to develop this versatility, by learning how to use the three steering elements.

These variations are used in the next section, *Master your speed and line*.

Later, in *Steering your skis - part 2*, we'll discuss each of them in detail, but let's start with a simple understanding of steering, so that the details will make more sense when we discuss them.



The freedom of the mountains, excellent steering control.
Skier: Gavin Kerr Hunter, Director of Snowperformance. Photo: Hugh Monney

Two essential approaches to steering

While it is true that there are many possible blends of the three steering elements, let's start by simplifying everything and identifying *two* specific approaches to steering, each of which gives you a different family of curves that you can create.

Each of these approaches is suited to a particular set of circumstances and so, by understanding these processes and learning how to apply them, you can become much more effective in different types of terrain around the mountain.

Each of these approaches uses all three steering elements, of course, but each uses a different element as its *main ingredient*.

The two approaches are:

Pivot-based steering, and
Pressure-based steering.

With **pivot**-based steering, the main ingredient is a healthy dose of pivoting, or rotation, of the skis, plus some edging to ensure effective grip and use of the ski's design. The pressure develops naturally throughout the curve, because of the other inputs.

This approach is very effective for controlling your speed.



**Control of speed on steep terrain. Skier: Helen Trayfoot, BASI
International Ski Teacher, Director of BASS Chatel. Photo: Peter Kuwall**

On the other hand, with **pressure**-based steering, the main ingredient is a well timed application of pressure to the ski, blended with enough edging to ensure grip and to apply the curved shape of the ski's side cut to the snow.

This is very effective for allowing you to flow smoothly, which includes the option of skiing at higher speeds.

Let's take a look at each of these in detail.



*Pressure based steering allows you to flow smoothly. Skier: Anita LaPlain
Photo: Hugh Monney*

Pivot-based steering

Please stay with me here, because I'm going to introduce this idea so that it's suitable for intermediate skiers and then I'm going to develop it for you, so that advanced skiers and experts can take advantage of this approach.

If you stand on one ski and pick up the other, you can move your foot, so that your toes, and so your ski, point to the left and then to the right.

This is what I mean, when I talk about pivoting the ski into a new direction. It's a very natural, simple movement, as are most skiing movements.

Just making this movement, three or four times with each foot, is enough to make your body more aware of the pivoting movement, allowing you to have easier access to it, when you set off on your skis

So here we go.

If you slide forwards on a gentle slope, with good posture (see the section on *Centred balancing*), you can gently *pivot* your right ski to the left, across your body, and *tilt* it gently, onto its inside edge, so that it begins to grip the snow.

This produces *skidding*, which is a scraping action of the ski's edge across the snow.



Pivot based steering can give skiers the control to tackle steeper slopes.

Skier: Elizabeth Mocerì. Photo: Hugh Monney

If this is coordinated in just the right way (and you have to feel for this, because coordination of this action is *your* job), the ski's design will create a beautiful, skidded curve for you.

When you just pivot one foot like this, you will see that the skis form the familiar snowplough shape, as you turn.

Please do not misinterpret this, by assuming that this approach is for beginners, only.

If you really want to ski safely and effectively, in steep terrain such as red runs, black runs, bump fields and beautiful powder off piste slopes, then you need to stay with me here, as I develop this process for you.

Pivot with both feet

You can also pivot both feet, in the same direction, if you have the balance, coordination and experience.

This will produce a skidded parallel turn, *if* you pivot them both at the same time, at the same rate and by the same amount.

So, already, we are adding some specific *qualities* to the coordination of this movement, to allow intermediate and advanced skiers to use this process for their parallel skiing.

Let's take a closer look at the coordination of this type of steering, for parallel skiers. As you begin to pivot both feet,



***Pivoting with both feet - control of speed in a steep chute, off piste in the Andes.
Skier: Nick Holmes - Smith, Director, Mustang Powder. Photo: Hugh Monney***

you can also begin to tilt your skis gently onto their edges. Straight away, the design of the ski will begin to work for you.

Keep both movements developing gently and progressively, until you decide that the curve has completed its work for you.

You can repeat this in the other direction, and there you have it, linked skidded parallel turns.

This is a **Performance breakthrough** issue, which transforms the quality and effectiveness of performance for many skiers.

But hold on just a minute, because to achieve this you need to be able to:

balance effectively, through the centres of your feet
pivot smoothly, through the centres of your feet
tilt your skis progressively, without losing balance.

The sections on “*Centred balance*” and “*Master your body*”, deal with developing these key abilities.

Let’s take time to consider the key process of changing the skis edges.

There is moment, of clarity and precision, at the heart of that process. Understanding how to use it will really improve the quality of your steering.



Pivot based steering, used expertly in the bumps.

Skier: Brian Dods, BASI International Ski Teacher Photo: Buster Cheetham

Changing edges: releasing one curve and beginning the next

There is a moment, between curves, when both skis are flat in the snow.

This moment is brief, but it is there.

Feeling for this moment, during the edge changing process, improves the following qualities of your turn initiation:

*sensitivity
accuracy
consistency
versatility
effectiveness.*

It takes a little time to tune into this, so that you can feel, with certainty, the precise moment when the skis are flat in the snow, for the first time.

But, soon after this, more of these moments become apparent to you. Soon after that, you can feel most of them.

This is a fundamental ability, that allows you to initiate your curves with precision and the other qualities listed above.

This allows you to steer your skis much more effectively in all circumstances.

The section on *Control of speed and line* sets out a series of drills to help you develop this essential skill.



There is a moment, between curves, when the skis are flat in the snow.
Skier: Gavin Kerr Hunter, Director of Snowperformance. Photo: Hugh Monney

Here's how to use it for pivot based steering

When you use pivot based steering, the first action that you take, to steer your skis, is a gentle pivoting movement, in the direction of the new curve.

There is a specific moment, which offers you the best time to begin this pivoting movement.

Yes, that's right, begin pivoting as your skis become flat in snow.

The more accurate you are with your timing of this, the better your steering results will be.

This is also a **Performance breakthrough** issue, which transforms the quality and effectiveness of skiers performances.

So, now you have a very accurate steering method plus an excellent process that helps you to improve the quality with which you use it.

The drills, a little later in this section, will help you to develop this ability and to *groove* it into your performance.



Pivot now, for well timed pivot based steering. Skier: Anita LaPlain

Photo: Hugh Monney

Intermediate skiers

Beginning to pivot your skis, and then beginning to tilt them gently onto their edges, can give you easy access to linked parallel turns, in which *skidding* helps you to keep your speed down.

There are **different intensities of skidding** and it's a good thing to develop your performance, so that you can skid gently or firmly, while producing curves of different sizes.

You manage this by blending the elements in different amounts.

For example, a little pivoting plus a little edging, is likely to produce longer, gently skidded curves. These are very effective at helping you to **ski smoothly on reasonably gentle terrain.**

A lot of pivoting (produced by a larger *range* of movement and a faster *rate* of movement), can combine with a lot of edging, to produce shorter, firmly skidded curves.

These curves are very effective at **controlling your speed on steep slopes**, but because your steering inputs are larger, your coordination and accuracy have to be good, if you are to avoid throwing yourself out of balance.



Mastery of pivoting and edging, gives you control on steep ground.

Skier: Elizabeth Mocerì. Photo: Hugh Monney

Advanced skiers and experts

More advanced skiers will be able to use the latter approach, for effectiveness on steep slopes and in bump fields.

Developing control of pivoting and edging allows you to deal with some very complex environments. Improving your accuracy and consistency, as well as versatility, with these actions, is part of that development.

So, your body needs the opportunity to practice and develop the balance, movement and coordination that makes this possible.

Summary of Pivot-based steering

Pivoting, at the beginning of the curve, (and continuing to do so throughout the arc), combined with good edge control, can give you a family of curves that:

skid
control your speed
help you on steeper ground

Timing your movements, to take advantage of the moment when the skis become flat in the snow, transforms the quality of your steering.

But, if you try to ski across very gentle slopes, with this steering blend, you may find that you grind to a halt.

And if you ski with friends, even on easy slopes, you may find that they pull away from you.



Pivot based steering, used expertly to control speed on steep ground.

Skier: Andy Thurner, Director of Arlberg Guides. Photo: Hugh Monney

Even more importantly, if you pick up a lot of speed and then try to use this steering blend, you may find that your trip yourself up, or at least, find it very difficult to maintain balance.

Wouldn't it be great to have a different steering blend that allowed you to flow more freely when circumstances allowed? And that would allow you to deal with speed, more safely?

That's where **pressure based steering** can help.



A steering blend that deals with speed - Pressure based steering.

Skier: Heliski guide Mike Hamilton, Beyond Boundaries. Photo: Hugh Monney

Pressure-based steering

Pressure-based steering is all about using the design of your skis efficiently and effectively.

In the previous examples, you began your curve by pivoting your skis.

You can make a small, but important change to your steering inputs, simply by being aware that you have the choice.

Instead of initiating the curve with a pivot, or twisting movement, just **press** gently down into the snow, with the sole of your foot, then gently tilt your ski on to its inside edge.

Let's just take a moment to clarify that new movement for you.

Imagine that you have made a snowball and set it on the ground, just to one side of your ski boot. Now, imagine picking up your ski, placing it over the top of the snowball, so that the middle of the arch of your foot is directly above it.

Now, imagine that you press down gently, to squash the snowball into the snow.

Of course, you can reproduce that movement, pressing down, without the snowball being there. That's the movement we're talking about.



Pressure based steering is all about using the design of your skis efficiently and effectively. Skier: Anita LaPlain. Photo: Hugh Monney

Again, it's a very simple, natural movement and you will be able to do it very easily.

You can make this movement with subtlety, so that no one will be able to see what you are doing and yet your ski will still respond. Which brings us to a very important point, discussed in the Preface, *The biggest secret in skiing*.

Excellent skiers can influence their skis with very subtle steering inputs. These inputs are often too subtle to be seen by the untrained eye, but have very clear and obvious consequences.

Many skiers attempt to imitate these consequences, without being aware of the subtle inputs that created them.

We are addressing one of the key components of effective steering. Even if people cannot see what you are doing, you will *feel* the effect of your improved **pressure control**.

Alternatively, you *can* be more vigorous with your pressure application, but be prepared for a vigorous reaction from your ski and be sure that is what you really want. You will still need to apply the pressure *smoothly*, to get the best response from your ski.

Let's get back on track with the whole steering action:

... **press** gently down into the snow, with the sole of your foot, then gently tilt your ski on to its inside edge.



Subtle steering inputs have clear consequences.
Skier: Andrew Lockerbie, BASI International Ski Teacher,
Director of BASS Megeve. Photo: BASS Chamonix

If you coordinate this sensitively, the outcome will be a very different type of turn, compared to your *pivot-based steering* turn.

Pressure-based steering, particularly when pressure is the *first* steering input, followed immediately by subtle edging, **is a very effective way to introduce the curved shape of the ski to the snow.**

As a result, the ski can flow smoothly, while deflecting you around a smooth arc. You are more likely to produce curves that are *carved, or nearly carved*, as you develop skill with this steering blend.

This is another **Performance breakthrough** issue, which transforms the quality and effectiveness of skiers' performances.

You can use pressure-based steering, for three main purposes.

1. To generate speed.

Pressure-based steering can allow you to accelerate your skis and flow smoothly around beautiful curves, generating speed.

2. To turn safely, when you are already traveling quickly.

It is very important that you have the skill to press, then tilt your ski(s), if you travel quickly.



*Flowing smoothly, with pressure based steering. Skier: Anita LaPlain
Photo: Hugh Monney*

If you have a lot of momentum, you need to deflect it progressively.

Please **do not** *pivot then tilt* your skis when traveling at high speed, as you are likely to trip yourself up, or at least lose balance and struggle to stay in control.

Elite skiers can sometimes deal with this, but it does take many years of training to achieve this level of skill.

3. To flow easily over gentle ground.

Pressure based steering is not all about high-speed.

You can flow smoothly down gentle slopes, on elegant curves, by using this steering method. It feels *fantastic*, it looks great and it can be very efficient, saving you a great deal of effort.

But hold on just a minute, because to achieve this, you need to be able to:

balance effectively, through the centres of your feet
tilt your skis progressively, without losing balance
and have the **patience and sensitivity** to pilot your skis until the curve has completed its' work for you.

The sections on “*centred balance*” and “*Master your body*”, deal with developing these key abilities.



*You need to develop patience and sensitivity, to pilot your skis in deep snow.
Skier: Hannes Webhofer, Director of Beyond Boundaries. Photo: Hugh Monney*

Changing edges: releasing one curve and beginning the next

As we discussed above, **there is a moment, between curves, when both skis are flat in the snow.**

This moment is brief, but it is there.

This process is introduced above, in the section *Pivot based steering*. The section on *Control of speed and line* sets out a series of drills to help you develop this essential skill.

Here's how to use it for pressure based steering

When you use pressure based steering, the first action that you take, to steer your skis, is a gentle pressing movement, into the snow, through the sole of your foot.

There is a specific moment, which offers you the best time to begin this pressing movement.

Yes, of course, begin pressing as your skis become flat in snow.

The more accurate you are with your timing of this, the better your steering results will be.

This, again, is a **Performance breakthrough** issue, which transforms the quality and effectiveness of skiers' performances.



Press now, for well timed pressure based steering. Skier: Anita LaPlain
Photo: Hugh Monney

So, now you have another accurate steering method plus an excellent process that helps you to improve the quality with which you use it.

The drills, a little later in this section, will help you to develop this ability and to *groove* it into your performance.

Intermediate skiers

Intermediate skiers make a breakthrough here.

Their skiing begins to feel more flowing and takes less effort. They begin to cover longer distances much more easily.

Advanced skiers and experts

This blend of steering elements *can* be used to skid, with skill, and can also be used to encourage the skis to carve.

Advanced skiers and experts enjoy carving their skis.

Pressure based steering allows experienced skiers to enjoy the sensations of flowing down the mountain.



Carving and flowing down the mountain. Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

Steering drills

Here are some practical activities that will allow you to develop the quality of your steering.

In the section on *Centred Balance and Athletic Movement*, I showed you how to use a clear process to help you use *drills* to develop your performance. The process works just as effectively with the steering drills, so here it is again, in case you don't have the information to hand.

Here's what to do!

Here is a simple, clear structure to the process of introducing new content to your skiing performance:

Have a clear objective

Have a clear process for achieving the objective

Start in a simple place

Set up simple activities (drills) that allow early attempts to succeed

Groove your new performance

Set up a series of more complex activities that challenge the new performance and require it to adapt

Move to a slightly more demanding place and repeat this process.

And so on.

Let's work this through for your *steering control*, using the processes of *pivot based steering* and *pressure based steering*.



Groove your performance. Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network, Photo: Peter Kuwall

Have a clear objective

You are trying to steer your skis using one of the steering blends discussed above.

Your objective is to *time your steering inputs* perfectly, using *the moment when the ski becomes flat in the snow* as a target for beginning your steering input (*pivot* or *press*, depending on which steering blend you are using)

Have a clear process for achieving the objective

Use the centred, athletic balancing process discussed in the section “*Centred balance and athletic movement*”.

Feel for the moment that your skis become flat in the snow, between turns.

Have a clear intention for your steering movements, as described above.

Start in a simple place

You need to choose a simple slope, and by that I mean either a green run, or an easy blue run, that has been well prepared. This simple *performance environment* removes many of the variables that would otherwise confuse your early attempts.

It also allows you to feel very comfortable about experimenting with new ideas.

So it's important, even for advanced skiers (in fact, especially for advanced skiers), to find a simple, inviting slope where you feel happy to experiment.



Choose a simple environment.

Feel for the moment when your skis become flat in the snow.

Skier: Peter Kuwall, BASI International Ski Teacher, Director of BASS Chatel,

Photo: Hugh Monney

Set up simple activities that allow early attempts to succeed

You need to choose something simple to attempt, so that you have the best opportunity to experiment with the new ideas that you are trying to develop.

One of the best ways is to use simple, rhythmic medium radius turns, controlling your speed with each turn.

An easy way to set this up, is to imagine a corridor down the piste. You're planning to turn from side to side in this corridor, so you need to choose a width for your corridor that allows you to complete medium radius turns, while controlling speed, very easily.

This is sometimes called a *medium radius corridor* drill.

The rhythm and consistency give you a simple framework with which to work. This allows you to focus on achieving your objective of timing your steering inputs accurately.

So, you have a clear objective, a clear process, you're in the right place and you doing the right thing. The chances are very good that you will have a *Eureka* moment. You will feel the results that you're searching for.

And of course, it will not have happened by chance, you will have created your own success by applying yourself in a clear, systematic way.



A clear process helps to bring results - sophisticated balance and coordination.

***Skier: Steve Ricketts, BASI International Ski Teacher,
Director of BASS Val d'Iserre. Photo: BASS Chamonix***

Feedback

When I'm working with people in this phase of development, and I don't mean inexperienced skiers, I simply mean skiers of all abilities, who are trying new ideas, I make a point of giving supportive and corrective feedback during these early attempts.

This helps the skiers to tune into the solutions and then develop their own sensitivity from there.

Since I'm not with you, here's some advice to use in the absence of that feedback.

If you do not have your *Eureka* moment, if you do not feel the results that you're aiming for, it's likely that you are not clear about the steering coordination you are attempting.

You must be able to do this in your mind, before you ask your body to do it, otherwise you will not give your body clear signals.

So please be clear about your intended movements, notice your actual results and change if you need to.

That process, more than any other, will ensure your success as a skier.

The corollary is also true. The absence of that process will inhibit your development more surely than anything else.



Sensitivity like this is developed by feeling for your results in the snow and using that information to help you adapt your performance.

Skier: Peter Kuwall, BASI International Ski Teacher , Director of BASS Chatel

Photo: Hugh Monney

For example, there are many enthusiastic and committed skiers who are so earnest in the application of ideas that they believe to be true, that they do not notice their actual results and so cannot adapt their performances.

Letting go of the tyranny of the ego, allowing your body to do its work, is an important part of the process of growth and development.

This is a **Performance breakthrough** issue, which transforms the quality and effectiveness of skiers' performances.

Sometimes, skiers rush their steering movements, so remember that the intention is to allow the design of your skis to work for you.

Begin by using relatively small, gentle movements and feel your skis respond.

Work on *timing* your steering inputs perfectly, using *the moment when the ski becomes flat in the snow* as a target for beginning your steering input (*pivot* or *press*, depending on which steering blend you are using).

For pivot based steering drills, be sure to decide on the intensity of skidding that you want to produce, for each run. Vary the intensity over a series of runs, to develop your versatility.



Performance breakthrough. Skier: Paul Morris, BASI Ski Instructor
Photo: Hugh Monney

Steering drills

Here is a series of development drills for you to use. The series begins with the medium radius corridor that we discussed above, and then moves on to introduce more variables, so that your performance develops more fully and becomes more versatile.

There are more drills described in the sections on “*Centred balance and athletic movement*” and “*Master your speed and line*”

A few are reproduced here, for your convenience, but to avoid unnecessary repetition, please refer to the other sections for a more comprehensive series of technical workouts.

You may find that you can deal with the first couple of drills, but that the later drills are too complex.

Don't worry, it just means that you need other techniques, perhaps from the *Master your Speed and Line* or *Master your body* sections, to succeed with the more complex drills.

Everyone is on the same journey.

There is a combination of the complexity of the drill and the complexity of the environment that challenges even the most highly trained skiers. That is the point.



Complexity that challenges performance.

Skier: Ross Nelson, BASI International Ski Teacher, Photo : Hugh Monney

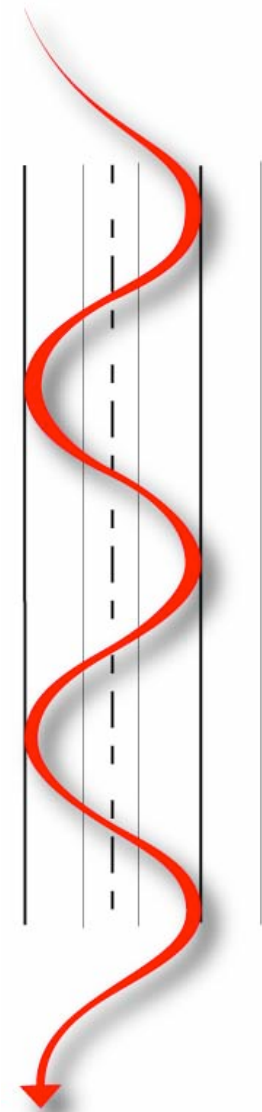
Remember, in all these drills, your objective is to use the athletic crouching process to help you find the target balance points under your feet, and to time your steering inputs accurately, as discussed above.

Medium radius turn corridor

an easy structure to allow early success.

Skiing to the edges of an imaginary corridor.

The rhythm and consistency give you a simple framework which allows you to focus on achieving your objective.



Illustrations: Tim Hall, Sweetimage.co.uk

Curve radius steering drills

This is a series of corridor based drills, again on an easy well prepared slope.

Start with your medium radius corridor, as above, and then on the next run, reduce the width of your corridor slightly.

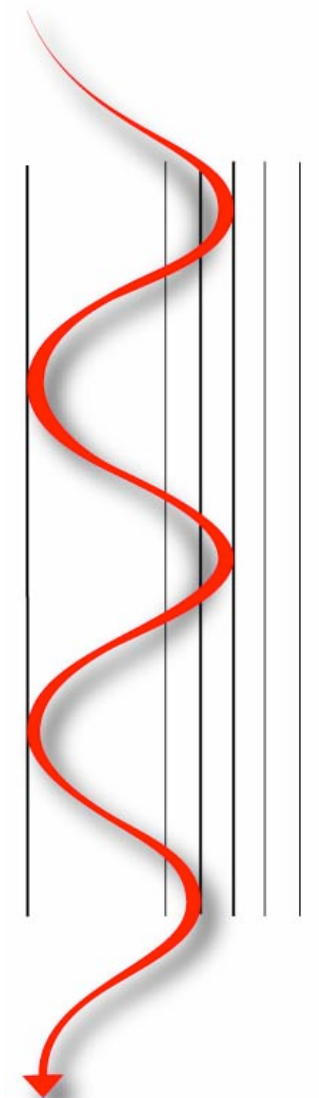
Please don't change the width too much to start with, just enough for you to perform curves with a slightly shorter radius, while still timing your use of the steering blend you have chosen.

Then, perhaps you could reduce the width of the corridor just a little bit more.

After that you could go back to your medium radius corridor and then on to slightly wider corridors.

You will be surprised at how rapidly your body will be able to adapt to the different timing requirements of each corridor, once it has been given the opportunity.

There are more drills described in the sections on “Centred balance and athletic movement” and “Master your speed and line”. They can be easily adapted for your purposes here. Please refer to these sections for a more comprehensive series of technical workouts.



Illustrations: Tim Hall, Sweetimage.co.uk

Summary of our two steering blends

Steering blends, in which *pivoting* is a main ingredient, are useful for: skidding and for controlling speed on steep ground, including bump fields.

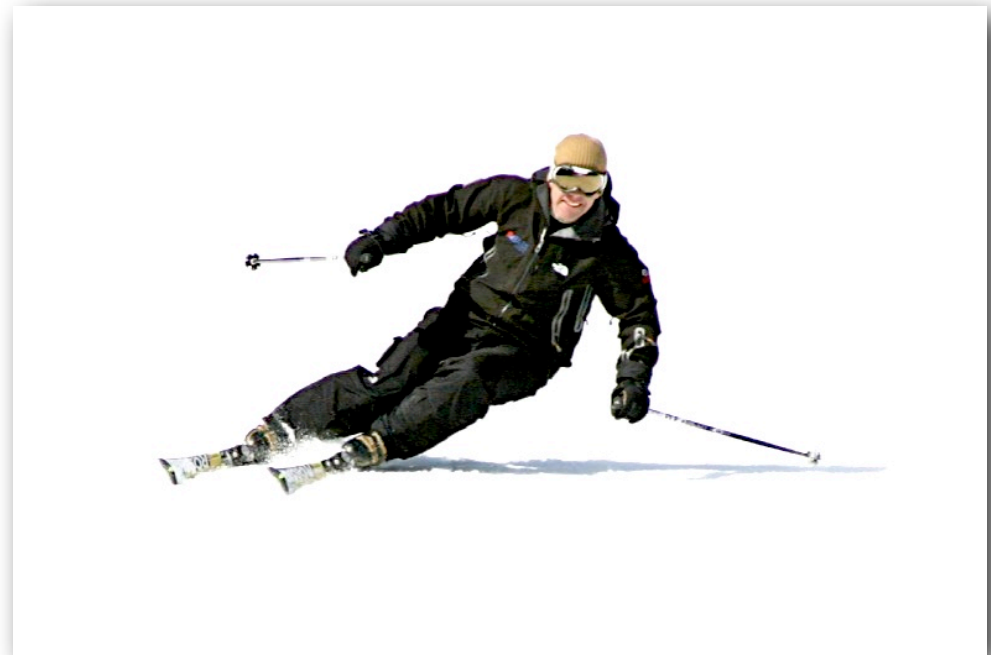
Steering blends, in which *pressure* is a main ingredient, are useful for flowing, either to generate speed or to cope with existing speed, and for encouraging the skis to *carve*.

In each of these examples, we have focused on a blend of two, out of the three steering elements.

We blended *pivoting* with *edging*, but *pressure* develops naturally throughout the resulting curve, so all three elements will be present.

We blended *pressure* with *edging*, and it is possible to add some gentle pivoting, if you want to. Even if you don't, the resulting curve causes you to change direction, so in a broad sense, the rotational aspect of performance is still present.

Pivot-based steering and pressure-based steering allow skiers to cope with a wide variety of situations, faced by intermediate and expert skiers alike.



Relaxed, efficient performance. Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

A third family of steering blends

There is a third family of steering blends, in which *edging* dominates the mix.

This is often accompanied by high *pressure* levels, that develop throughout the arc.

It can be coordinated with rapid *rotational* movements, in high-performance short radius turns, or with little or no active rotation, in high-performance medium or long radius turns.

This family of steering blends is used by ski racers and expert skiers. These skiers develop large tilting movements, producing large edge angles in the snow.

This type of skiing is exhilarating and athletic. You will need a lot of technical and tactical training, physical conditioning and a strong, disciplined mind, to perform in this way.

There is much more on this subject in the next section, *Steering your skis - part 2*.



Edge based steering is used by ski racers and expert skiers.
Skier: Ross Nelson, BASI International Ski Teacher. Photo : Hugh Monney

Notes for your own Ski Performance Breakthrough:

Overleaf:: **Spring Skiing in the Andes**
Photo: Hugh Monney



Chapter 3

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Skier: Gavin Kerr Hunter, Director of Snowperformance. Photo: Hugh Monney

Steering your skis - part 2

If you read the previous section, *Steering your skis, part 1*, you have an appreciation of some steering blends and some useful drills to help you develop skill with them.

Now it's time to take a closer look at each steering element.

This section deals with many refinements to the process of steering your skis, which gives you many opportunities to improve your effectiveness and control.

To start this process, let's look at each of the steering elements, *pressure*, *edging* and *rotation*, in detail.



Off piste in the Andes

Skier: Gavin Kerr Hunter, Director of Snowperformance. Photo: Hugh Monney

Pressure - the lowdown

Let's start with a definition.

Pressure is the force that the ski exerts on snow, divided by the contact area of the ski with the snow.
(pressure = force / area)

This is just physics, that's what pressure *is*.

We can influence the pressure between our skis and the snow, in many ways. They fall into the two categories of either increasing or decreasing the pressure.

1. Increasing the pressure between the ski and the snow

a. Press the sole of your foot down into the snow.

Imagine that you have made a snowball and set it on the ground, just to one side of your ski boot.

Now, imagine picking up your ski, placing it over the top of the snowball, so that the middle of the arch of your foot is directly above it.

Now, imagine that you press down, to squash the snowball into the snow. Yes, it is that simple.

Of course, you can make that pressing down movement, even without the snowball being there. That's the process we're talking about.



Skiing at speed, on steep slopes, requires excellent pressure control.

***Skier: Steve Ricketts, BASI International Ski Teacher,
Director of BASS Val d'Iserre. Photo: BASS Chamonix***

You can do this very gently, or very strongly, or with any intensity between those limits, so it is a very versatile process.

This is a very important way of generating pressure, usually near the beginning of a curve, in the initiation phase.

b. Pivot your skis across your line of travel **and tilt** them onto their edges.

This creates pressure automatically.

The amount of pressure created depends on:

how quickly you are traveling,

how far across your direction of travel you pivot your skis

and how much grip you create with the skis edges in the snow.

Expert skiers can adjust the amount of pressure generated, by controlling these three variables.

This principle is easy to understand, in the context of a skidded curve, created by the *pivot steering* method, discussed in the previous section.

However, this process also works when your ski arcs across your direction of travel, more progressively. So this process also works during carved turns.



This creates pressure automatically.

Skier: Alison Kerr Hunter, Director of Snowperformance. Photo : Hugh Monney

This is your principal source of pressure and it is at work for you in every curve that you create, as your skis change direction, with grip, across the line of your momentum.

Just imagine for a moment, that you are skiing off piste, on breakable crust, on a spring day.

The circumstances might require a *gentle* approach, so that you can stay on top of the snow, or a *powerful* approach so that you can break through into the snow below.

It depends, on the snow, really, and you can adapt your approach to suit the circumstances, by using this process skillfully.

Variations of this method are described in *method g*, below, and in the section on *steering angles*, later in this chapter.

c. You can ski into bumps or drifts of snow.

Your skis will slow down and your *momentum will* act against your skis, again, to create pressure.

Many skiers are caught off balance by this process and are pitched forwards. **Some nasty falls are caused by this.**

Here is the solution for you.

It is possible to predict this course of events and re-coordinate your movements, so that you are pitched onto the centres of your feet.



Grace under pressure in the bumps. Skier Ambrogio McClintock, BASI International Ski Teacher. Photo: Buster Cheetham

This is called *anticipatory* balancing and is not as complex as it sounds.

You make exactly this type of adjustment when you step off an escalator, or moving walkway, or slow down when you are running.

Anticipatory balancing on skis, for bumps or drifts of snow, is just a slight development of your natural ability.

d. You *can* bend the ski boot forward.

This loads the front of the ski, often at the expense of the rear of the ski.

Please be very careful with this. For every hundred skiers using this approach, probably only one uses it correctly, to his or her advantage.

The secret is that you need to flex the boot, while remaining centred. Achieving this takes quite a bit of discipline and training. Just leaning forwards is *not* the point here.

e. You can place your body weight over a ski, to increase pressure through it.

Please be careful with this, too, as it often causes problems for your balance, posture and movement.

An interesting observation here, is that, for many years, skiers have been asked to use methods d and e, and have been left to struggle with the undesirable consequences.



*Transmitting pressure to the front inside edge of the ski, while staying centred.
Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney*

f. When you tilt your skis onto the edges, on firm snow, you reduce the contact area between the ski and the snow.

This will increase the pressure between the ski and the snow, if the forces are not reduced by other means.
(pressure = force / area)

A consequence of this is that you can inadvertently drop through a fragile crust, by tilting too much, even if you're trying to be gentle with your skis.

g. You can increase pressure by tightening your turn radius.

The tighter the turn, the more pressure you generate between the ski and the snow, if you are able to maintain grip.

To succeed with this, you will need a well coordinated influence over all three steering elements and a good feel for the grip levels available.



Increasing pressure by tightening the radius of the turn.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network

Photo: Peter Kuwall

2. Decreasing the pressure between the ski and the snow

a. You can jump off the snow. There is no pressure at all between the ski and the snow, while you are in the air.

b. You can ski over a brow on the slope, onto steeper terrain. (The ground falls away from you.)

This is an important factor for advanced and expert skiers, as they will experience this several times a day.

Unless adjustments are made, if your curve passes over a terrain feature like this, the turn radius will increase as you pass over the ridge.

It is easy for inexperienced skiers to fall foul of this unexpected influence on their steering control and run wider than expected.

Ski racers have to learn to cope with this, at gates set over a ridge.



The ground falls away from you. Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

c. You can reduce pressure by absorbing it with your legs.

To succeed with this, you will need well coordinated flexion movements, that work through a large *range* of movement without causing you to lose your centred balance. (See the section on *Centred balance and athletic movement*.)

This is important for bump skiing, off piste skiing and general comfort and skill on the open piste.

d. You can reduce pressure by increasing your turn radius.

The more gradual the turn, the less pressure you generate between the ski and the snow. To succeed with this, you will need well coordinated influence over all three steering elements and excellent balance.

Summary of factors affecting pressure

We have listed eleven factors that can influence the pressure between your skis and the snow. Excellent skiers influence all of these factors, during a descent, as part of their control of pressure.

The objective is to allow the pressure to develop smoothly and progressively, through the arc of your curve, to match your tactical intentions.



Well coordinated flexion movements are important in bump skiing.
Skier: Ross Nelson, BASI International Ski Teacher. Photo : Hugh Monney

Your tactical intentions, in turn, are influenced by questions such as:

Where, on the arc, do you choose to have your maximum loading? (*This is discussed below*)

How does this influence your exit line?

(*See the chapter on Control of speed and line*)

How does this fit into the terrain?

How will this influence your speed and safety?

How does this make you *feel*?

One of the conclusions to be drawn, from our overview of pressure control, is that the quality of your *bending and stretching movements* plays a very important part in your control of pressure, and so your steering control.

Many skiers have very restricted bending and stretching movements.

It's clear that they have an excellent opportunity to develop much better pressure control, and therefore much better steering, by improving the quality and range of these, and other, movements. (*See Chapter 5*).



Highly refined quality of movement

Skier: James Lamb, BASI International Ski Teacher, Director of BASS Morzine

Photo: Buster Cheetham

The development of pressure, throughout the curve

One of the key ways in which expert skiers influence their skis, is by deciding where to experience maximum pressure, on a given curve.

Left to its own devices, the pressure would naturally be gentle at the beginning of the curve, smoothly increasing to a maximum at the end of the curve, in the control phase.

That *can* be a good plan, it's an excellent way to ski down an open slope.

Skiers can shape all of their steering inputs so that this pattern of pressure development is smooth and progressive.

Working *with* this pattern of pressure development is very sophisticated behaviour, and gives rise to flowing, seemingly effortless performance. This is because the coordination of all the skiers' moments, is finely tuned to the curves being created.

This gives you a very important process of self-management, that will improve the quality of your performance enormously.

Most skiers just don't do this, so this will give you a big advantage.



Maximum pressure in the acceleration phase of the arc.

Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo : Hugh Monney

Skiers of all abilities

The good news is, that you do not have to be an expert to achieve this. Skiers of all abilities can begin to use this process.

I introduce this principle to beginner skiers, as a way of helping them to improve their performance of snowplough turns. When these skiers tune in to this process, even their snowplough turns become graceful and fluent *and fun*.

Advanced skiers and experts

Advanced skiers and experts, who have developed this ability, earn the freedom to *reshape* the pressure development around the arc.

For example they can choose to develop the maximum pressure in the central, acceleration phase of the curve.

This can be an excellent strategy for **ski racers**, in many circumstances, as it propels them into the next turn, without losing speed.

This is also an approach that works well **off piste**, where it helps to overcome the drag of the deep snow and gives a lively rhythm to an off piste descent.

Can you see how a process that can be introduced to beginners, using snowplough turns, can develop into sophisticated, off piste performance?

As I say elsewhere, there is a sense in which we are all on the same journey.



Placing maximum pressure in the acceleration phase.
Off piste skier: Alan Dupont
Racer: Ross Nelson, BASI International Ski Teacher
Photos: Hugh Monney

Edging

This steering element influences two key aspects of steering:

the level of **grip** available
the introduction of the **shape** of the side cut of your skis to the snow.

Grip

While it's true that different types of snow offer different amounts of grip to all skis, it's also true that some skis are able to develop more grip than others.

This is influenced by three key factors:

the *design* of the skis
the *condition* of the edges
the *skill* of the skier.

Some skis are designed to be twisted easily (low torsional rigidity). This is difficult to test by hand, but it's easy to feel this when you are skiing. These skis are designed to be easy and comfortable for intermediate skiers, or those skiers who do not want to experience high loads.

There is a limit to the amount of grip that these skis will produce on hard snow, even for a skilful skier, even with the edges in good condition.

Other skis, designed for more experienced skiers, are less easily twisted.



Skier: James Lamb, BASI International Ski Teacher, Director of BASS Morzine
Photo: Buster Cheetham

They can produce much more grip, if they're kept in good condition, but on the other hand they are much less forgiving, so skiers need to be better trained to use them effectively.

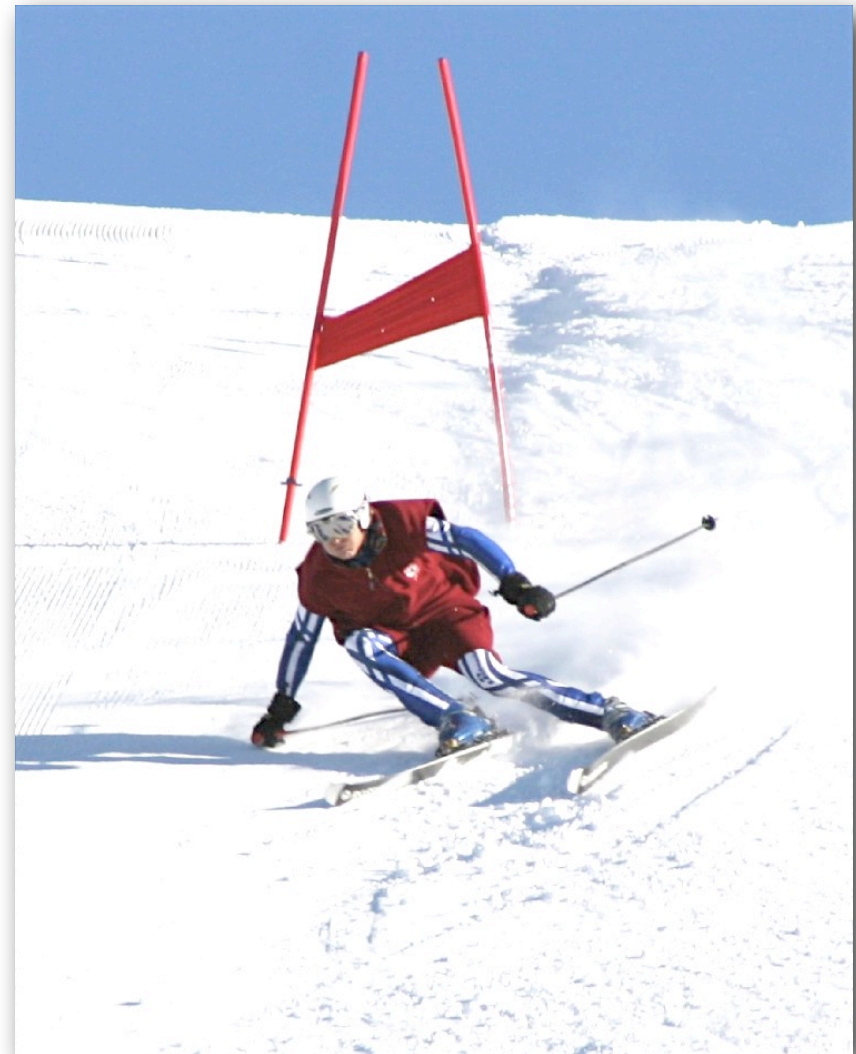
Whatever the design, the edges need to be maintained in excellent condition, if the skis are to perform well. Worn, rounded edges just will not grip on firm snow.

For this reason, expert skiers pay great attention to the maintenance of their edges.

For a given design of ski, in excellent condition, very good skiers will be able to create more grip on firm snow, than less skilled performers.

The difference here is the result of the accuracy, timing, sensitivity and coordination of all three steering elements, *pressure, edging and rotation*, combined with other aspects of performance, such as balance, agility, strength, and the ability to predict how much can be asked of the ski, in the circumstances.

These abilities are developed by taking part in sophisticated training programs, specifically targeted at developing these qualities of *application* of your performance.



Creating grip in difficult circumstances. The shape of the outside ski tells the story. Skier: Ross Nelson, BASI International Ski Teacher.
Photo : Hugh Monney

Using the side cut of your skis in the snow

You will be aware that the sides of your skis are curved, with the narrowest part of your ski placed under your foot. The tail of your ski is much wider and the tip is wider still.

The specific side cut shape of *your* skis is carefully designed to work with other design factors, such as the flex pattern and the torsional rigidity of your ski.

So, whether you use a giant slalom ski, a special slalom ski, a recreational ski based on either of these patterns, or a wide, free ride ski, these design characteristics have been carefully balanced to work with each other, to give you excellent results.

Even modern rental skis, designed for less experienced skiers, are carefully balanced in this way, to give these skiers a successful and enjoyable experience.

All that remains, is for *you* to make the best use of your sophisticated equipment.

So, let's take a look at how you can use the *side cut* of your skis to best effect.



Introducing the shape of the sidecut of the skis to the snow.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network

Photo: Ross Nelson

The key point here is:

the greater the tilt angle of your skis in the snow, the tighter the curve you can create.

This happens because:

the combination of your skis side cut shape and it's flex pattern (your skis bend under load) presents a curved shape to the snow.

The more you tilt your skis and the more you bend them, the tighter the arc your ski presents to the snow.

The shape that you create, is an important factor in determining the size of the curve that you create in the snow.

Edging as part of Pivot based steering and Pressure-based steering

We took a close look at these two steering blends, in the previous section, *Steering your skis part one*.

If you have read that section, you will be able to apply this new information straight away, improving your performance with both of these important steering blends.

*In either steering blend, you can tighten the arc of your curve, by **tilting** a little more.*



Large tilt angles. Skier: Ross Nelson, BASI International Ski Teacher
Photo : Hugh Monney

So, now you can use your Pivot based steering and Pressure-based steering approaches, with an extra dimension of control and expertise.

Progressive edging

There is more to tilting your skis on their edges, than meets the eye.

For most of the curves that you create, the quality of your steering will be improved (smoother, better grip, more accuracy, better balance) if you tilt your skis smoothly and progressively, rather than abruptly.

Let's take a look at how this works through the three phases of the curve that we identify, in more detail, in the section on *"Master your speed and line"*

If you tilt your skis too much at the very beginning of your initiation phase, they are likely to be very difficult to steer, especially if you are using the pivot-based steering and pressure-based steering blends.

So, there is great advantage to be had by tilting subtly at this part of your curve.

By contrast, it's quite possible that you are loading the skis heavily in the control phase of your curve.



Subtle tilting at the beginning of the turn.

Skier: Peter Kuwall, BASI International Ski Teacher, Director of BASS Chatel,

Photo: Hugh Monney

There are three reasons why more tilting might be required here.

1. More tilting might encourage your skis to *grip the snow*.
2. More tilting might *encourage your skis to turn quickly across your direction of travel*, to control you. You're presenting a shorter radius shape to the snow, here, so the curve that you are producing will tighten.
3. The movements that create more tilting might help you to *balance more effectively with the forces generated by the curve*. (There is much more on the subject in our section on *managing the forces of your performance*).

So, the ability to tilt your skis smoothly and progressively onto their edges, is a key component of your steering control.

This ability makes a tremendous difference to all pivot based steering and pressure-based steering blends for skiers of all abilities.

That is quite a considerable effect, so it's clear that this is a very important area to develop.



More tilting at the end of the turn, encourages the skis to turn quickly across your direction of travel. Skier: Peter Kuwall, BASI International Ski Teacher, Director of BASS Chatel. Photo: Hugh Monney

Coordinate your maximum tilt angle with your maximum loading

The section on *Pressure*, above points out that some advanced skiers and experts choose to reshape the pressure development around the curve, so the maximum loading occurs in the acceleration phase.

This would be a very good place to have your maximum edge angle for the curve, if you are using this strategy.

Coordinating your maximum tilt angle with your maximum loading, around the curve, is a sophisticated strategy that works very well.

Now, let's take a closer look at the third family of steering blends, which was introduced, briefly, in the previous section "*Steering your skis, part one*": *Edge based steering*.



Coordinating the maximum tilt angle with the maximum loading.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network

Photo: Ross Nelson

Edge based steering

There is a third family of steering blends, in which *edging* dominates the mix.

This is often accompanied by high levels of pressure, that develop throughout the arc.

It can be coordinated with rapid *rotational* movements, in high-performance short radius turns, or with little or no active rotation, in high-performance medium or long radius turns.

This family of steering blends is used by ski racers and expert skiers. These skiers develop large tilting movements, producing large edge angles in the snow.

This type of skiing is exhilarating and athletic. You will need a lot of technical and tactical training, physical conditioning and a strong, disciplined mind, to perform in this way.

This type of skiing depends on excellent tilting movements, balance, timing, plus skillful alignment of your body to the forces of the curve, so that you can work with them safely and subtly.

Each of these factors is dealt with in more detail in the sections on “*Master your body*” and “*Managing the forces of the performance*”.



Changing edges in the air; the first contact with the snow will be with the edges.

Skier: Peter Kuwall, BASI International Ski Teacher, Director of BASS Chatel

Photo: Hugh Monney

Edge based steering uses the side cut, flex pattern and torsional rigidity of your skis, to help you carve accurate, slicing arcs in the snow.

To access these qualities with maximum effect, you need to be *very familiar* with your edge changing process and the moment of clarity and precision at the heart of that, when your skis are flat in the snow.

You can now see **this moment is the gateway to all of your steering options.**

You can choose to *pivot* here, for *pivot based steering*,

or *press* here, for *pressure based steering*

or *be patient* here and wait until your edges have engaged, before applying another steering element, for *edge based steering*.

How much edge angle should you apply, before introducing some pressure, for example? That depends entirely on the circumstances.

So, a significant part of the skill required to use edge based steering, is the ability to predict how your skis will respond in the snow.

This ability is developed by taking part in specific training, that targets these qualities of *application* of your performance.



This moment is the gateway to all your steering options.
Skier: Gavin Kerr Hunter, Director of Snowperformance. Photo: Hugh Monney

Rotation and pivoting

The third, and final, steering element is rotation.

Let's make a distinction here, between rotation and *pivoting*, so that you can have a clearer view of their roles in the steering of your skis.

Pivoting is a *movement* that can be used to introduce the steering element, *rotation*.

Rotation, can also influence your steering, even if there is no pivoting movement being used. This will become clearer over the next few pages.

Pivoting movements

Pivot-based steering was discussed, in some detail, in the section "*Steering your skis part one*", so let's focus on refining and developing that understanding.

Centred pivoting movements

Just as there is a place to balance on each ski, as discussed in the section on "*Centred balancing and athletic movement*", there is also a specific place on your skis which should act as the centre of your pivoting.

Placing the axis of all of your rotational steering movements through this point, gives you precision, balance and control.



Rotation, used to control speed, on an off piste descent in St. Anton.

Skier: Paul Morris, BASI Ski Instructor. Photo: Hugh Monney

Fortunately, this place is the same place as the balance point on each ski.

You will remember, from the section on “*Centred balancing and athletic movement*”, that this is highlighted on your ski by an index mark, which is directly underneath the index mark on your ski boot, **under the arch of your foot**.

Please take a moment to let this sink in.

Many skiers, possibly most, pivot their skis through the balls of their feet, or even about a point in front of their toes.

There is a reason for this, it's easy to set up a turning moment (please excuse the physics) by leaning forwards and hooking the front of the ski into the snow. People, by their nature, can become very skilful with this.

The problem is, that these skiers are out of balance and are obliged to make many corrections, to avoid falling over.

Plus, of course, they are restricted to relatively low intensity situations, because the combination of being out of balance *and* generating large forces, ends in snowy chaos.

By contrast, taking the care to develop accurate pivoting movements, that are centred through the sweet spots of your skis, under the arches of your feet, opens up all kinds of possibilities, including success in bump fields and off piste runs.



Accurate rotational movements - one of the secrets of successful off piste skiing.
Skier: Andy Thurner, Director of Arlberg Guides. Photo: Hugh Monney

Keeping your rotational movements “on axis” is as important for skiers as it is for gymnasts.

So, now, when you use pivot based steering,

you have a clear *time* to begin the pivoting movement:
as the skis become flat between turns

and you have a clear place, for the axis of rotation:
through the arches are your feet, and so the sweet spots of your skis.

Intermediate skiers

can use this information to refine the timing and accuracy of their movements, so improving the quality and effectiveness of their steering, while saving energy through increased efficiency.

This is a **performance breakthrough moment**, as skiers finally realise that their skis can be finessed, rather than wrestled with.

Advanced skiers and experts

Some complex descents involve scores of rotational steering movements. Just think of bump runs and steep off piste runs and you’ll see what I mean.

If you are going to use that much rotation, that frequently, you *really* need it to be accurately **timed** and accurately **placed**.



Bump skiers use accurate rotational movements, every turn.

Skier: Peter Kuwall, BASI International Ski Teacher, Director of BASS Chatel

Photo: Hugh Monney

Just improving your ability to manage these two variables, will give you access to more complex environments.

This is a major opportunity to move your performance forward.

More on pivoting movements

So far, the only pivoting movements we have addressed directly, involve pivoting your feet, which involves pivoting movements of your legs.

You can tell when skiers are using this approach, because their skis change direction underneath their bodies.

If you look at the photograph of Peter Kuwall, on the previous page, you will see that *his skis are pointing across the direction in which the body is facing*, at the end of the curve.

This is very suitable for many types of skiing, but there are alternatives.

For example, you can choose **not to pivot** at all, relying instead, on the shape of your skis to provide all the change of direction you need.

You will see this used expertly by racers on giant slalom courses and by free riders in large off piste bowls.

You will see photographs in this book, showing skiers facing in the same direction as their skis, at the end of the curve.



Choosing not to pivot. Skier: Ross Nelson, BASI International Ski Teacher
Photo : Hugh Monney

This is often evidence that the skier is not using active rotation, but is relying entirely on the shape of the skis to provide the steering input and the resulting control of speed and line.

Also, you can **pivot your whole body**. Clearly there can be complications with this.

This movement is often used by inexperienced skiers, when they are feeling apprehensive. It causes great difficulty for their balance and control of steering, so a great deal of effort goes into helping them select more accurate steering methods.

However, there can still be value in this movement, usually for expert skiers. These skiers can influence their skis with carefully judged pivoting movements that begin in the upper body and are passed down to their skis.

The movement is subtle, but you can sometimes see evidence of it, when excellent skiers are traveling at very high speed.

The appearance may be similar to the previous example, where the skier faces in the same direction as the skis, but you may also see that the outside arm is advanced.

If you look more closely you may also see that the torsion passes through the upper body, passes down to influence the pelvis, then the legs and feet, and so the skis.



*The outer arm is advanced - evidence of some subtle rotation.
Skier: Ross Nelson, BASI International Ski Teacher. Photo : Hugh Monney*

So, what's going on?

How can we understand these different types of rotation more clearly, and how can we use that to our advantage?

Let's take a closer look.

Two critical steering options

If you take a look at the two photographs on this page, you will see two completely different sets of biomechanics.

Each photograph shows a completely different approach to the physics of the curve.

In the top photograph, I've created a **steering angle** between my body and my skis, which allows my momentum to create pressure between my skis and the snow.

This is described above, in the section dealing with pressure.

My body and skis are traveling along different pathways.

In the lower photograph, my body and skis are traveling in the same direction, around the curve.

*My body and skis are traveling along **parallel pathways**.*

Lets take a closer look at each of these methods and their applications.



Steering angles. Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Peter Kuwall



Parallel pathways. Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Peter Kuwall

Steering angles

Your body and skis travel along different pathways.

This is a very sophisticated coordination and the advantages are:

it can give you control over your speed and line:

*in narrow places
on steep slopes
in bump fields
off piste*

and

it can give you excellent agility and manoeuvrability, by making the edge changing process easy and effortless.

Taken together, these advantages have an exceptional effect on the quality of a skier's performance.

Using this process relies on the skier having an excellent ability to coordinate the three steering elements, good balance and well-trained movement patterns.

In particular, it is not possible to use this approach without good quality rotational moments, as described in the section above.



Steering angle. *My skis are steered across the direction of travel of my body.*

Skier: *Hugh Monney, BASI International Ski Teacher, Director of the BASS Network.*

Photo: Peter Kuwall

Many experienced skiers, who would like to ski better off piste and in bumps, need to develop these movements to improve their prospects.

The diagram illustrates the different pathways of the skis and of the body's centre of mass. You can see that, at the beginning of the curve, the skis and body move away from each other.

This takes well trained confidence and relaxation skills, especially in the bumps or on a steep slope.

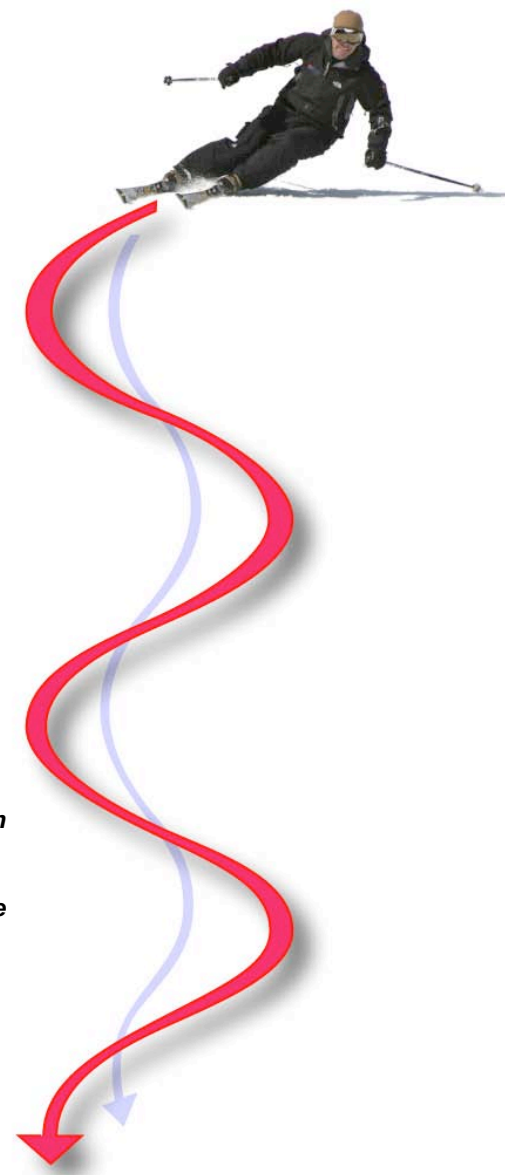
By the middle of the arc (acceleration phase) the body and skis travel in the same direction, briefly.

By the end of the arc, their pathways converge and the intention is to allow the momentum of your body to act on the skis, so that the pressure created passes through the target balance points of your skis (under the arches of your feet).

All of that takes quite a lot of coordination, even in simple terrain.

And it is the ability to perform this accurately and consistently, which earns skiers the freedom to tackle the more complex environments such as steep slopes, bumps and off piste runs.

You will see that the edge changing process is a natural consequence of the fact that the body and skis converge at the end of one turn, then diverge at the beginning of the next.



The pathway of the body is shown in blue, that of the skis, in red.

Confidence and relaxation are required, to create this.

Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams.

*Photo: Hugh Monney
Illustrations: Tim Hall, Sweetimage.co.uk*

The skier's role is to influence this process, subtly, to finesse control of speed and line.

Advanced skiers and experts

Advanced skiers and experts can develop the coordination here, so that their skis are propelled into the next turn.

This takes even more refinement of the coordination of the steering elements and the movement patterns involved, but it is very worthwhile because you can use this process:

to give you excellent grip at the end of the turn, handy on hard snow and on steep ground,

to place your skis where you want them to be, at the entry of the next turn, and to get them there very rapidly,

to harness the energy in your skis, rather than using your muscles,

to overcome the effects of the drag of deep snow,

to place your skis at the next turn entry point, in the bumps, just in the nick of time.



The skis have been propelled to the next turn entry point, from the bump on the left, just in time. The skis and centre of mass are diverging at this point.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network.

Photo: Peter Kuwall

Parallel pathways

Your body and skis travel along parallel pathways.

Biomechanically, this is a simpler coordination, but ultimately you still need discipline and finesse to master this process.

The advantages are:

excellent physical strength and resilience

good stability

very effective when traveling at high speeds

minimises the build up of pressure at the end of the turn (compared with using steering angles) and

this approach is very effective for dealing with high loads.

Taken together, these advantages suit rapid travel, using medium and long radius curves.

You will see this process being used on television, when you watch top level giant slalom and downhill skiers.

You will also see it being used, by skilled freeride skiers, traveling at speed on wide open off piste slopes.

The reason that this method minimises the build up of **pressure** at the end of the turn (compared with using steering angles) is that the skier's momentum acts in the direction in which the ski is traveling, ie. along its length, rather than across it.



My skis and body are traveling in the same direction.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network

Photo: Peter Kuwall

This allows the ski to track quickly and smoothly over or through the snow.

Another important consequence of this method, is that you need to have an excellent strategy to help you release from one curve and change your **edges**, to begin the next.

As you will see from the diagram, the automatic edge changing process, that is characteristic of the steering angles method, is not present here, so you need to *do* something instead.

A very simple and effective method is to **relax your supporting leg**.

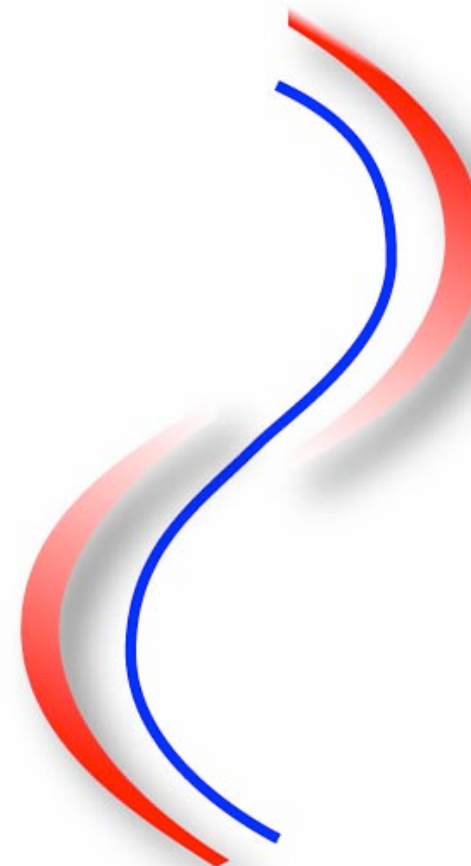
Even though both skis will be pressurised, and both legs will be supporting you, your outer leg will be doing most of the work in supporting you.

Relaxing this leg, at just the right moment, will allow you to change edges smoothly.

So, the way that you apply **rotation** to your skiing, influences the ways in which you can apply your **edges**, as well as the **pressure** development throughout the curve.

While it may be fair to say that

the **Parallel pathways** approach favours *strength and stability*, and medium to long radius curves,



Parallel Pathways

The pathway of the feet and skis is shown in red, that of the centre of mass, in blue.

Illustrations: Tim Hall, Sweetimage.co.uk

while the **Steering angles** approach favours *agility*, and shorter to medium radius curves, this does come with a caveat.

Skilled performers can blend the two approaches, to produce excellent strength and stability in high load turns, of almost any radius, within the design characteristics of their skis,

and flow seamlessly, from one turn to the next, with a subtle application of steering angles to aid the edge changing process.

The technique here, is to use the parallel pathway approach, then introduce some **rotational freedom** in your body, towards the end of the curve. Usually, this is done by allowing the shape of the curve to keep turning your skis, feet and legs, while relaxing the muscles around your hip joints, so that your legs are turned in your hip sockets.

This isolates your centre of mass from the turning influence of your skis at this point, and sets up a subtle steering angle, which begins the edge changing process for you.

This is a pretty sophisticated technique, but it's a great way for advanced skiers and experts to finesse their performances.

It's sometimes embellished, by adding a slight outward rotation of the upper body, to enhance the steering angle effect.



Skier: Rebecca Malthouse, BASI International Ski Teacher, Director of BASS Morzine. Photo: Buster Cheetham

More steering drills

There are some excellent steering drills in the previous section, *Steering your skis- part one*.

Now, you can repeat them using the information from this section.

From the external viewpoint, you will appear to be performing the same drills, *but* you will be using much more sophisticated content, with more refined intentions and that represents a great deal of progress.

For example,

you can focus on the pressure development throughout the arc, as discussed above;

you can focus on progressive edging, throughout the arc,

you can focus on using steering angles and using parallel pathways.

There are just three other steering drills that I would like to introduce here for you, one each for edging, pressing, and rotation.

Edging drill

This will probably surprise you.

Spend time *side slipping* down an easy slope.

Firm snow is required for this drill, to keep it safe.



Skier: James Lamb, BASI International Ski Teacher, Director of BASS Morzine

Photo: Buster Cheetham

Can you slip smoothly?
Can you slip in a straight line?
Can you slip on a smooth diagonal (which angles are most challenging?)

Can you slip without catching the downhill edge, of either ski?

This drill helps you to develop the sensitivity required to apply your edges with subtlety. It also helps you to refine your balance.

Please make sure that you keep your downhill ski pole out of the snow, otherwise you will trip over it and fall onto your hand, still gripping the pole handle, which can really injure your ribs.

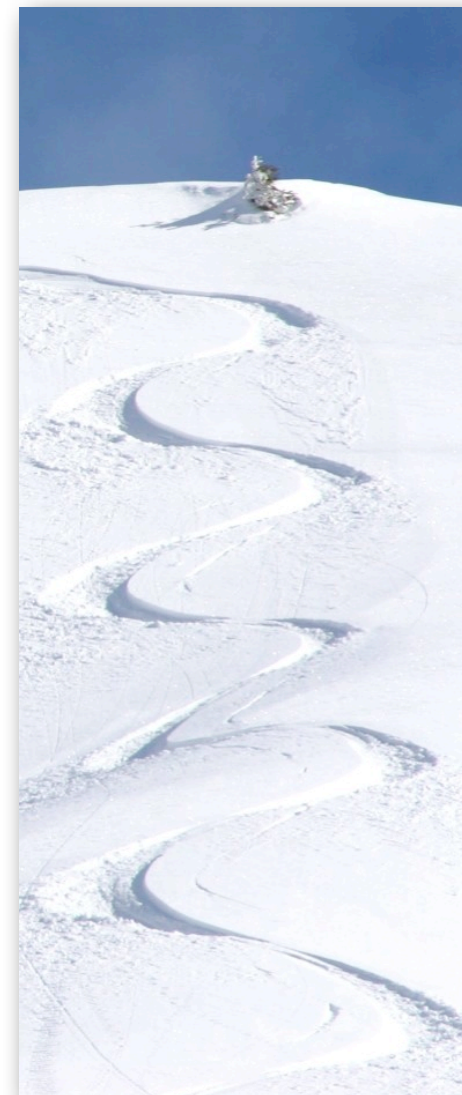
Rotation drill

Firm snow is also required for this drill, to keep it safe.
Having developed the *side slipping* skills above, you can move on to drill that develops the quality of your pivoting movements.

Can you slip smoothly, in a straight line, down an easy slope, with your left ski as the lower ski and then *pivot both skis* in the other direction, so that you continue to slip smoothly in a straight line, with your right ski as the lower ski?

Can you repeat this several times on the way down the slope?

Can you travel in a straight line, or do you end up performing a series of diagonals or curves?



**Short radius turns, off piste.
Evidence of steering angles.**
Photo: Hugh Monney.

This is not an easy drill, but it is an important skill!

Pressure drill

Can you bend and stretch, without losing your centred balance, over the targets points on your skis?

How low can you go, without balancing on your heels, inadvertently? Your objective is to re-coordinate your movement, so that you can drop into a low tuck, without losing balance.

It's just as important to remain centred when you stretch, so be sure that you can achieve this, without balancing on the balls of your feet, rather than the arches.

This drill starts off very simply, just bend and stretch, to these extremes of your range of movement, as you straight run on a nursery slope.

Yes, this is an exercise given to beginners, but only because it's so important. What a shame it is that many advanced skiers have forgotten this lesson.

Once you have the hang of this, you can make these movements as you link simple curves, on an easy slope.

The whole point, is for you to learn how to coordinate yourself, so that you can then apply your improved coordination, when the going gets tough.



Centred flexion and rotation movements are important in the bumps.
Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network.
Photo: Peter Kuwall


Opposite: The Mont Blanc Massif. Photo: Hugh Monney





Chapter 4

Master your Speed and Line



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Master your speed and line

The information in this section will allow you to use your existing ability much more effectively. You will be able to reorganise your intentions and outcomes and become a safer, more effective skier.

Intermediate skiers

will be able to use this information to feel safe and enjoy their skiing. They will be able to stay in control, slow down, and deal with awkward slopes more safely. They will also save a great deal of energy through a day's skiing.

Advanced skiers and experts

will be able to use this information to optimise their speed control effortlessly and to finesse their choice of line. They will be able to deal with more challenging slopes and conditions and enjoy the qualities of a finely crafted series of curves.

Racers

will be able to use this information to maximise their speed, optimise their line and become more successful on race courses.



Mastery of speed & Line. Skier: Ross Nelson, BASI International Ski Teacher

Photo : Hugh Monney

Control of speed and line: the factors that make the difference

1. Curve shape.

Skis allow us to make curves in the snow.

The modern ski is a magnificent piece of equipment that has evolved over many thousands of years. Recent technical and design developments have given us skis that create beautiful curves, very easily.

In the sections *Steering your skis, part 1 and 2*, we take a close look at how to make the most of ski design by steering the skis skilfully, and in this section we're going to learn about the qualities of the curves themselves and how to use them to our advantage.

Linking curves in a smooth, fluent, athletic performance is a wonderful experience. Achieving this kind of performance requires quite a bit of organisation and structure, as well as the application of athletic qualities.

So let's look more closely, so we can begin to build towards excellence.



Mastery of the three phases of the curve.

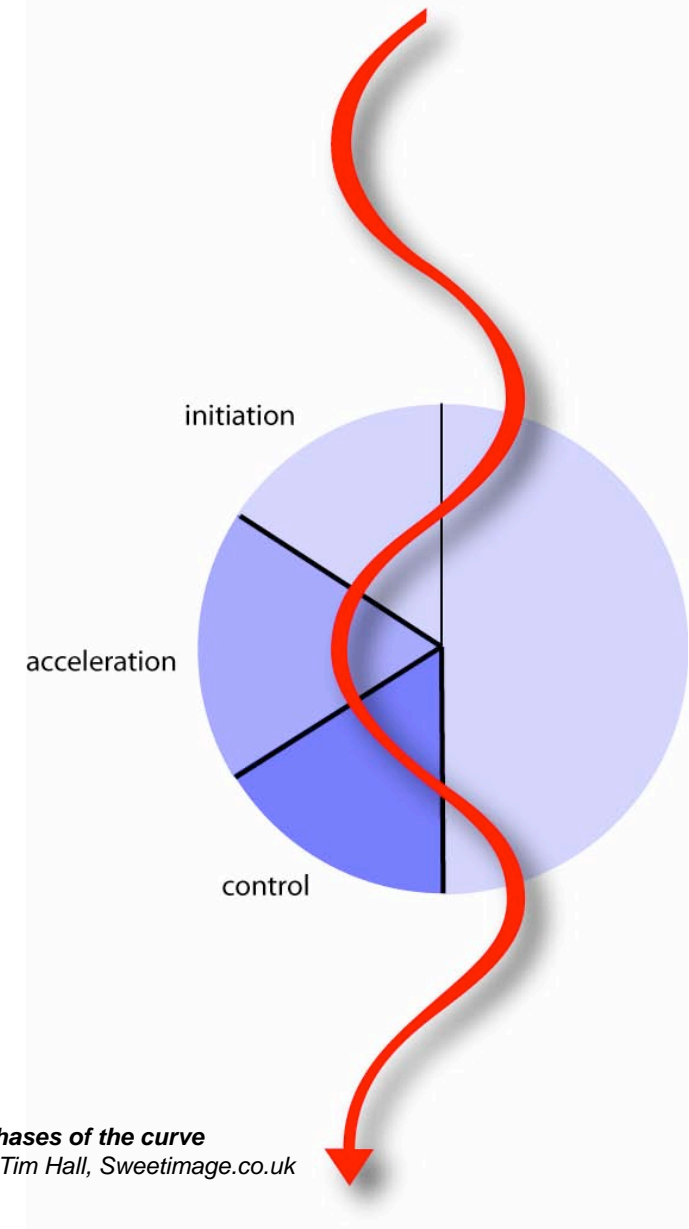
Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo : Hugh Monney

Let's consider a single curve and slice it into three parts: the initiation phase, the acceleration phase and the control phase.

Each of these phases gives the skier characteristic sensations and provides characteristic opportunities.

Some of the phases can cause concern for some skiers and this can lead to behaviour that blocks the performance.

Let's work through each phase in turn, and look at the opportunities and solutions.



The three phases of the curve
Illustrations: Tim Hall, Sweetimage.co.uk

The initiation phase

The initiation phase is fairly subtle, and this provides the first challenge. The changes in the behaviour of the ski, during this phase, are subtle and progressive.

Many skiers don't tune in to these subtle changes and they are left wondering whether or not the curve has begun.

This causes many skiers to disturb this phase of the curve and hurry the ski.

There are three specific solutions to apply here:

1. Be positive when you change onto the skis edges at the beginning of the curve, so that you are confident that you have begun the curve.

(There is much more on this subject in the sections on steering the skis)

2. Tune into the subtle changes that take place, so that you can feel the ski working for you. (For more on learning how to tune in, see the sections dealing with steering and centred balance).

3. Be patient and allow this phase of the curve to develop, without hurrying the ski and disturbing the curve.

The initiation phase drill

Here is a great drill for the initiation phase of the curve.

This drill helps you to make sure that your initiation is accurate and clean. It will help you to stay calm and relaxed during this critical phase of every curve, while, at the same time, helping you to tune in and remain focused.



The Initiation phase.

***Skier: Andrew Lockerbie, BASI International Ski Teacher,
Director of BASS Megeve. Photo: BASS Chamonix***

In the steering section of this book, we discuss the process of changing the skis edges and identify a moment, of clarity and precision, at the heart of that process.

There is a moment, between curves, when both skis are flat in the snow.

This moment is brief, but it is there.

Feeling for this moment, during the edge changing process, improves the following qualities of your initiation phase:

sensitivity
accuracy
consistency
versatility
effectiveness.

It takes a little time for your first *Eureka* moment to arrive, when you feel with certainty that you noticed the precise moment when the skis were flat in the snow, for the first time.

Soon after this, however, more of these moments become apparent to you. Soon after that, you can feel most of them.

This is a fundamental ability, that allows you to initiate your curves with precision and the other qualities listed above.

This allows you to steer your skis much more effectively in all circumstances.



There is a moment, between curves, when the skis are flat in the snow.
Skier: Gavin Kerr Hunter, Director of Snowperformance. Photo: Hugh Monney

By contrast, many skiers are uncertain of the behaviour of their skis at the beginning of the curve. This can lead to a lack of confidence and it also inhibits the quality of the steering and so the quality of control of speed and line.

The bottom line is, feel the flat spot, feel good, be free.

You need to choose a simple performance, so that you have the best opportunity to experiment with the new ideas that you are trying to develop.

One of the best ways is to use an easy, well prepared piste, and a series of simple, rhythmic medium radius turns. Control your speed with each turn.

An easy way to set this up, is to imagine a corridor down the piste. You're planning to turn from side to side in this corridor, so you need to choose a width for your corridor allows you to complete medium radius turns, while controlling speed, very easily.

This is called a *medium radius corridor drill*.

The rhythm and consistency give you a simple framework which allows you to focus on achieving your objective.

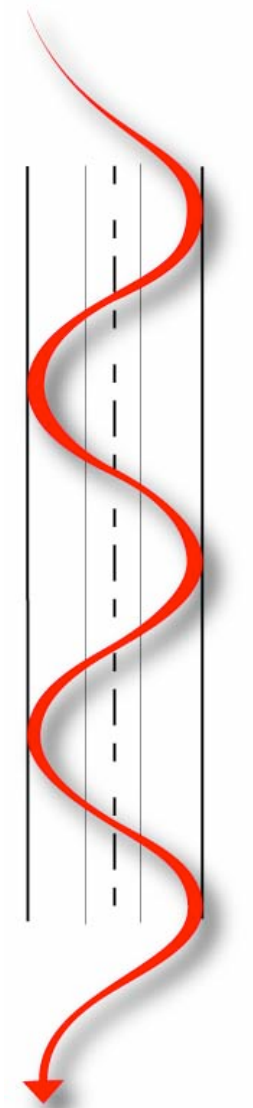
Feel for the moment, of clarity and precision, at the heart of each edge changing process.

Feel your skis become flat in the snow between curves.

Skiing to the edges of an imaginary corridor.

The rhythm and consistency give you a simple framework, which allows you to focus on achieving your objective.

Illustrations: Tim Hall, Sweetimage.co.uk



Feel the subtle initiation phase working for you, whichever steering combination you choose to use.

The acceleration phase.

During the acceleration phase, there is a very obvious acceleration of the skis down the hill. This misleads some skiers, who think that the skis are running away from them and so they disturb the action of the skis and perform emergency braking.

The real opportunity here is to realise that the acceleration phase provides all of the energy for your performance, which means that you don't have to use your muscles to wrestle your skis down the mountain.

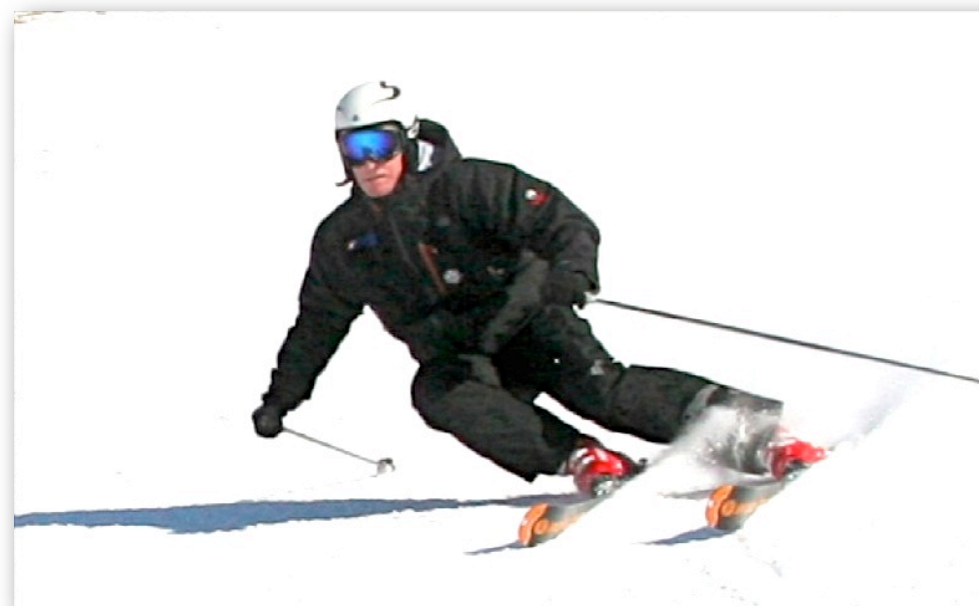
The solution is to decide just how much acceleration will be comfortable for you, in the circumstances, before moving onto the final phase of the curve. There is more detail on this, below, but the message is clear, the acceleration phase is supposed to be there and you can control it. You can be confident here, because the control phase comes next.

The acceleration phase drill

This is the part of the curve that allows you to convert some of the *Potential energy* that you gained by taking the ski lift, into *Kinetic energy*.

This either feels fantastic or intimidating, depending on your point of view and your environment.

The important point to be made here is that the acceleration



The Acceleration phase.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network.

Photo: Ross Nelson

phase is just a consequence of the physics of your curve and the slope that you are on. You could say that it is supposed to be there.

Tactically, it provides the source of energy for your whole performance and so it's important to learn to use this phase skilfully.

The steering sections give you options that allow you to control how much acceleration you use, plus there are some other solutions below.

More fundamentally, it's important to recognise where the acceleration phase is and what a valuable job it does for you.

So as you ski the medium radius corridor, on an easy, well prepared slope, **your job is to discover exactly where on the curve you feel your skis begin to accelerate, and exactly where that process diminishes, as you enter the control phase of the curve.**

You will quickly become more sensitive to this process and this will become very important to you in all of your skiing.

Just as importantly, you need a good relationship with this part of the curve, so I'm going to ask you to *smile* as you feel the acceleration.



Harness the energy of the acceleration phase.

Skier: Tim Jackson, BASI International Ski Teacher. Photo: Hugh Monney

Please bear in mind that this is not trivial.

As you smile, you release *serotonin* in your brain, which makes you feel good and enhances the quality of your performance.

Even if you feel that your smile is false, you will still release serotonin, you will begin to feel good and your smile will become genuine.

This is a very simple yet very powerful way for you to improve the quality of your performance.

The bottom line is, feel the acceleration, smile, feel good, be free.



Feel the acceleration, feel good, be free.

Skier: Gavin Kerr-Hunter, Director of Snowperformance. Photo: Hugh Monney

The control phase.

During the control phase, the shape of the curve naturally slows you down, and this is where you can control your speed effortlessly. There are many variations available to you and we'll take a look at some of them a little later.

The control phase drill

So, as you ski the medium radius corridor, on an easy, well prepared slope, **your job is to discover exactly where on the curve you feel your skis begin to slow you down, as you exit the acceleration phase of the curve.**

Let this process continue long enough for you to feel good about having controlled your speed, within your medium radius corridor.

Summary of curve shape

The three phases we have considered give you very different sensations: subtlety, acceleration, deceleration.

The tactical aspect of using curve shape to control your speed, is to use each phase for its own part of the whole.

The initiation phase gives you access to the shape of the curve.
The acceleration phase powers the performance for you.
The control phase allows you to slow down for little effort.

That is the basic structure of the curve.
The other aspects of control of speed and line use these qualities of the curve to your advantage.



The Control phase. Skier: Glen Radford, BASI International Ski Teacher
Photo : Hugh Monney

2. Skid or carve.

Skiers have a choice over how to allow the skis to steer around the curve.

Allowing the skis to *carve*, means letting them slice cleanly through the snow along the arc.

This can feel fantastic and can be very efficient, but it can be a little scary if you are uncertain of the circumstances.

Choosing to *skid* the skis around the curve slows everything down and puts the skier firmly in charge of control of speed.

There are degrees of skidding, of course.

Skidding very firmly, all the time, is very effective for slowing down, though it's more appropriate to reserve this for steep ground, because it can become quite tiring if used all the time.

Skidding gently takes much less effort and still can be very effective on gentle and moderate ground.

Being able to choose between skidding and carving your skis and between different intensities of skidding, are key components of good skiing performance.

We take a much closer look at how to achieve this in the sections dealing with *steering your skis*.



Choosing to carve. Ross Nelson, BASI International Ski Teacher

Photo: Hugh Monney

Skidding and carving drills

The steering sections lay out, in some detail, how to skid your skis smoothly. Here, the idea is to use a medium radius corridor, as above, to give a simple structure to your performance, that allows you to experiment with the variables of skidding.

The main variables to experiment with are the rate and range of pivoting your skis, versus the rate and range of tilting your skis.

Skiing with lots of rotation and very little edging, gives less curve shape and less build up of pressure.

Adding more tilting on to the skis edges, gives a much firmer response in the snow, and really slows you down.

Reducing the rotation, while still being active with the edges of the skis, can give very firm curves, that skid less, and are moving towards more of a carving effect from the skis.

Changing the approach, so that rotation is really reduced, pressure is more actively applied and the skis are tilted earlier and more significantly onto their edges, can reduce skidding further and can lead to true carving of the ski.

The bottom line is that you can learn to vary the way the ski steers in the snow, by adjusting your three main steering inputs: *rotation, edging and pressure*.



Carving can be fun!

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network.

Photo: Ross Nelson

3. Curve radius.

We have all heard the term *performance envelope*. Well, each pair of skis has its own performance envelope, too.

Some skis are designed to make short radius curves and others are designed to make longer radius curves. There's quite a bit of variety out there, so it's worth knowing the properties of the skis that you find yourself using.

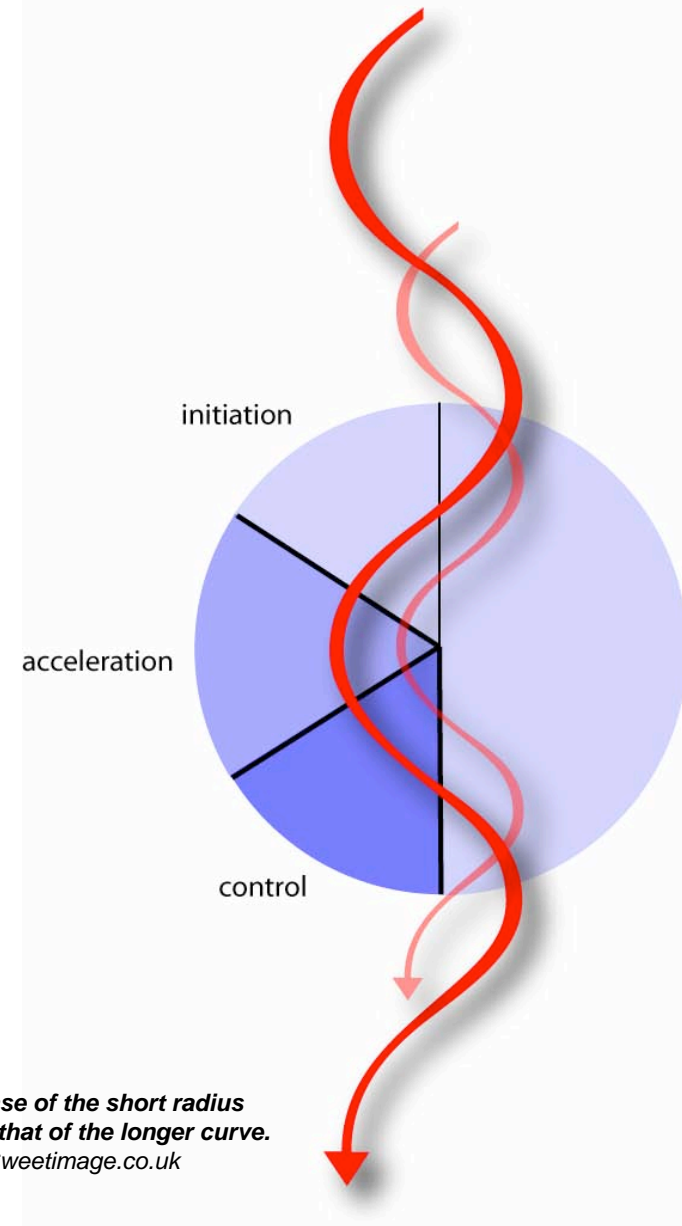
Even so, a skier can make many sizes and shapes of curve on a particular pair of skis. This is very useful, because changing the size and shape of the curve that you make is an important way of controlling your speed and line.

For example, the acceleration phase of a short radius curve is briefer than that of a long radius curve, so it won't accelerate you as much. This can be very useful, though it does require well developed agility and coordination.

A longer curve, can help you to increase your speed, if that's what you need, through a longer acceleration phase, though it does require refined balance.

So, it is worthwhile spending time learning to change the radius of the curve that you make, so that you can use this to control your speed.

We take a closer look at this in the sections dealing with *steering your skis*.



The acceleration phase of the short radius curve is briefer than that of the longer curve.
Illustration: Tim Hall, Sweetimage.co.uk

This is a series of corridor based drills, again on an easy well prepared slope.

Start with your medium radius corridor, as above, and then on the next run, reduce the width of your corridor slightly.

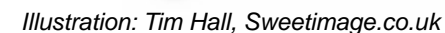
Please don't change the width too much to start with, just enough for you to perform curves with a slightly shorter radius, while still using all three phases of the curve.

Then, perhaps you could reduce the width of the corridor just a little bit more.

After that you could go back to your medium radius corridor and then on to slightly wider corridors.

Your job is to feel all three phases of every curve on each of these runs.

That may seem to be quite a tall order, but you will be surprised at how rapidly your body will be able to adapt to the sensations, once it has been given the opportunity.



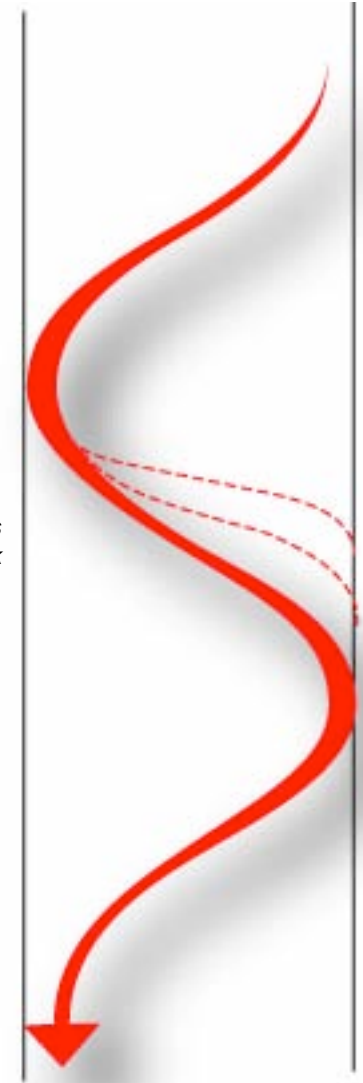
4. Choice of exit line.

This is a fantastic way to influence your speed and line.

As you can see from the diagram, you can choose to change the shape of the curve *in the control phase*, to give a variety of different exit lines.

Wrapping the curve around tightly, will really slow you down, while choosing a more direct and open exit line will allow you to carry more speed into the next curve.

Exit lines
Illustration: Tim Hall, Sweetimage.co.uk



The exit line drill

You can see, from the diagram, the effect of changing the shape of the control phase of the curve. You can either accentuate the control of your speed, or you can reduce it, giving you a range of options.

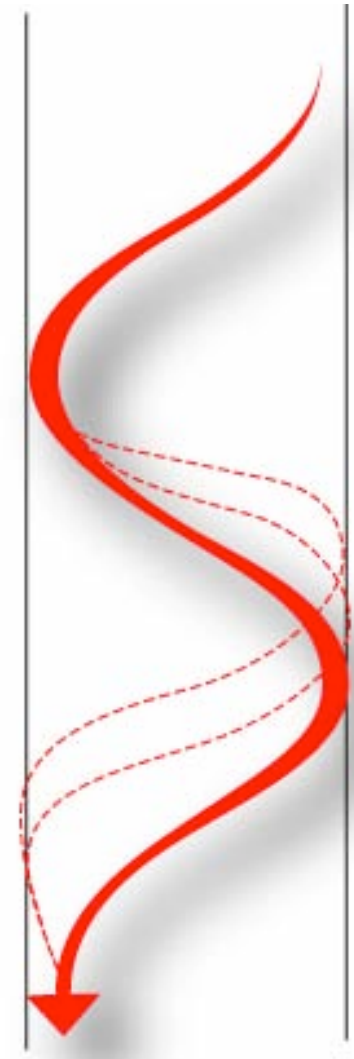
On the open mountain, you would choose the solution that fits your circumstances, but first you need to develop these options, so that they are available to you.

Again, a series of medium radius corridor drills gives you the simplicity that allows you to experiment with these factors.

Really wrap the last third of your curve around, for maximum control, for a couple of runs. Then, try a slightly more relaxed shape, and lastly a slightly more open shape still.

The bottom line is, whatever curve you are making, you normally have a choice of several exit lines, which allows you to finesse your control of speed and direction.

This strategy works hand-in-hand with the next; choice of release point.



Illustrations: Tim Hall, Sweetimage.co.uk

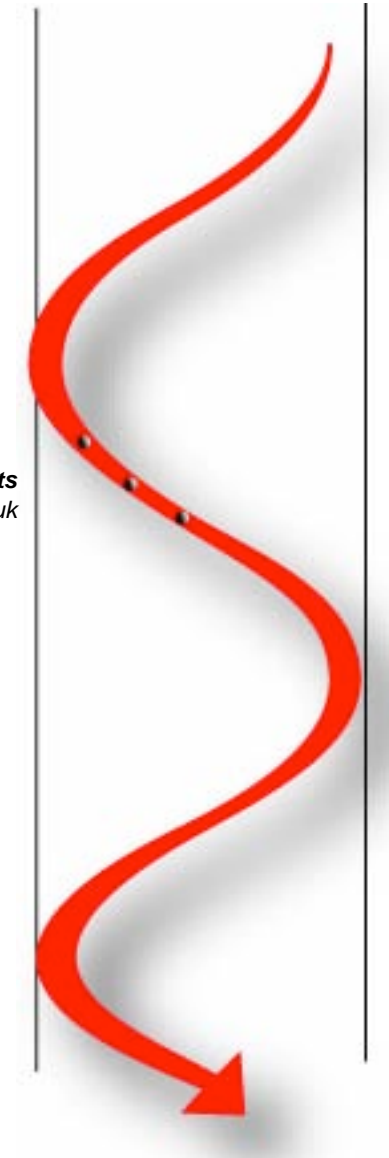
5. Choice of release point.

Whatever curve radius you have chosen, whether you have chosen to skid or carve and whatever exit line you have selected, you can add another layer of influence and control over your speed and line.

Choose which release point you would like to use. (The point at which you release your skis from the turn and begin the edge changing process).

The diagram shows you some of the options. An early release point will allow you to carry more speed into the next curve, while a later release point will emphasise the control phase of your curve and slow you down more.

Release points
Illustrations: Tim Hall, Sweetimage.co.uk



The release point drill

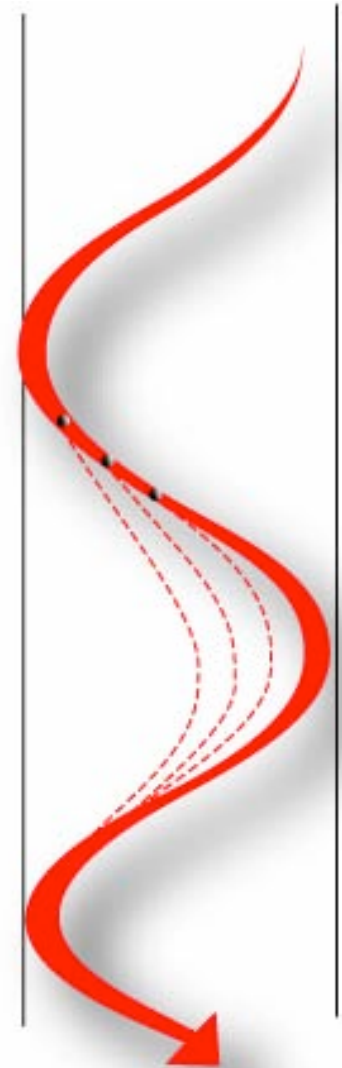
Use your medium radius corridor, to establish your rhythm.

When you are feeling good, use a slightly earlier release point. The diagram shows the effect this has over the line of your next curve.

You may also carry a little more pace into the next curve, and so your release point may influence your speed, or cause you to make other adjustments so that your speed remains unaffected.

Try several variations of release point, to become familiar with the influence of this essential component of your whole performance.

The bottom line is, that varying your release point will become one of your major influences over your speed and line.



Illustrations: Tim Hall, Sweetimage.co.uk

6. *Glide phase.*

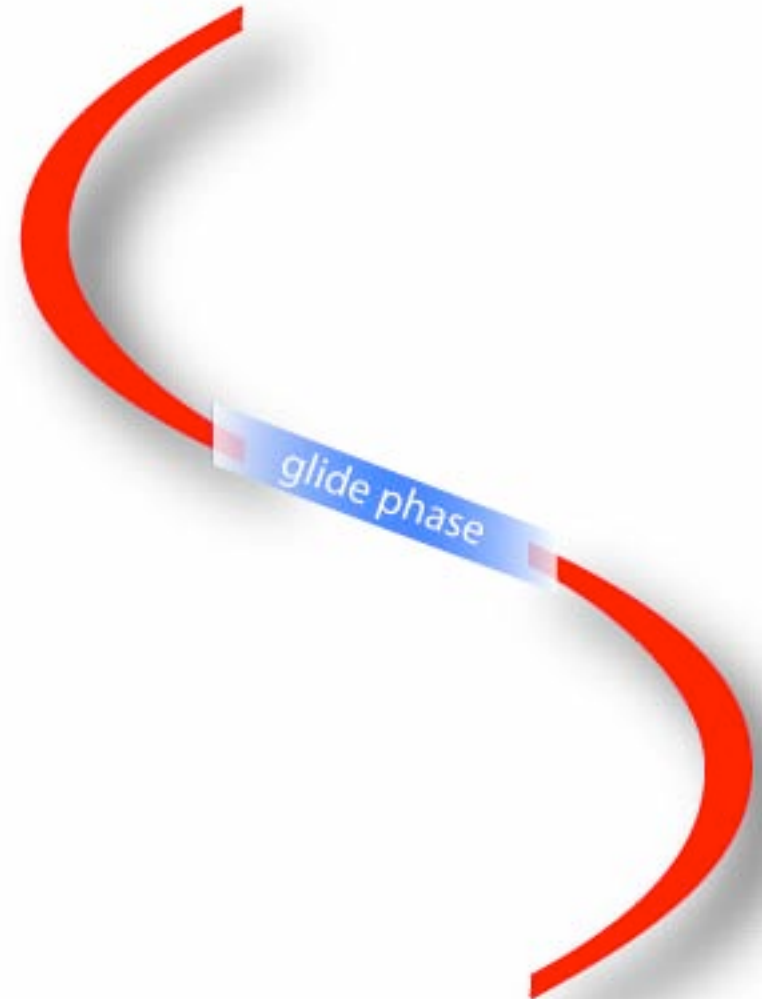
There is another variable here that can be exploited by ski racers.

It is possible to introduce a *glide phase* between two curves. The diagram shows the effect of this and it has been found to offer racers a speed advantage, when they glide sensitively on flat skis, between curves on a giant slalom race course.

This takes a high degree of coordination and balance, but it allows the racer to move across the slope without the edges of the skis creating drag.

So additional variables for the racer are: the length of the glide phase between the curves and how that can be coordinated with an exit line that is as steep as is possible, for the circumstances.

Keep an eye out for this the next time you watch a high level giant slalom race on the television.



Illustrations: Tim Hall, Sweetimage.co.uk

Control of speed and line – summary

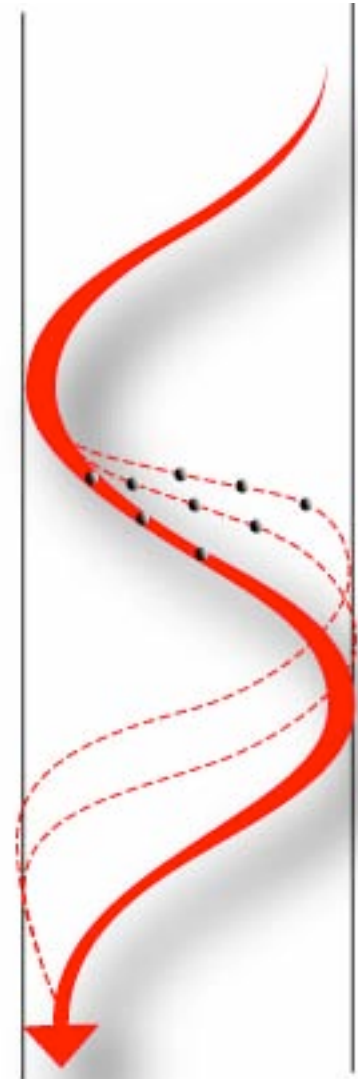
Looking at the diagram, you can see that combining the choice of exit line with the choice of release point, gives skiers many options for finessing control of speed and line.

Adding to this, the choice of radius and the option to skid or carve, you can see how it is that many skiers are versatile, fluent and effective in all circumstances.

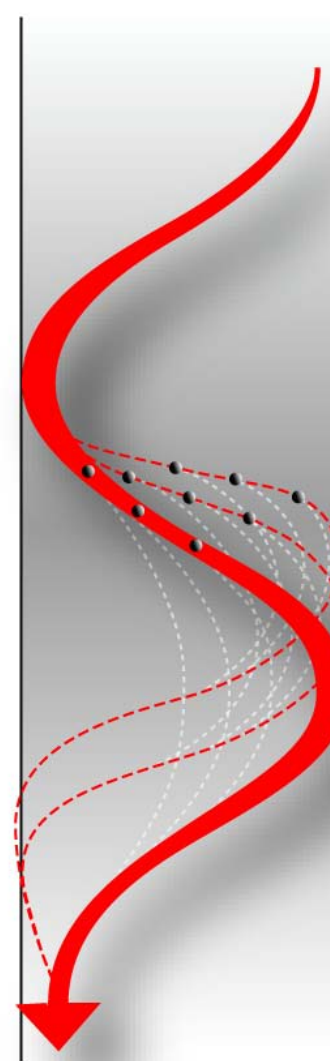
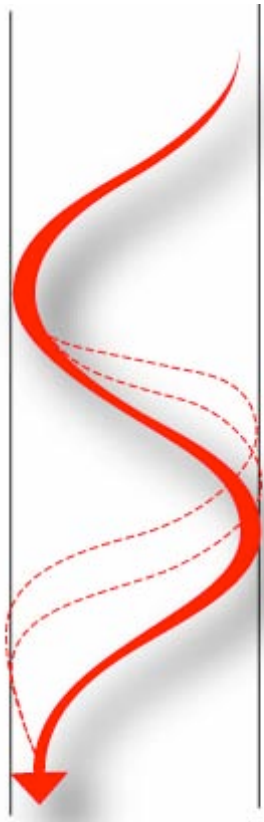
But of course, turning these ideas into an athletic, versatile performance takes a little time. It's important to understand these ideas clearly and to try them out with professional support, so that your efforts are channelled in productive directions.

Then it's important to be guided through a training programme that helps you to flesh out all these variables and begin to apply them in different circumstances.

Eventually, you will become the fluent, athletic, versatile skier.



Illustrations: Tim Hall, Sweetimage.co.uk



A choice of exit line, plus a choice of release point, gives you many options, allowing you to finesse your control of speed and line.

The diagram on the right illustrates a total of 10 variations on this theme. Excellent skiers use these opportunities to pilot their skis with precision.

Illustrations: Tim Hall, Sweetimage.co.uk

Let's take a moment to consider the differences between intermediate, advanced and expert skiers.

The intermediate skier

Let's assume that the intermediate skier can be encouraged to skid gently or skid strongly, choose between three different sizes of curve, and between three different exit lines and three different release points.

First of all, we should recognise that this is very sophisticated behaviour for an intermediate skier and we can conclude that the skier has been well trained.

Most intermediate skiers have two curves, one to the left and one to the right.

And one of these will be favoured over the other in difficult circumstances.

But our well trained intermediate skier has **over 50 different options in each direction**. ($2 \times 3 \times 3 \times 3 = 54$)

That makes a huge difference to the quality of the performance.

The advanced skier

Now let's consider the advanced skier.

Let's assume that the advanced skier can be encouraged to select between carving and three different intensities of skidding. It is also reasonable to expect an advanced skier to be able to select from five different curve sizes, five different exit lines and five different release points.



Many of the differences between trained skiers and untrained skiers are apparent to everyone. Others are more subtle and less easily understood.

Skier: Mark Aplin, BASI International Ski Teacher. Photo: Hugh Monney

Our advanced skier has **500 different options in each direction.** ($4 \times 5 \times 5 \times 5 = 500$)

Again, we should recognise that this is very sophisticated behaviour, even for an experienced skier. Most experienced skiers do not show this degree of versatility.

Their habits confine them to a few options in either direction.

Helping experienced skiers to develop this degree of versatility, which allows them to be effective in very many more circumstances, requires a training programme that includes these variables, that helps the performer to develop the different options and then gives them practical experience in applying these principles in different circumstances.

Clearly, this example is artificial.

Restricting a skier to just five release points and five exit lines is very limiting.

In reality, once skiers begin to develop skill with these issues, they begin to use limitless variations.

This is the performance breakthrough point.

This is the work that I'm privileged to help people with on beautiful, snowy mountains all over the world.



The freedom of the mountains. Off piste tracks on a remote glacier in Greenland. You really need to know how to control your speed and line, to ski here.

Photo: Hugh Monney

The Expert skier

Expert skiers blend these variables in a smooth and seamless way, to produce just the right outcome for the situation in which they find themselves.

Pistes, bumps, powder, wonderful open fields of spring snow; all of these can be enjoyed with fluency, ease, power and joy.

That is freedom and it feels really good!



***Wonderful open fields of Spring snow, off piste in the Andes.
This is freedom! Photo: Hugh Monney***

Notes for your own Ski Performance Breakthrough:

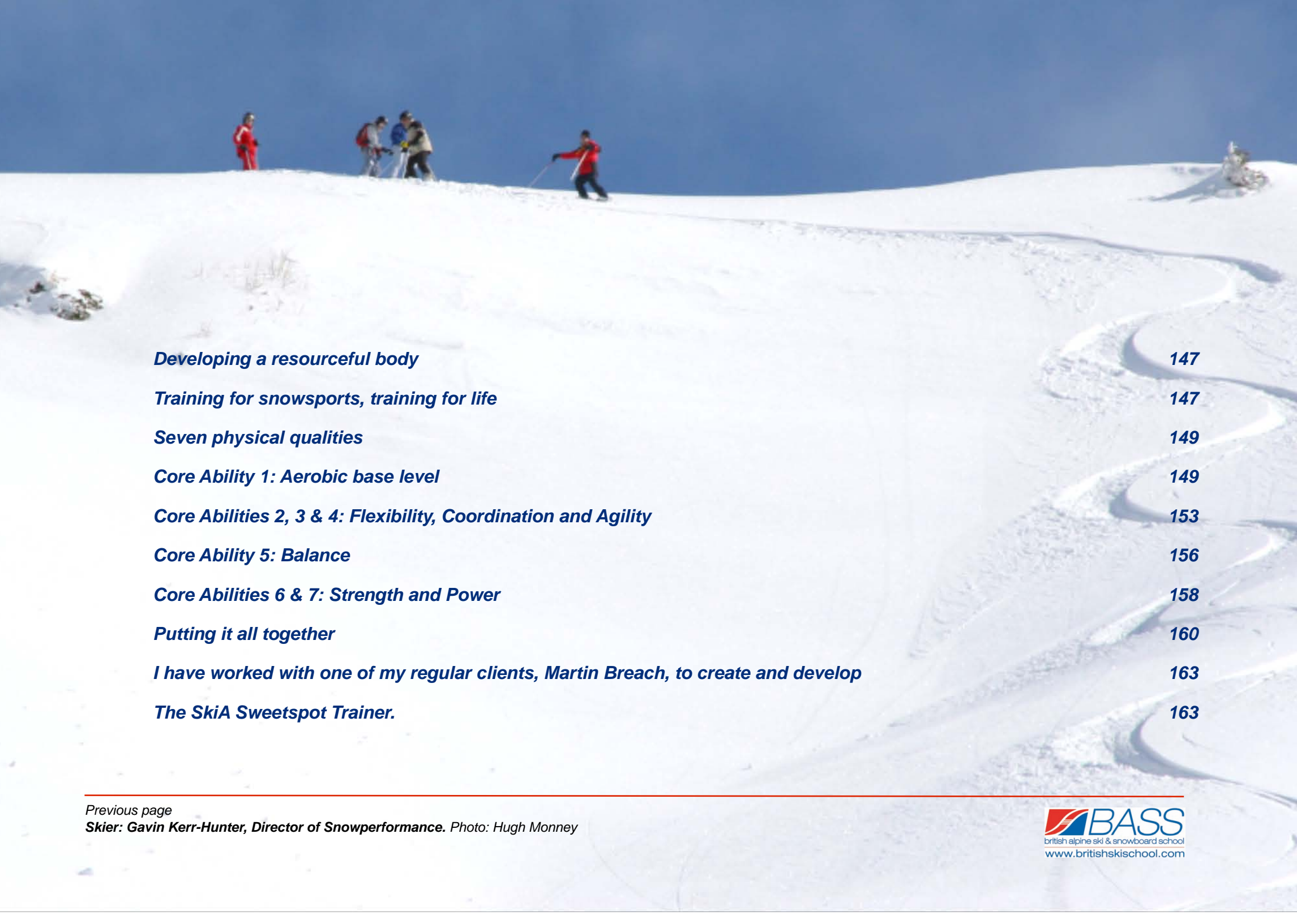
Overleaf: **A remote river valley in the heart of the Andes.**
Photo: Hugh Monney





Chapter 5

Developing a resourceful body



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Developing a resourceful body

Training for snowsports, training for life

When you become a better athlete, sports become easier. It's that simple.

Many skiers arrive on skis, for the first time each winter, a little lacking in this area, so let's identify some core physical abilities, that will improve your athleticism, and see how you can develop them.

But before that, here's the most important factor of all:

your body has a miraculous ability to change.

All you need to do is give it the opportunity and it will adapt.

This ability is your birthright and forms the basis for all sporting development, including the development of your underlying athleticism.

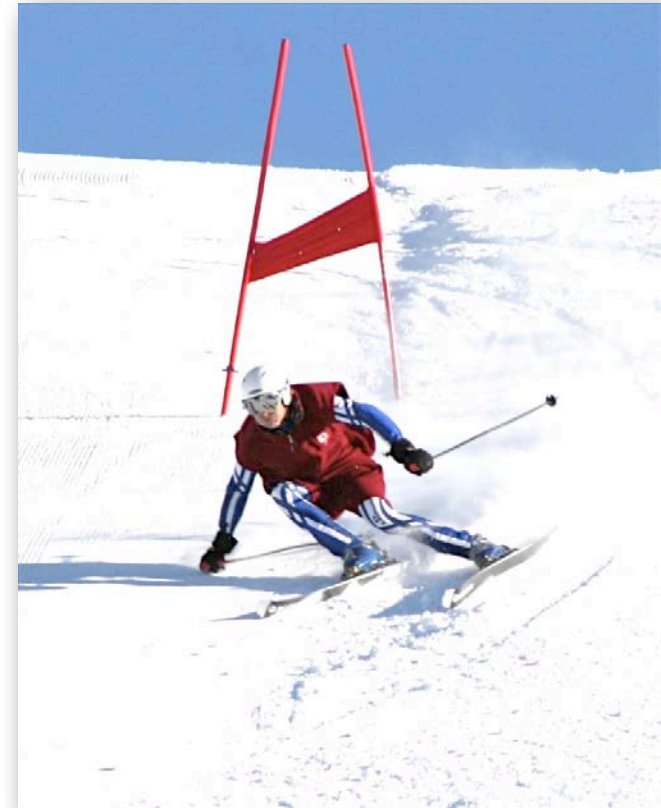
Just consider for a moment: it is possible to allow your body to become stronger, more flexible, better balanced, better coordinated, etc. All you need to do is provide the opportunity for these changes to take place and your body will take care of the rest.

So, in this chapter, I suggest several activities that will prepare your body to excel, when your skis hit the snow.

And, don't worry, these activities really should be *fun*.

You don't need to waste your time with activities that you don't enjoy. They won't be effective for you, in any case. Here's why.

Firstly, you are a human being, not a machine.



Physical resourcefulness in action.

Skier: Ross Nelson, BASI International Ski Teacher

Photo : Hugh Monney

For centuries, artists, poets and philosophers have struggled to capture the essence of what it means to be human.

And they probably will for centuries more, but here's a summary of the work in progress:

Mind, Body, Spirit.

This implies that we need to engage all three of these aspects, if we are to be completely involved in any activity.

Something that you find boring will cause a lack of motivation.

Something that you enjoy will make you feel great!

That's so simple and so effective.

Please stay with me here, because this is not trivial.

Pleasure inducing *dopamine* is released by your body, to sustain you and reinforce activities that you enjoy. This is a very powerful process that reinforces the actions you enjoy.

The trick here is to use this process to your advantage.

I'm not suggesting a life of indulgence, that's a sign of a lack of balance, I am suggesting that there is a smart way to work with yourself, so that you make the progress that you are aiming for *and* enjoy yourself along the way.

Plus, at specific stages of training, we know that relatively high volumes of the activity are required, both to develop physical conditioning and to promote technical development.

So you really need to choose activities that you find enjoyable, to avoid boredom and drudgery.



The back of beyond, off piste in the Andes. This group of skiers needs to be resourceful, in this remote environment.

Photo: Hugh Monney

Seven physical qualities

I'm going to discuss seven core physical qualities that will improve your general athleticism, your snowsports performance and, probably, your quality of life.

They are: aerobic base level, flexibility, coordination, agility, balance, strength and power.

I'm going to propose several ways that you can improve these qualities, by taking part in enjoyable activities.

For various artistic, poetic, philosophical and scientific reasons, it's important that all of the activities considered are FUN! Choose those that you like the most and enjoy yourself!

Core Ability 1: Aerobic base level

This is a very important physical quality, that has very many components that have to dovetail together, to produce their benefits for you.

If you have a high aerobic base level, you are able to:

take large amounts of air into your lungs

extract the oxygen, in the air that you breathe, efficiently

pass it to your muscles, via your blood flow, through an efficient, well developed system of arteries and capillaries

combine it with the fuel in your muscle cells, to produce energy

remove waste materials from your cells, into your bloodstream



***Physical resourcefulness can be called upon suddenly.
Skier: Sean Langmuir, Olympian, formerly Coach for the
British and Canadian ski teams. Photo: Hugh Monney***

transport the waste back to your lungs, through a well developed system of veins and veinous capillaries

breathe out the waste gases, to clear your lungs and prepare them for the next inhalation.

And, of course the increased blood flow, is driven by your well trained heart.

You'll see that this process involves several systems, working in a complex, coordinated way. Each system is improved by aerobic training, as is the coordination of the whole process.

With everything in good shape, a high aerobic base rate allows you to stay active, and performing at a high level, without undue fatigue.

By contrast, a poor aerobic base level causes early fatigue, which reduces the amount of skiing you can do *and* causes physically and technically clumsy performances.

So if you only improve one quality listed in this section, this is the one that will take you furthest.



A high aerobic base level is required for prolonged exercise at high altitude. Your summer training improves your powder tracks! Photo: Hugh Monney

How to

The real miracle is that this complex system adapts readily, if you just use it! Exercise that raises your pulse rate and increases your breathing rate, will automatically help your aerobic system to develop.

To begin with, the exercise can be gentle, just going for a walk is a great way to begin. Once you are up and about on a regular basis, you might choose to take up more vigorous activities, to keep the aerobic ball rolling.

The big four activities here are running, cycling, rowing and swimming. Choose the one that suits you best and get going. You can even go for three of them and become a triathlete!



Aerobic base level - important for bump skiing.
Skier: Dani Boshier, BASI International Ski Teacher
Photo: Hugh Monney

Safety first

Anyone with serious health issues will need to seek professional medical advice before beginning a programme of exercise.

Also, it's important to develop good technique to avoid injury, because you will be performing high volumes of this type of training.

Don't swim poorly and destroy your shoulders and knees. Seek out professional help.

Don't become the jogger who makes track coaches wince, with an up and down bouncy style that damages your body. Find help and great shoes.

Don't damage your knees with a poorly set up road bike or mountain bike. Get a great set up and learn how to develop excellent riding technique.

Respect your back, if you are a rower; develop accurate techniques that improve your health, rather than undermine it.

What does it do?

You're working out your heart, improving the performance of your lungs, developing the supply of blood to your muscles, improving the ability of your muscles to use the oxygen supplied to them and to get rid of waste, and much more.

Secrets of the champions

Herman Mayer, many times the men's GS World Cup Champion, develops his high aerobic base level on his bike.



Great high altitude off piste skiing, after a hike!
Aerobic base level to the rescue. Skier: Paul Morris
Photo: Hugh Monney

Core Abilities 2, 3 & 4: Flexibility, Coordination and Agility

Obviously, these three abilities are different from each other, but there are many fun activities that develop all of them, so I've grouped them together.

Poor flexibility can lead to injury as well as to limited performance. But a *double dose down side* also means that there is a double benefit when you reverse the trend and improve this quality. *Be flexible, feel free.*

Between them, flexibility and coordination affect your posture, the rate and range of your movement, the quality of your movement and so, your agility.

You'll see that, if your aerobic base level keeps you in the game, the qualities of flexibility, coordination and agility play a large part in determining *how well* you can play the game.

The importance of including **flexibility training** in your activities should not be overlooked. Many activities can shorten some muscle groups.

For example skiing, running and cycling can all shorten your hamstrings, over a period of time. So if you are a skier, who enjoys running and/or cycling for aerobic work outs, you could be setting yourself up for a hamstring injury, unless you address the issue in your flexibility training.

Tai Chi and Yoga allow your muscles to lengthen, and your connecting tissues to become more elastic in their behaviour, which increases your flexibility.

There are some specific stretching routines which can help to achieve the same outcome, but take care not to strain.

Becoming more flexible involves developing your patience, so don't rush at it.



Flexibility, coordination and agility, in action.
Skier: Peter Kuwall, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Hugh Monney

How to

There are many enjoyable activities that develop flexibility, coordination and agility. Choose any of these and you'll go a long way:

Yoga, Pilates, Chi Kung, T'ai Chi, most martial arts, gymnastics and dance.

All of these activities have an initial effect, but they really start to work their magic for you over the medium and longer term.

What does it do?

Developing coordination, means training your central and peripheral nervous systems and their effect on your muscles and joints, and so your limbs. This affects the quality of your posture and the quality, timing and intensity of your movements.

Flexibility and coordination have a critical influence on agility, strength and power, which affect the athleticism of any performance. They also affect balance, but more of that in a moment.

Yoga, Chi Kung and Tai Chi also train your central nervous system, clearing it of junk traffic that clogs the system. This leaves the nerves free to pass on the signals that you need for your performance, improving your balance and coordination.

They also help you to develop and reinforce healthy movement patterns, the basis of all athletic movement.

Safety first

This is a great place to mention the issue of warming up before sport.

A well designed warm up will activate your joint mobility, which changes the chemistry of your joint fluid, preparing it to protect the joints during performance.



Coordinated movements determine the quality of performance.
Skier: Hugh Monney, BASI International Ski Teacher,
Director of the BASS Network. Photo: Tim Hall

It also activates the elasticity of your ligaments, tendons and some muscle fibres. A good warm up then moves on to involve gentle use of the major muscles, which then become more pliable and ready for performance.

The intensity gradually increases until you're ready for the full activity.

So, good warm ups usually involve some gentle movements standing still, then some easy activity, gradually increasing the intensity.

The reverse process helps you to cool down effectively, after performance, which prepares you to perform well during your next session.

And remember,

becoming more flexible involves developing your patience,

so don't rush at it.

Secrets of the champions

Herman Maier, many times men's GS World Cup Champion, and many of his fellow Austrian ski team members, practice Chi Kung and T'ai Chi to develop balance, coordination, agility and an effective central nervous system.



Complex, coordinated movements. Telemark skiing in a blizzard.
Skier: Elaine Adam, BASI International Ski Teacher.
Photo: Hugh Monney

Core Ability 5: Balance

Snowsports are balance sports. So it's really useful to be good at balancing.

How to

You can take up the same martial arts discussed above, and you can train with a balance board, a slack rope, a Swiss ball and, if you are athletic, an evolution of the skateboard, called **Carveboard**.

A good balance board is great for helping you to tune in to what balancing is really all about. You need to feel this, not read about it.

The slack rope is similar, even more challenging, lots of fun and gives you a pretty good workout!

Carveboard, is an ultra steerable long wheelbase skateboard, which allows you to link beautiful arcs, just like skiing, snowboarding and surfing.

These activities are also excellent for developing your **core strength**, which is an important aspect of your general athleticism.

Safety first

Tying a slack rope isn't that tricky, but you do need secure anchor points, decent knots and a sound rope. And an area that allows you fall off without too much hardship.

Balance boards can have you over in a flash, so keep the area clear of obstacles and consider using friends for physical support to start with and to act as spotters a little later. You'll have more fun doing this with friends anyway.

Safety during martial arts is a priority, so if you choose those activities, join an official programme.



*Highly refined balance in action.
Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham*

Riding any skateboard is less tricky than it appears, once you know what you're doing, but you do have to take it easy to begin with, and use suitable safety gear.

What does it do?

You're developing your central and peripheral nervous systems again, plus the coordination of the muscles that correct for loss of balance, including the development of core stability.

You are also helping your nerve pathways to grow and the synapses in your brain to make new connections.

Balance work really does rewire your body!

These activities are entirely in your body. Your conscious mind is not wired into this process, so you cannot get better at this by reading about it or thinking. The secret is, just do it.

Secrets of the champions

Ingemar Stenmark walked a slack rope and rode a unicycle. He was so good that he sometimes rode the unicycle *on* the slack rope.

He dominated the men's technical skiing events for about 15 years, during his record breaking career.



Balance in the bumps.

Skier: Ross Nelson, BASI International Ski Teacher.

Photo : Hugh Monney

Core Abilities 6 & 7: Strength and Power

'Strength' means the maximum effort you can make, which translates into the maximum load you can move.

'Power' is a combination of the effort, the distance through which it is moved and how quickly it is moved.

So power training combines strength with your rate and range of movement, and the quality of the coordination, which will include balance if the activity is free. (For example, working with free weights, working on a balance board, skiing, etc.)

Snowsports athletes need to be powerful. Remember that strength is one of the components of power, so you may need to do some specific basic strength work to achieve this, in addition to increasing the effective range of your movements and the rate at which you can use them.

It's worth noting that a light athlete can often generate as much power as a more heavily built athlete, by using a larger range of movement, deployed more rapidly and with more accurate coordination.

How to

You can use gyms, which have the advantages of machines that may to keep the activity safer and qualified staff to help you.

You can also adapt your running, swimming, rowing or cycling workouts to include high power output phases, e.g. hollow sprints, fartlek training, hill climbs etc.

This has the advantage of developing coordinated power rather than just strength. And it's fun!



Coordinated power, under high load.
Skier: Ross Nelson, BASI International Ski Teacher.
Photo: Hugh Monney

Many skiers are underpowered for the activities they aspire to, often through a combination of not enough basic strength, under trained quality of movement and under developed balance.

Safety first

Basic strength training works on the principle of overload, which means low repetitions with a load that you can only just move. People do strain themselves with this type of training. So care and a controlled environment are called for. Go to professionals who can train you to do this safely.

What does it do?

Basic strength training causes micro tears in the muscle fibres. That's why it hurts.

Remember that there is also a coordination component to strength.

This means that you can get a great benefit by training with lower (safer) loads and learning to improve the coordination of your movements.

This *recruits* more of your muscle fibres and re-coordinates the order in which they activate.

So this aspect of strength training is more about using your existing resources to the best effect. It may be better for you to try this first, before moving into supervised overload training, if required.

Secrets of the champions

All snowsports athletes train for power and strength. The champions know the difference between the two and aim to maximise their power to weight ratio.



Managing high compressive loads, accurately, requires coordinated power.

Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Peter Kuwall

This means developing good basic strength, plus improving the components of power that rely on quality of movement (ie. rate, range, coordination, balance, muscle fibre recruitment).

Putting it all together

That's a lot to take in, so let's focus back on getting the maximum fun from activities that will help us with snowsports.

Here's how I use these principles.

I take part in all of these activities for fun and because I enjoy being active, but I'll list the core abilities they develop.

Remember, *you* might easily choose different activities to achieve the same effects.

Cycling

I ride a road bike for aerobic base level development and, later in the training process, I push the hill climbs, sprints and fartlek sessions.

Slack rope

I walk the rope to improve posture, balance, coordination, agility and core strength. It also has an excellent influence on relaxation and mental clarity.

A slack rope video made, to accompany this chapter, can be found on **BASS TV**, on the BASS website. Ebook readers can follow this link: [slack rope video](#)



Walking the rope - Hugh Monney. Photo: Anita LaPlain

Balance board

I use my balance board regularly, to improve and maintain balance, coordination and core strength.

The best I have found is the great series of boards from **IndoBoard**.

I'm impressed, so I negotiated a deal for BASS clients.

If you want to get hold of an **IndoBoard**, just follow the [Indoboard link](#) on the BASS website.

You'll benefit from a **5% discount** if you use the special discount code **BASS**.

An Indoboard video, made to accompany this chapter, can be found on **BASS TV**, on the BASS website. Ebook readers can follow this link: [Indoboard video](#)

I practice **Chi Kung and T'ai Chi** for balance, coordination, agility, strength, power, flexibility, breathing and for training my central nervous system.

This practice also relaxes me and helps me to keep things in perspective.

I do a little work with some light **dumbbells** to keep my shoulders strong.

I make sure I keep them flexible, too. (Skiers often suffer from shoulder injuries.)

I fly my **power kite** on the beach for strength and balance, and to get out of the office.

I used to ride a kiteboard on the sand, pulled by the kite, which was great for balance, too.

But that was before the wheels were commandeered by my sons, for their go-kart!

I ride my **Carveboard**, an ultra steerable long wheelbase skateboard, which



Indoboard provides an excellent workout for your core strength as well as helping to train your balance and coordination. Photo: Anita LaPlain

develops all the core physical abilities outlined in this article and brings them all together into a performance sport. And, most importantly, it's so much fun that you'll actually want to do it all the time.

Secrets of the champions

Top USA surfers and snowboarders use Carveboard for dry land training and fun. You can see action photos and video on the Carveboard website, just follow the [Carveboard link](#) on the BASS website.

I negotiated a deal for BASS clients. So if you want to get hold of a Carveboard, just follow the link to their site, or call Carveboard sports UK on 01277 219 600. You'll benefit from a **10% discount** if you use the special discount code **BASS**.

A Carveboard video, made to accompany this chapter, can be found on **BASS TV**, on the BASS website. Ebook readers can follow this link: [Carveboard video](#)

Summary

Seven core physical abilities are presented and discussed:
aerobic base level, flexibility, coordination, agility, balance, strength and power.

Some background and safety issues are discussed, along with enjoyable activities to develop the core abilities. Examples are given of champions who use these activities in their own programmes.

Becoming a better athlete prepares you for progress and success in snowsports. There are many excellent reasons why the training process should be fun.

This section also directs you to special discounts on **Carveboard** skateboards and **Indoboard** balance boards.



Carveboard is a lot of fun. Performer: Hugh Monney.
Photo: Anita LaPlain

I have worked with one of my regular clients, Martin Breach, to create and develop

The SkiA Sweetspot Trainer.

It's a superbly effective balance trainer for skiers, which guides you to the sweetspot of your ski boots *and* helps you to retrain your movement patterns.

It's been trialled in ski schools across Europe and it has accelerated the learning of skiers from beginners to professionals.

This is a great way for skiers to develop balance and coordination, through the Summer months.

It also improves performance when used just before a session on snow. The user manual incorporates the principles used throughout this book.

The idea for the SkiA Sweetspot Trainer came about as a consequence of the work we were doing on centred balance, on Ski Performance Breakthrough clinics.

[You can get hold of it here!](#)



"The BASS Network endorses the use of The SkiA Sweetspot Trainer as a highly effective performance development aid for skiers."


[You can get hold of it here!](#)





Chapter 6

Fluent, effective performance



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Master your body: Fluent, effective performance

This chapter allows you to deal with a sophisticated aspect of snowsports performance: dealing with complex and changing forces.

The ideas presented here are concise, because the whole focus of this section is to provide you with **activities** that improve the way that you use your body as you ski.

The chapter *Developing a resourceful body* showed you how to train for skiing, away from the snow, using fun activities that develop key physical qualities. This chapter shows you how to apply those qualities to your advantage.

Taken together, these two sections give you an extraordinarily effective programme for developing your skiing and your athleticism as a whole.

Posture, Balance and Movements

Chapter 2, *Centred balance and athletic movement*, developed the key ideas on these issues and the processes for achieving success with them.

Summarising the main points:

1. **Fore and aft balance** - be centered on the target points of your skis.
2. Keep all your **rotational movements** centered and on axis
3. Stay centered while you **bend and stretch**

Here, I'd like to introduce an additional point:

4. **Lateral balance** - tilt into strength, balancing the lateral forces.
The details of this process are described later in this chapter.



Highly refined balance in action.
Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham

In addition to these four key components, there is another issue to introduce:
the quality of your movements.

This determines the effectiveness of your skiing performance, so let's take a closer look at these important factors.

Qualities of movement

Here are some of the important qualities of movement that great skiers develop. Some common difficulties are listed, and we will all recognise some of these as applying to ourselves, to a greater or lesser extent.

The physical activities on snow described in this section, and on dry land described in *Developing a resourceful body*, are designed to help you to overcome the obstacles and develop these abilities.

Range of movement

Many skier have movements that are limited in range, by factors such as inflexibility, obstructive equipment and undeveloped movement patterns. Your useful range of movement can be increased quite easily, simply by applying yourself to the issues presented in this chapter.

Rate of movement

Few skiers are aware that they need to develop different rates of movement, for different purposes. Habit entrenches a single rate of movement. You can overcome this by taking the time to develop a versatile approach.

Distribution and duration of movement

Where and when, on the curve, or relative to the terrain, should the movements take place, and how long should they last?



*Off piste in Chatel,
Skier: Helen Trayfoot, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Peter Kuwall*

The answers are so varied that the solution is to train for versatility, giving you the ability to react to the circumstances.

Quality of coordination and balance

If you look across any ski slope, you will see skiers making movements that throw them off balance. There are ways to develop movement patterns that help you, rather than hinder you.

More than that, your balance and coordination can be developed, by many of the activities presented in *Developing a resourceful body*. These enhanced abilities will transform the quality of your performance.

Quality of timing and accuracy

Critical for successful skiing in bumps, off piste and on steep ground, these qualities of movement can be improved off skis and then applied to your performance.

These qualities can be further developed on skis, using *targeting drills*, such as those featured in [Chapter 8](#) and the [Ski Performance Breakthrough mp4 video programme](#).

Core stability

Your posture and movements are improved when you use the muscles deep in your abdomen to improve the stability of the midsection of your body.

This is often described as *stabilising your core*.

The balancing activities, presented in *Developing a resourceful body*, will help you to develop this important ability, improving your overall athleticism.

Your balance, your coordination and your ability to direct the forces of skiing through your body are all enhanced by improving your core stability.



Powerful and effortless performance. Spring Snow. Off piste in the Andes. Skier: Gavin Kerr-Hunter, Director of Snowperformance. Photo: Hugh Monney

Working with the forces of your performance

This is really what skiing is all about, physically.

As we ski, we create forces, the snow creates forces, the equipment and the terrain create forces.

The whole sport of skiing is about working with these forces safely, blending them and shaping them, to create curves that keep us safe and thrill us at the same time.

It's a complex process, but you can make rapid progress by applying the principles outlined here, and using the progression of drills, below.

Each of these drills feels great, so the process is actually a lot of fun.

There are three technical elements that will help us, in this section:

**Managing the flow of forces through the snow, your equipment and your body,
Fluency and ease,
Coordination and Rhythm.**

Managing the flow of forces through the snow, your equipment and your body.

All great, athletic performances are sophisticated, coordinated and complete, rather than a collection of parts.

Developing your ability with this aspect of performance helps you to integrate all of your other technical content into a skilful, sensitive, coordinated performance.

Understanding these issues will allow you to develop more accurate **inputs** and improve your ability to **respond to complexity** with greater accuracy and sensitivity.



Powerful, balanced, athletic. Skier: Glen Radford, BASI International Ski Teacher. Photo : Hugh Monney

This subject is all about learning how to fine tune your movements, so that the forces created, during your performance, pass through the intended parts of your skis and through the ideal parts of your body.

Fluency and ease

This element clearly expresses qualities that we all recognize in skilful performances. By contrast, skiers too often fall victim to clumsy, mechanical performances. The methods shown in this chapter allow you to develop the qualities of fluency and ease in your performance.

Coordination and Rhythm

Coordination and rhythm form part of the skill of Managing your Body, in which context they can be considered to be *internal*.

However, they also determine the ways in which you interact with the snow and the terrain, so there is also a significant *external* component to these qualities.

All of your timing and targeting is based on how these aspects of performance relate to the slope you are skiing on and your tactics for your descent.

For example, your ability to produce a smooth descent of a bump field depends on your ability to coordinate your entire performance in harmony with the shapes and rhythms of the bumps.

I'm sure you have seen the results of someone getting this right, though you may not have thought of it in these terms before.

Here is a similar, though less obvious example, which describes excellent off piste skiing.



Fluency and ease, in deep powder snow.
Skier: Hannes Webhofer, Director of Beyond Boundaries.
Photo: Hugh Monney

Your ability to produce a smooth off piste descent depends on your ability to coordinate your performance in harmony with the ways in which your skis behave in the snow.

Great off piste skiers phrase their movements *based on their sensations* of their skis behaviour in the snow.

Working this way, it's possible to finesse your skis into several different types of behaviour, but this relies on your ability to work *with* the snow and its effects on your skis.

Your coordination is informed, perhaps driven, by the information you feel during the performance.

This *reactive* aspect of performance is understood clearly by musicians, dancers and martial artists. It is an important aspect of performance for bump skiers and powder skiers.

This chapter allows you to develop these reactive qualities of coordination and rhythm.

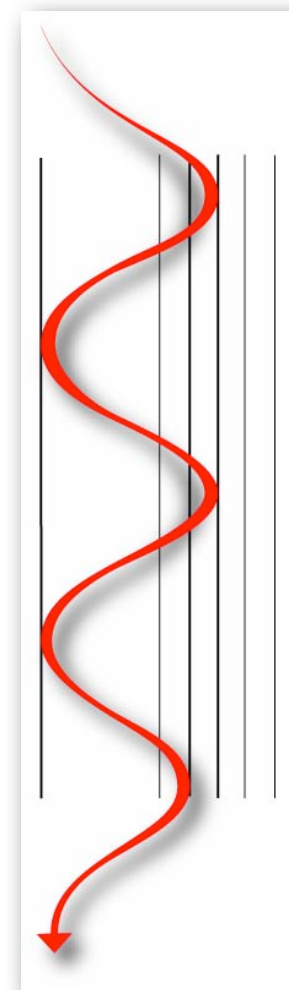
Feedback

You are responsible for your own Feedback

Some **External feedback** from an Instructor, or coach and fellow skiers, on **technical content**, can be useful in the early stages of technical development.

Some **External feedback** from an Instructor, or coach and your fellow skiers, on **tactical application**, can be useful in the early stages of the development of Control of Speed and line and adjustments for snow and terrain.

The main point here, is that **Intrinsic feedback** (feeling it for yourself) has to take



This curve radius drill, explained on p130, will give you an excellent framework for the activities presented in this chapter.

Illustration: Tim Hall, Sweetimage.co.uk

over, if your performance is to progress from an early expression to a sophisticated athletic performance.

All of the elements in this chapter are developed by **intrinsic feedback** (feeling it for yourself) and this makes the difference between a mechanical performance and one that is sensitive, accurate and in tune with the snow.

Much of my work on snow, running Performance Breakthrough Clinics, is aimed at helping skiers to develop their performance by moving beyond the limitations of external feedback and learning how to train and to trust their own senses.

Most of your valuable skiing time should involve lots of skiing, using intrinsic feedback to shape the quality of your performance.

This is how the movements and applications are grooved and how the flexible responses are developed.

And you ski a lot. Which is fun.

There are many activities listed here, to help you develop the ability to work accurately with the forces produced when you ski.

Each of the drills is designed to be open ended with respect to skill development. They can be used by skiers throughout their entire careers, with ever increasing levels of skill and sensitivity.

They are introduced in their simplest form and in simple environments. As the activity progresses, the complexity of each drill increases as does the complexity of the environment.

It's fun, it's effective and skiers have a great time with this part of their development.



*Generating large lateral forces.
Skier: Hugh Monney, BASI International Ski Teacher,
Director of the BASS Network. Photo: Ross Nelson*

Managing the flow of forces through the snow, your equipment and your body.

Topic 1. Centeredness and Stacking

Principle - the process of balancing, in a centered posture, is a complex dynamic process even when standing 'still' on flat ground.

The **objective** here is to understand, accept, feel and use this understanding, win freedom from the misleading concept of static positions and gain the powerful performance that comes from guiding the forces of snowsports accurately through the snow, equipment and body.

Activity 1

Settle into a centered basic stance on flat ground, in ski boots.

Think of each foot as having 3 points of contact with the ground - heel bone, big toe and little toe.

Feel these tripods support you.

Move fore and aft to feel the different pressures at each of these points of contact.

Come back to centre.

Activity 2

As above, then, move your hips and knees gently, in small circles, to feel the different pressures at each of these points of contact.

Come back to centre.

Activity 3

Settle into a centered basic stance on flat ground, in ski boots, then move fore and aft several times to and tune into the strains involved in being off centre.

Settle into the strongest feeling posture,



Freedom and balance.

*Skier: Rebecca Malthouse, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham*

There are **two** variables here.
Work with your **feet** and with how your body is **stacking** above your feet.

Evaluation and feedback

Settle into a centered basic stance on flat ground, in ski boots.

Then ask a partner (or instructor) to press down, **gently**, on both your shoulders.
(This is only appropriate if you have a healthy back.)

A skillfully balanced, dynamic balancing performance gives a rock steady response to this test. Both skier and tester feel the strength of the body's structure and the integrity of the flow of forces through to the ground.

This is an Applied Kinesiology test.

This is great if the tester is also a skier, as the power of this experience is extraordinary. It shows both parties the clear way ahead.

If the athlete is slightly off centre and/or the body is poorly stacked, a very weak response is clearly felt by both parties. The body is either toppled by the force (not centered) or flexed somewhere (poor stacking/posture).

The great strength of this test is that it works independently of opinion.
It is purely the result of physics and biomechanics at work.

A skilful tester is able to give specific feedback to the skier, which helps the skier tune into his/her sensations.

For example:

"You're hinging backwards slightly at the knees. Adjust your ankles, knees and hips a little, till you feel strong."



Powerful and effortless.

Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

The objective, of this type of feedback, is to guide the skier to his/her own sensitivity of these issues.

Activity 4

Objective.

Having felt the strength of the process while standing still, you now have to ski, in a simple environment, tuning into the same process while linking simple curves.

The **self check feedback** question here is

“Am I really stacked over the centre of my feet/foot?”

Please note that this question encourages you to monitor 2 variables- **centeredness** over your feet and accurate **stacking** of your body.

So if you feel a loss of power, you can

1. check centeredness over your feet.
2. feel the different pressures at each of the three points of contact of each foot
3. check the quality of stacking your body.



Freeride off piste, St Anton, Skier: Paul Morris, BASI Ski Instructor. Photo: Hugh Monney

Managing the flow of forces through the snow, equipment and body.

Topic 2. Movement and coordination

Movement pattern 1 - Flexion under load

The development of flexion, to control pressure, in a sensitive, centered manner.

Specifically, this is the development of accurate coordination of the lengthening of the major muscles of the supporting leg/legs, under load, so that pressure build up can be moderated and shaped, while remaining centered. (These are *eccentric contractions* of the muscle groups involved.)

Activity 1

Adopt a centered basic stance on flat ground, in ski boots.

A partner (or instructor) **gently** presses down on both shoulders.
(The same warning, as before, applies with regard to back problems).

You **yield smoothly** to this pressure, working sensitively and dynamically to retain centred balance through the largest range of flexion available.

A skillfully balanced, dynamic balancing performance gives a rock steady response to this test. Both athlete and tester feel the strength and integrity of the flow of forces through to the ground.

When you lose centre (classically, the hips drop backwards after the ankles become blocked by the ski boots) the loss of strength and stability is very apparent to both athlete and tester.



Balance and movement, on Spring snow, off piste
Skier: Peter Kuwall, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Hugh Monney

Using this activity, you have the opportunity to **retrain the movements** to maintain strength through the largest possible range.

Activity 2

Objective.

Having felt the strength of the process while standing still, the skier now has to ski, tuning into the same process while linking simple curves, allowing the body to yield sensitively to the pressure development of the curve.

The **self check feedback** question here is

“Am I really stacked over the centre of my feet/foot while I absorb?”

NB this question encourages you to monitor 2 variables- **centeredness** over your feet and correct **coordination** of your body. So if you feel a loss of power, you can

1. check centeredness over the feet.
2. feel the different pressures at each of the three points of contact of each foot

It is important to explore the range of possible resiliences to the forces.

You can chose to have soft springs, firm springs and everything in between.

Developing this versatility allows you to deal with different intensities of force, from gentle forces in powder, to large forces on race courses.

The complexity of the environment can be increased over time, right up to performing in challenging courses, bumps and off piste.



*Skier: Rebecca Malthouse, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham*

Movement pattern 2 - Extension under load

Extension is the partner movement of flexion. It can also be developed by using the activities above.

Activity 1

Adopt a low, centered basic stance on flat ground, in ski boots.

A partner (or instructor) **gently** presses down on your shoulders and upper back. (The same warning, as before, applies with regard to back problems).

The skier **extends smoothly** against this pressure, working sensitively and dynamically to retain centred balance through the largest range of movement available.

A skillfully balanced, dynamic balancing performance gives a rock steady response to this test. Both athlete and tester feel the strength and integrity of the flow of forces through to the ground.

When you lose centre (classically, the hips move forwards and the shoulders move backwards after the ankles become blocked by the ski boots) the loss of strength and stability is very apparent to both performer and tester.

Using this activity, you have the opportunity to **retrain the movements** to maintain strength through the largest possible range.

Activity 2

Having felt the strength of the process while standing still, you now have to ski, tuning into the same process while linking simple curves, allowing the body to extend sensitively to reinforce the pressure development of the curve.



Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

The **self check feedback** question here is

“Am I really stacked over the centre of my feet/foot while I extend?”

NB this question encourages you to monitor 2 variables- **centeredness** over your feet and correct **coordination** of your body.

So if you feel a loss of power, you can

1. check centeredness over your feet.
2. check the quality of your flexing movements.

It is important to explore the range of possible intensities of the movement. ie you can chose to extend gently or powerfully, and everything in between.

Movement pattern 3 - Lateral movements under load

Activity 1 – imagery

Cyclists tilt their bikes to balance the lateral forces of the curves they make.

Skiers tilt skis to set up grip and apply the skis shape to the snow, snowboarders do the same. This is a steering issue.

There is more to this process, though.

Skiers and snowboarders tilt laterally **for two reasons**.

Firstly to apply the skis/board for steering and secondly, **to balance the lateral forces of the curves they make.**

These two process work with each other to produce a skilful performance.

Visualise the cyclist and the skier tilting laterally to balance the forces of the curve.



Skier: Hannes Webhofer, Director of Beyond Boundaries.

Photo : Hugh Monney

Activity 2 – lateral pull

With a partner, on flat, grippy snow, in ski boots, or in training shoes on dry land, you are gently pulled sideways, so that you have to tilt laterally to balance against the force applied.

The **objective is to balance the force exactly** rather than to overcome your partner.

Varying the intensity of applied force gives you the feeling of responding accurately to a variable force.

Activity 3 – Tilt into strength.

Ski in a simple environment, **tilting into strength** during each turn, ie balancing the lateral forces generated, exactly, while maintaining centered balance.

The timing and coordination of the progressive tilting movement, ie the range and rate of movement, are determined by the load and turn shape experienced. You need to feel this, so that you can to perform it sensitively.

This becomes interactive as skill develops, with the curve shaping the performance and the performance shaping the curve.

Two types of Lateral movement

Use this process to develop your skill with two types of lateral movement:

1. Tilting your whole body, or inclining.

This method is an excellent way resist high loads, safely.

Your whole body stays in line, more or less. This method may reduce your agility, because you have a lot of mass a long way to the inside of your skis. This means that it takes more time, or more effort, to move from one turn to the next.



Skier: Ross Nelson, BASI International Ski Teacher.
Photo : Hugh Monney

2. Tilting your legs, or taking your hips to the centre of the turn, while your body remains unaffected.

This method is an excellent way to deal with light and moderate loads, while favouring agility and the ability to move rapidly from one turn to the next. Very highly trained athletes can also use this method in relatively high load situations, where agility remains important, such as special slalom courses.

With both of these movement patterns, the **self check feedback** questions here are
“Am I tilting into strength?”
“Are my movements fluent in response to the curve?”

Variables here include:
rate and range of movement
intensity of load
placing the high load area in different sectors of the curve

Becoming sensitive to subtle lateral initiation, rather than going in too quickly, helps you to achieve skilful turn initiation.
This is an important factor for advanced skiers and plays an important role in Giant slalom racing.

Movement pattern 4 - Lateral movements and edge changing

Activity 1 – Feel the flats of your skis between curves

As we discussed in the Steering chapter,
there is a moment, between curves, when both skis are flat in the snow. This moment is brief, but it is there.

Ski in a simple environment, **tilting in to strength** during each turn, and retaining centered balance, perhaps using the flexion movements developed earlier.



Skier: Ross Nelson, BASI International Ski Teacher.
Photo : Hugh Monney

The **Objective** here is to feel the skis go flat in the snow between curves. This flat spot is a transient phase of edge changing and it offers you several advantages.

1. **Feeling for** it increases your sensitivity to information coming through your feet.
2. **Feeling for** it allows your body to coordinate the complex edge change process in a sensitive and intuitive manner.
3. Success **in actually feeling** it allows split second timing of steering inputs
4. Success **in actually feeling it** can enhance the glide between curves.
5. Success **in actually feeling** it allows you to feel for centered balance at this instant, allowing you to enter the next curve cleanly, without a complex history caused by errors in the previous turn. **This can feel very empowering for you and is worthy of special attention.**
6. **Familiarity with it** allows a conscious tactical decision such as quick crossover or slow crossover to be translated into intended feelings in the snow ,while allowing the body to maintain intuitive coordination.
7. **Familiarity with it** allows you to put it in specific places on the snow, often giving tactical advantage or greater accuracy.
8. **Familiarity with it** gives you an increased sense of agility.

Each of these issues can be used as the focus of the application of this principle.

Some **self check feedback** questions here are:

“Can I feel the flat spot? Am I centered on the flat spot?”

How to take these activities further

Skiing in a simple corridor of medium radius turns, on an easy blue run, will give you an excellent chance to groove the feeling.



Skier: Andrew Lockerbie, BASI International Ski Teacher, Director of BASS Megeve. Photo: BASS Chamonix

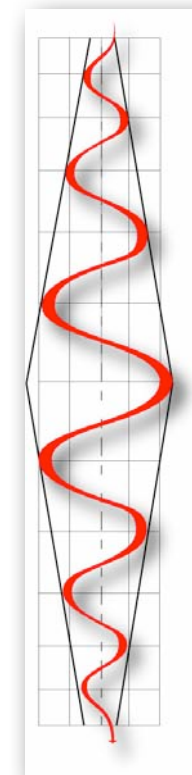
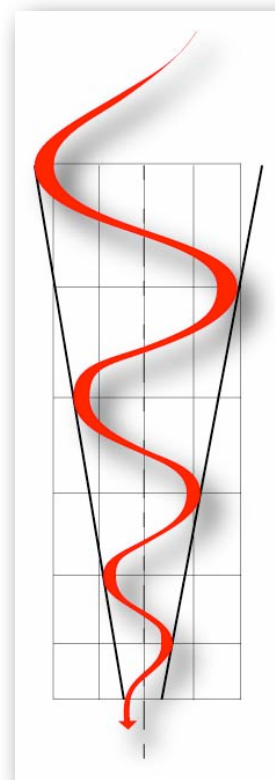
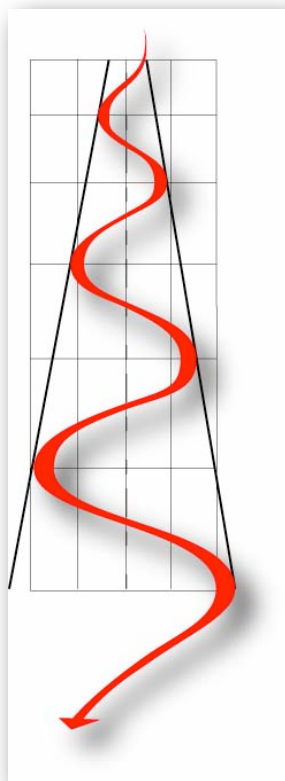
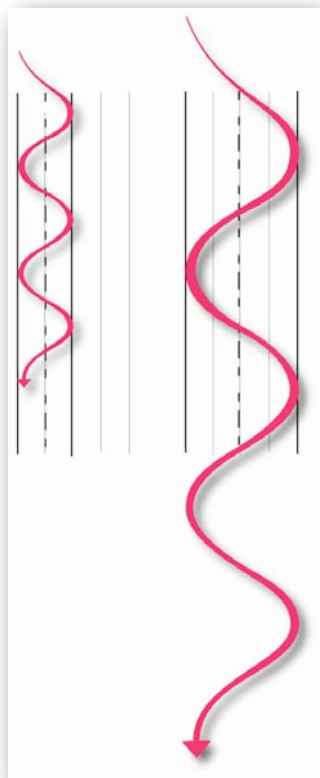
When you think you are ready, change the corridor and radius, to introduce variety in the practice and to alter the timing and coordination of your movements.

Then, introduce Hourglass drills, instead of corridors, using the full range of coordinations that you can sustain.

The sequence of corridors and hourglasses, shown here, become more complex from left to right.

The complexity of the environment can be increased over time, right up to performing in challenging courses, bumps and off piste.

Illustrations: Tim Hall, Sweetimage.co.uk



Notes for your own Ski Performance Breakthrough:

Overleaf: **The Mont Blanc Massif.** Photo: Hugh Monney



Ski Performance Breakthrough



Chapter 7

Freedom



Freedom

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Freedom

When you see someone skiing smoothly, freely and simply, even in complex circumstances, you know that they have tuned into something special.

This chapter shows you many ways to gain access to these elusive aspects of performance.

Freedom in skiing is partly about having options and deciding which options to take.

By getting this far through the Ski Performance Breakthrough programme, you will have developed very many options and the experience to make the right choices.

So you're half way to being free, already.

Charlie Parker, the great jazz musician had an interesting view on this. He said:

*"You've got to learn your instrument.
Then, you practice, practice, practice.
And then, when you finally get up there on the bandstand,
forget all that and just play."*

That's a great way to describe one of the profound truths of performance.

And, if you've already applied the principles in the earlier chapters of Ski Performance Breakthrough, you've already done the hard part.



Just play. The joyful expression of freedom.
Skier: Andy Jerram. BASI International Ski Teacher.
Photo: Buster Cheetham

So, let's introduce some processes that will help you take the final steps to Freedom.

Being free to

perform, move, express, develop, interpret and create,

also means

being free from

fear, anxiety, expectations, preconceptions, physical blockages and habits that tie you to your past.

Here, we look at both of these:

processes that liberate your performance and overcoming obstacles to freedom.

Let's begin by looking at processes that will help you to free your mind, body and spirit.

Freedom part 1. The right state of mind

Lesson number one from the world's greatest performers, is that it's very important to be in the right state of mind.

You can easily learn how to create this for yourself, now that you know that it's important. One way of doing this, effortlessly, is to use music.

Before you ski off, you can listen to music that helps you become **relaxed and alert**, key qualities of great performers in all activities.

Achieving this state will really help you to learn more quickly and to



Skier: Rebecca Malthouse, BASI International Ski Teacher, Director of BASS Morzine. Photo: Buster Cheetham

perform more effectively. For the [Ski Performance Breakthrough mp4 video programme](#), we created music specially to help you achieve this. You can use this music to help you create your optimal mental state, your *performance state*.

This is a very effective process, that anchors your performance and promotes excellence.

You will experience some of the benefits of this process straight away, and it will become even more effective for you, the more often you use it.

When you have done this often enough, you'll be able to summon up your great state of mind, just by imagining the music, effectively playing it in your head. When you have achieved this, you will have your own anchoring technique, ready to use to your advantage in any situation, in any walk of life.

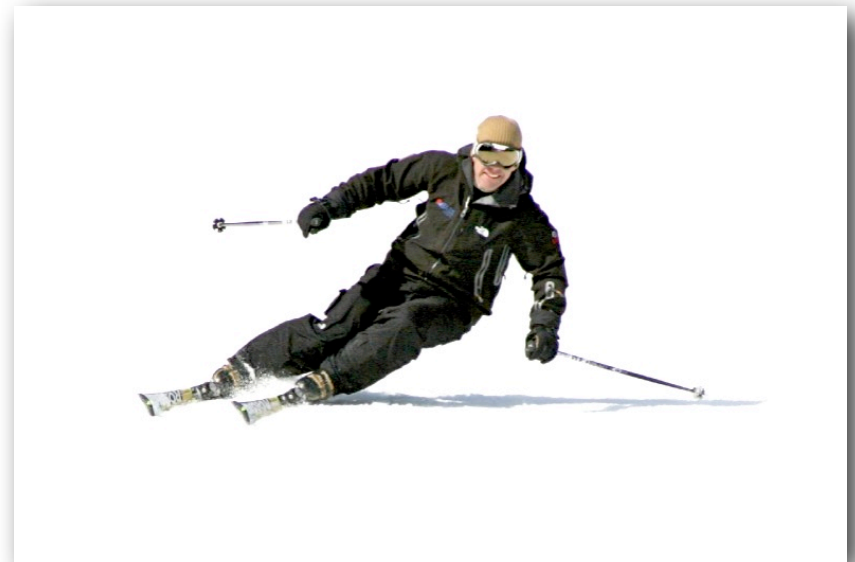
Your ideal performance state can also be anchored to visual images (real or imagined) and physical sensations or gestures.

An anchoring process that combines

**image based cues,
sound based cues and
physical cues**

is likely to become very effective, reliable and resilient.

If you need to perform at your best in highly stressful circumstances, this combination of anchoring techniques will help you.



Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

There's another point here, too, as you listen use your anchoring techniques, **you'll reinforce the effect if you smile!**

When you smile, your pineal gland releases *serotonin*, which makes you feel good and enhances the quality of your performance.

Serotonin seems to help memory and the learning process, as well as helping your muscles and cardio-vascular system to function.

So, smile, feel good, be free!

Freedom part 2. The right place

Lesson number two from the world's greatest performers is: choose the best environment for your training.

Even if you are a very experienced skier, with lots of experience skiing off piste and in race courses, it's important to return to simple environments regularly, to help your performance to develop.

Why is this important? Here's an example.

The training processes in this book set out to rewire your performance from the ground up.

They allow you to create changes in the way you balance, coordinate your movements, steer your skis and control your speed and line.

To achieve this, your body needs a simple environment and lots of opportunity, with a clear focus for each run.

The good news is, this means you have fun with lots of smooth, enjoyable skiing, while the Ski Performance Breakthrough training processes



Skier: Gavin Kerr-Hunter, Director of Snowperformance.

Photo: Hugh Monney

combine with your central nervous system, to take care of the changes for you.

So use simple terrain when you want to change or develop an aspect of your performance.

You can also ski simple terrain for the first half hour of each skiing day, tuning into your performance and developing a connection with it.

The best skiers in the world do this every time they train or perform.

They call it the **activation process** and it is an essential part of preparing for success.

Each session becomes more successful, as a result, and there is a powerful cumulative effect, over many years.

Freedom part 3. Feeling for your results

You are very familiar with the next process, from earlier chapters of Ski Performance breakthrough.

You'll remember that:

“There is a moment, between curves, when both skis are flat in the snow.” The moment is brief, but it is there.

Feeling for this moment, during the edge changing process, improves the sensitivity, accuracy, consistency, versatility, effectiveness of your turn initiation.”

An added benefit of feeling for this moment, is that it helps to elevate your performance from the mechanical to the intuitive.



*Balance and freedom of movement, off piste.
Skier: Rebecca Malthouse, BASI International Ski Teacher,
Director of BASS Morzine Photo: Hugh Monney*

Your performance can become liberated by this type of approach. Your central nervous system, which is a miracle of evolution, can work for you to resolve many of the complexities of skiing.

There are examples of many different ways of using this type of approach, throughout this book.

If you have skied through the Ski Performance Breakthrough programme to this point, you have a great deal of experience with this process already, so you can use it as a trusted friend, everywhere you ski.

There is another point here.

Below, in *Freedom part 6, the art of seeing*, you will learn about the importance of planning ahead and using a wide field of vision.

While your vision is allocated to helping you to plan for the future, what is left to help you deal with the present?

The answer is **your ability to feel what is going on**, combined with **your ability to allow your performance to adapt** to fit the immediate circumstances.

This is a very important aspect of performance, which is one of the reasons that it features as a constant theme through this book.

Freedom part 4. Targeting

Use targets in the snow to focus your performance.

If you choose your targets wisely, your coordination and timing will adapt to fit your circumstances. This is how great bump skiers can create a



Sophisticated balance and coordination.

Skier: Andrew Lockerbie, BASI International Ski Teacher, Director of BASS Megeve. Photo: BASS Chamonix

smooth performance, while others are thumped and bumped by the moguls.

Again, the Ski Performance Breakthrough programme has prepared you for this.

The corridor drills you are familiar with contain an aspect of targeting. You have judged where you are, your direction of travel, your speed, and how you need to coordinate your performance to fit in your corridors.

So let's take this one stage further, by targeting specific points in the snow.

Your choice of release points in Chapter 5 is an example of this, so you have some experience of this, already.

You can take this idea further and decide to target 4 specific points.

your release point

the place in the snow where your skis become flat, between curves,

your turn entry point - the place in the snow where you begin to have a steering effect, and,

the place in the snow where your skis touch the corridor you have chosen to ski.

That's a pretty sophisticated task, so you might choose to go back to your medium radius corridor drill, in easy terrain, and build this up, one point at a time. You'll find that all the effort you have invested so far will really pay off.

Targeting, really helps you to connect with your environment.



Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

Freedom part 5. Release direction

This process, is very effective, if all the other work has been done.

You can use your release direction as a process that influences your entire performance.

The release direction we're discussing here, is the direction in which you choose to let your body travel, at the release point.

This will influence:

your edge changing process,
the duration of your "flat spot",
the radius of the turn you make and so
the path of your skis over the snow.

Let's take a moment to explain this more clearly.

When you change edges, your body moves across your feet, to create the flat spot, though sometimes this can feel like your feet moving under your body.

The point is, in what direction, exactly, is you body moving?

If it moves forwards, diagonally across your feet, towards a point near the tip of your skis,

the edge change will be gradual,
the flat spot relatively long,
the radius of the next turn is very likely to be long.



A long radius turn.

Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

If it moves almost directly downhill, across your feet,

the edge change will be rapid,
the flat spot relatively brief,
the radius of the next turn is very likely to be short.

And, of course, all the variations in between these limits are available to you.

Because you have invested so much time and care in your training, you will have the skill to coordinate this, while staying centered on your balance points.

You can use your choice of **your release direction**, and your influence over it, to guide your entire performance with subtlety and fluency.

You can trust your body to take care of the details.

You are free.

Whatever curve you are making, whatever environment you are skiing, you normally have the choice to remain inhibited and mechanical or to perform freely and intuitively.

You can use the five processes described above,
with our series of drills, described in earlier chapters,

to help you develop this ability and breathe FREEDOM into your performance.



A short radius turn. Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Anita LaPlain

Freedom part 6. Balancing

When you see someone skiing smoothly, freely and simply, even in complex circumstances, you know that they have tuned into something special.

Let's take a look at this process, from a different perspective, so that we can see things more clearly.

If you watch someone learning to walk a slack rope, you will see *lots of large* correction movements. The movements are *large* because they are *late, slow* and *uncoordinated*. They are also ineffective and the learner will struggle to succeed, even with simple tasks.

By contrast, if you watch experienced slack rope walkers, you will see them perform complex tasks very easily and smoothly.

Their correction movements are subtle. For the best slack rope walkers, these corrections are so small that they become invisible. This is because they correct *early and rapidly* and the movements are *well coordinated*.

A **balance reflex** operates from nerves in the soles of your feet, up through the sciatic nerves and into a nerve centre in the base of your spine.

This nerve centre processes the information and sends out correction signals to muscle groups throughout your body, particularly to muscle groups in your feet and legs.



Generating large lateral forces.... Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network.

Photo: Ross Nelson

The balance reflex has some important qualities:

it operates many times per second,
it is completely autonomous, it bypasses your brain and your conscious thoughts
it can learn to solve complex balance problems, through *balance training*.

Ebook readers can see a **slack rope video** for skiers, on BASS TV [here](#).
You'll see that my corrections are quite large - I'm not great on the rope.

My long term objective is to be able to walk the rope without any visible corrections. So I'm feeling for better balance, more sensitivity and earlier, more accurate corrections.

I'm training my balance reflexes to be more responsive and more accurate. So, let's turn our attention back to skiing.

It's all very well planning to be beautifully centred on your skis, but a bump field will throw you off centre, very quickly.
So will complex, off piste snow and so will slightly misjudged timing, or slightly mis-coordinated movements.

What really counts, here, is how quickly you can correct for these complications. The more sensitive you are and the faster your reflexes, the smaller the corrections are.

Smooth, accurate, liberated skiing is the result of excellent technical content, excellent application and well trained balance reflexes that produce rapid, small adjustments, to keep the whole process centred.



... and rebalancing them at the end of the turn, prior to release.
**Skier: Hugh Monney, BASI International Ski Teacher,
Director of the BASS Network.** Photo: Ross Nelson

*If you flick backwards and forwards from the previous image to this one, you'll see the movement pattern.
(Ebook readers can do this with the click of a button.
If you are reading a hard copy of this book, photocopy both pages so you can flick from one image to the other.)*

When these adjustments are *very rapid* and *very small*, they become invisible and the performance appears to be simple, easy and effortless, even in complex environments.

By now you know that this is a highly cultured ability.

The apparent simplicity is the result of excellent technical training, planning, execution and well trained balance reflexes.

Earlier in Ski Performance Breakthrough, we discussed physical conditioning, including balance training.

So you are probably using balance training to rewire your body. This is one of your most important assets.

Return to centre

Still on the subject of balance, there is an important tactical opportunity, that will help you to simplify many of your balance problems.

Earlier in Ski Performance Breakthrough, **Centred Balance** was identified as your number 1 priority. From this mechanical and bio-mechanical condition, everything is possible.

You also identified a moment of clarity and precision, at the heart of your edge changing process, a moment when both skis are flat in the snow.

You then combined these two issues and trained yourself to **be centred as your skis pass through this transient moment**, when they are flat in the snow.

You can use this process to free yourself from the errors of the previous curve.



Skier: Ross Nelson, BASI International Ski Teacher.

Photo : Hugh Monney

You can use this process to help you aspire to

pass through a moment of perfection

as you release from one curve and enter the next.

The complications of the previous curve will become neutralised and you can enter your next curve with simplicity and freedom.

Freedom part 7. The art of seeing

There is much more to the art of seeing, than meets the eye.

This is one of the most important processes in skiing, so let's take a fresh look at it and develop it into one of your major assets.

There are two aspects to this: **how to see** and **what to look for**.

1. How to see

The first point to notice is that there is a big difference between the visual information collected by your eyes, and where you choose to focus your attention.

Our most detailed vision is created by the light that falls on the *fovea* of each eye. These are small areas that are rich in nerve cells, but they cover only a small part of our field of vision.

Our *peripheral vision*, covers by far the largest part of our field of vision, but does so with a lower resolution than the fovea.



Skier: Gavin Kerr-Hunter, Director of Snowperformance.

Photo: Hugh Monney

Our *awareness* of the information presented to us, by our visual field, tends to be heavily biased towards the rich detail in the area covered by the fovea.

This is especially true because of some of the patterns of modern life, such as reading, working at a computer, watching TV etc.

However, different circumstances require different strategies and you can make substantial progress by adopting the best strategies for skiing.

For general skiing, on the open mountain, looking ahead, as far as you can, while maintaining an awareness of your wide field of vision, is the best solution.

We know that, in many circumstances, there are specific targets in the snow that we need to attend to, (turn in points, flat spot transitions for your edge change, release points, etc) but this does not mean that we should focus on them too narrowly.

This is also true for physical targets and obstructions, such as terrain features, slalom poles, trees, pylons and people, etc.

Maintaining **an awareness of your wide field of vision** is a sophisticated, cultivated behaviour that takes a little time to develop, but consider the problems created by a narrow focus of attention.

Intermediate skiers on blue runs, looking intently at the snow immediately in front of their skis, are experiencing the same difficulty as the experienced skiers in the bump fields, looking intently at the bump immediately in front of their skis.



*Skier: Rebecca Malthouse, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Hugh Monney*

Skiers in both circumstances are:

trying to achieve the same result (more information),
making the same mistake (restricting the field of vision)
suffering from the same problem (reduced information)
They also suffer the same unwanted consequences:

reduced information,
reduced ability to plan ahead,
agitation, as all actions become last minute emergency responses
loss of balance rearwards, as they move their heads backwards.

This last point is a response to the “ground rush’ effect of limited forward vision and seeing the snow pass rapidly under your skis.

Earlier in this book, we identified **central balance** as our number one priority. Many skiers surrender this involuntarily, because of the way they use their field of vision. So how do we resolve the dilemma?

How can we attend to the details without becoming narrowly focussed?

Learning to use an awareness of your whole field of vision.

Look as far ahead as you can.

While being aware of your full field of vision, note and acknowledge information that is useful to you, **without diverting narrow attention to it.** Note and acknowledge targets in the snow, some distance away and maintain awareness of them as they move through different parts of your field of vision.

They will pass to the lower sector of your peripheral vision, as you approach them.



Sophisticated balance and coordination.
Skier: Steve Ricketts, BASI International Ski Teacher,
Director of BASS Val d’Isere. Photo: BASS Chamonix

You can supplement information from your peripheral vision, by using your **sense of timing** to help you judge when you will arrive at your target points.

This is a very different solution in the quest for more information and it feels very different. It can seem “looser” than trying to “fix” a point with your eyes, but the advantage is that you can

maintain a continuous, smooth stream of information about your environment, as you travel.

As you develop skill with this process, you become better able to negotiate complex environments, your planning becomes more effective, your use of terrain improves, your awareness of hazards, including other skiers, improves.

These advantages, plus the ability to maintain your centred balance, allow your performance to become smoother.

It takes time to develop the ability to overcome the urge to “look at” details rather than “seeing” everything.

Step 1 is being aware that you have the choice.

Step 2 is training yourself to make the correct choice.

Summary

Look as far ahead as you can.

Maintain a wide field of vision.

Maintain a wide awareness of your whole field of vision.

Acknowledge targets, obstacles and other important points, without diverting all of your attention to them.



*Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham*

Use your peripheral vision to track these important points
Supplement this by using your sense of timing to help you judge your approach to your targets.

Training yourself to use your peripheral vision

Route 1, is simple and very direct.

Look a long way ahead, perhaps across the valley, to the mountains on the other side, yet be aware of everything in your field of vision, from near to far,
from left to right
from sky to ground.

Train yourself to do this. Do not be distracted.
This takes a little time, but it can be done.

There is another excellent approach, which trains you to use your peripheral vision, without the apparent urgency of the skiing situation.

Look at the stars on a clear, dark night.
Your peripheral vision is better equipped to detect faint images than your foveas. So you will see lots of faint stars in your periphery, but they will disappear if you “look at” then directly.

Train yourself to see the faint stars.
Learn to accept that the best images of them lie in your peripheral vision.
Learn to suppress the urge move your eyes, to focus narrowly on them.

A strong point in favour of this approach is that great feedback is built into it. When you succumb to temptation and look too directly, the faint images fade away. When you hold the images in your peripheral vision, they remain clear and bright.



Wide vision allows you to take in all of your surroundings.
Off piste in the Andes. Skier: Mike Hamilton Photo: Hugh Monney

This can help you to develop visual habits that are great for your skiing.

Should I use a wide field of vision, all the time?

The real objective is to **maintain a continuous, smooth stream of information about your environment, as you travel.**

This will help you to understand your surroundings and your trajectory through them.

So you will need to look as far ahead as you can, to give yourself the luxury of time.

There are some circumstances where you will need the widest awareness of the widest visual field possible and others where a more specific awareness of a narrower field of vision can be helpful.

For example, **skiing off piste** requires a wide, wide approach.

If you are making strategic decisions about travel through complex snow and terrain, you need to become fully integrated with your surroundings. It takes many years to develop this ability.

Often, skiers use the services of experienced professionals to provide this level of awareness and safety.

On the other hand, **ski racing** is a highly intense activity, that takes place in a simplified environment. The snow is well prepared and the race piste is roped off, to keep other skiers out.

Racers can benefit from restricting their awareness to the edges of the race piste, and as far ahead as they need, to plan entry and exit lines, release points, etc.



Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Tim Hall

Usually, a racer becomes familiar with the slope and the course, through a pre race inspection, which helps to simplify the interpretation of information while on the move.

On the open piste, skiers have some complex situations to deal with, some related to the mountain environment, others to the behaviour of other skiers. A wide awareness will help you to plan, keep you out of trouble and enhance your performance.

Beware of hunters

A final point on this, look out for other skiers who move their heads all the time.

They are probably *hunting*, which is an attempt to gather information over a wide area, while using a narrow field of view, or a narrow field of attention. These skiers are not fully aware of their surroundings and they can behave erratically.

Perception theory

There is a whole body of scientific study devoted to perception theory, or how we interpret our surroundings.

One simple, useful idea from this area of study is *Nidifer's model of attentional focus*.

This model suggests that we can have our attention in one of 4 main zones, at any one time.

He arrives at this by defining our attention as either *Internally* or *Externally* directed and either *Narrowly* or *Broadly* focussed.



**Skier: Peter Kuwall, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Hugh Monney**

This is a very simple idea, that's easy to use and has powerful benefits. Elsewhere in this book, we used the *narrow internal focus of attention* to enhance your awareness of the quality of your balance or movement.

In this section, we have been using the *broad external focus of attention* to enhance your awareness of your surroundings and your trajectory though them.

This is not just about skiing

I regularly take up new activities. This is mainly so that I can study the art of learning and learn from different approaches. Obviously, I choose activities that are interesting to me (see *Chapter 6, Master your body part 1* to see why this is important) and have some relevance to skiing.

As part of this programme, I took up motorcycling a few years ago. After some time spent developing basic experience, it was time to seek out specialised training.

The California Superbike School had been recommended to me by clients on Ski Performance Breakthrough clinics, who told me that some of their approaches were similar to those they experienced on the ski clinics. Intrigued, I signed up for some high quality training. It turns out that many aspects of motorcycling are similar to, or comparable with, many aspects skiing.

The art of seeing, however, is identical.

Wide perspective, peripheral vision, avoiding the direct “stare of doom”, it's all there.



Use your eyes.....

Photo: California Superbike School.

<http://www.superbikeschool.co.uk/>

So, if you ride a bike or motorbike, or if you drive a car, you can use this wide awareness approach to improve your safety and performance.

How to see in poor light

We have all experienced days when the overhead conditions produce difficult light.

Whiteout

A *whiteout* is just that, mist or fog that turns the whole world white. No details can be seen in the snow. Objects loom out of the mist at close range.

This is, obviously, a very dangerous situation. Avoid skiing in these circumstances. If you are caught out on the mountain in these circumstances, you need to decide whether or not you can follow piste markers or ropes to safety.

If not, then you may need to stay where you are, until visibility improves.

Or you may need to telephone the piste patrol for help. Don't be shy about this. They are compassionate professionals, who will be much happier to help you off the mountain, safely, than to rescue you once you are lost and injured.

Flat light

Flat light is the result of cloud cover, which diffuses the sunlight, providing a uniform, non directional type of lighting effect. **This reduces or eliminates the contrast of the scene**, removing some or all of the details from the appearance of the snow. This leaves us with the illusion that the terrain is flat.

This effect can range in intensity, based on how much detail has been removed. Low, dense cloud, from horizon to horizon can produce full flat light, which removes *all* detail from the snow.



Skiing at speed, off piste, in a snow storm.
Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

Light, hazy, high clouds can reduce contrast without eliminating it completely, removing some of the details but leaving others.

Many skiers are distracted by the missing information, but you can develop the ability to maximise your use of the detail that remains.

This improves your safety in marginal light conditions and allows you to ski more effectively, even though the visibility is less than ideal.

Here's how:

1. You need to wear good goggles, ideally with a yellow or orange lens. These lenses can increase the contrast available to you, going some way towards minimizing the effect of the overhead conditions. Certainly, using the wrong eyewear for the conditions (high intensity sunglasses with blue lenses) can make the situation worse.

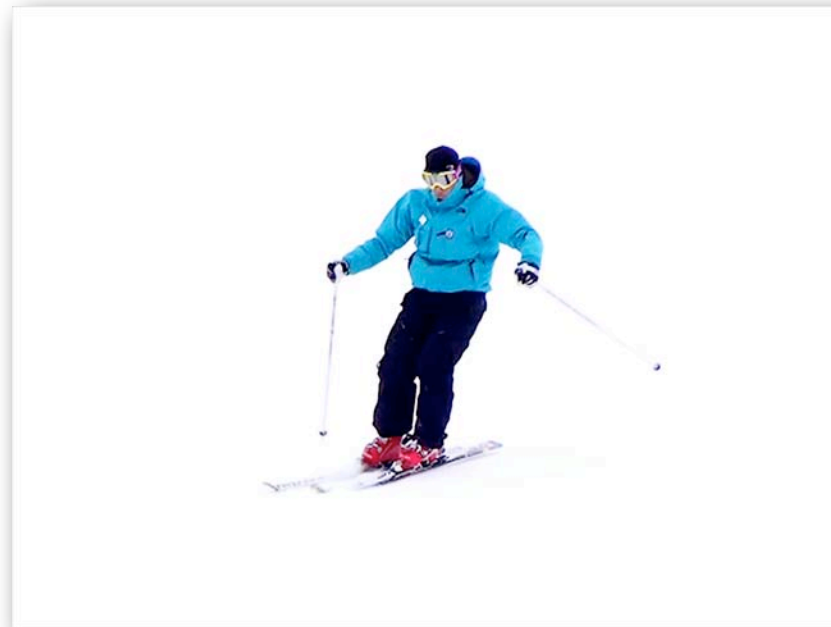
2. You need to focus on the details that remain, not the details that are missing. This seems like a simple, obvious point, but many skiers don't do it. They are distracted by the problem, rather than being focussed on the solution.

3. You can increase your sensitivity to the contrast that remains, allowing you to maximise your ability to use the remaining details. This is a skill that can be developed, over time.

Blue and yellow

One way to achieve this, is to develop an awareness of the **colour of the light** in the mountains.

This changes throughout the day, from one slope aspect to another, according to the overhead conditions and according to the season. Painters and photographers are very sensitive to this.



Flat light skiing.

***Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Hugh Monney***

Bump skiers and off piste skiers have an acute need to develop the same awareness, as their every move is determined by judgements, based on information in the light reflected from the snow around them.

Other skiers are using the same process, too, though perhaps in a less critical manner.

Marginal light conditions test the ability of skiers to make use of subtle signals given off by the snow.

A simple way of evaluating the colour of the light, is to judge whether it is **blue** (and if so, how blue) or **yellow** (and if so, how yellow).

For example, in the northern hemisphere, if you are in the shade, on a north facing slope, early on a January morning, you will experience very blue light indeed.

By contrast, if you are in full sunshine, on a South facing slope, late on an April afternoon, you will be bathed in a golden yellow light.

However, even on the South facing slope, late on an April afternoon, there will be shadows, cast by shapes and textures in the snow. Obviously, in those shadows, the snow will have a darker appearance than the snow in full sunlight. If you look more closely, you will also notice that the snow in the shadows has a bluer appearance than the snow in full sunlight.

**So there is your opportunity to become more sensitive to contrast.
Highlights are yellow, shadows are blue.**

This is true, to a certain degree, on every slope, on every aspect, at all times of day and throughout the year.

In our first example, everything will be bathed in a bluish cast, but the shadows will be bluer still and the highlights will have a hint of yellow.



A shady, North facing slope; "...everything will be bathed in a bluish cast, but the shadows will be bluer still and the highlights will have a hint of yellow."

Skier: Hannes Webhofer, Director of Beyond Boundaries Heliskiing.

Photo: Hugh Monney

In our second example, everything will be bathed in a yellow cast, but the highlights will be more yellow still and the shadows will have a hint of blue. If you make the effort to develop a general awareness of the quality of the light, you can become more sensitive to contrast, **even in low contrast circumstances.**

In flat light, you will be able to see a little yellow and blue and you will pull a little more detail out to the light reflected from the snow.

That will tell you more about the terrain around you.
And that will make a difference.

Sometimes, when skiers complain of flat light conditions, there is actually plenty of information available, for those with eyes to see it.

2. What to look for

Seeing is one thing, but what are we looking for?
Here are some suggestions.

Targets

We identified some specific targets: turn in points, flat spot transitions for your edge change and release points, in *Freedom part 4. Targeting*

Your choices about where to place these targets on the snow will shape your whole performance. How do you decide? How can you improve those decisions?

Environmental factors

Here are some environmental factors that you should be observing, as you use your wide field awareness:

- Snow texture
- Light and shade



Flat light skiing, 2.

**Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Hugh Monney**

Shape of the slope
Orientation of the slope and Gradient
Changes in the direction of the fall line
Snowcover and snow quality
High wear areas and obstacles, including moving skiers!

As you improve your awareness of these factors, you will make better informed decisions about where, when and how to steer your skis.

Freedom part 8. Groove your performance

There is a time in your development of a new skill, when you have:

a clear idea of the concept,
a clear physical intention,
the awareness to detect when you are performing accurately and when you are making errors, and
the ability to correct the errors.

When you have reached this stage of development, it is time to ski, ski, ski.

Your further development *depends* upon relatively high mileage, to groove the new ability into your performance. The [mp4 programme of this book](#) is built upon setting up these sessions for you.

Your *neuromuscular system* simply needs the opportunity to reprogramme the way that it coordinates itself, to integrate the new skill into your whole performance.

There is more detail on this process in the chapter, *Learning how to learn*. So, when you have reached this important stage, make sure to ski the mileage you need, to groove your performance.

Your progress depends on it.



Flat light skiing, 3.

***Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Hugh Monney***

Freedom part 9. Long distance skiing

There are other reasons for high mileage skiing.
When you have developed a well rounded, well integrated, technically sound performance, high mileage skiing is *fun*!

You will have spent a lot of time and effort to achieve your high quality performance, so it makes a lot of sense to enjoy it, to reap the rewards of your effort.

And there is another, deeper reason.

Performance qualities such as timing, coordination, balance, finesse, adaptability and judgement continue to improve with high mileage.

If you set about this the right way, your performance will become smoother and more refined, freer and more powerful, better able to cope with a wider variety of circumstances.

If you do not ski high mileages, or if you do not go about it in the right way, these developments will elude you.

Long distance skiing

How far can you ski, without stopping to rest?

If you watch the behaviour of skiers on the slopes, you will see that most of them ski for short pitches, of perhaps a few hundred metres, before stopping.

There are several reasons for this.

Some reasons are social, and some are related to physical conditioning.

There is a third factor, too.



Long distance skiing, in wild country. Photo: Hugh Monney

Most skiers have an inefficient style and so they tire quickly.

If you have worked through the Ski Performance Breakthrough book or video programme, you will have gone a long way towards developing an efficient skiing style.

Long distance skiing gives you the opportunity to put this to the test and to refine it further.

Try skiing from the top of the mountain to the bottom, without stopping. As your descent continues, you will feel the early signals of fatigue. Most of these signals come from the build up of lactic acid in your muscles.

These signals do not mean that you are tired yet, just treat them as information that your muscles are working.

Use these signals as the stimulus to refine your balance, finesse your movements, smooth out your coordination and flow effortlessly around the arc.

Do everything you can to conserve your energy, while continuing with your descent.

Relax! Remove all traces of unnecessary tension from your body.

Still you will feel the fatigue beginning to creep up on you. Relax, be softer, be smoother, be centred.

Turn and burn

You will begin to feel your muscles burning. Excellent. Now it's time to **turn and burn**.

There is a training opportunity here. Your body will do its best to become more efficient, if you can keep going.



Skier: Andrew Lockerbie, BASI International Ski Teacher, Director of BASS Megeve. Photo: BASS Chamonix

Relax, relax, keep going.

There will come a time, when you feel yourself beginning to lose sensitivity. **Stop!** Above all else, you do not want to ski clumsily, while fatigued.

Rest for a few minutes, then set off again, till you arrive at the bottom of the mountain.

The point, here, is you are using the duration of the run, and the signs of fatigue, to train for efficiency and to improve the quality of your coordination.

If you stop every few hundred metres, there is no reason to become more efficient, so your body will accept the status quo.

If you give it a really good reason to change, however, it will refine the quality of your performance in ways that are not available to you by any other means.

Long distance skiing smooths and refines your performance.

How long is a piece of string?

There is a ridge, high above Zermatt, on the border of Switzerland and Italy. The piste down into Cervinia is about 10 kilometres long.

Which is to say, if you took a piece of string and laid it straight down the centre of all the pistes that link up, to take you to Cervinia, that piece of string would be about 10 kilometres long.

But, of course, when you ski those pistes, in, medium radius turns, for example, you travel much further than 10 kilometres. If you laid string over your tracks, all the way down, how long would *that* piece of string be?

One and a half times as long as the 10km “centre line”?



Refined performance.

**Skier: Rebecca Malthouse, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham**

Perhaps. That's probably the maximum possible theoretical value.
The true value will be less than that, because ski tracks rarely describe full semi circles, either side of the centre line.

It's fair to say that your route over the snow would be 12 to 14 kilometres long.
This is one of the longest ski descents on the planet.

That's what I mean by long range skiing.

I have had the pleasure of skiing several groups down this route, at pace, in medium radius turns, non stop, from top to bottom.
It takes 13 or 14 minutes and it is an extraordinary experience.

The performance is exhilarating and I have yet to see someone who has not become a very different skier by the end of the run.

To put this in perspective, everyone in these groups was already a qualified instructor and they were training to certify at the international level. So there was a high degree of individual ability, throughout each of these groups.

Also, on each occasion, we had spent over a week together, prior to the long descents, developing their performances further, and developing a group discipline that had earned our trust.

So these runs were very special indeed.

But you can simplify this process for yourself.

Ski long distances as an individual, rather than in a group.
Stop when you need to, as described above.

Use the opportunity to refine the quality of your performance.



**Skier: Helen Trayfoot, BASI International Ski Teacher,
Director of BASS Chatel. Photo: Peter Kuwall**

Throw away unwanted movements. Discard obstructive ideas. Relax.

Just ski.

You will be surprised how far that will take you.

Here's a footnote to this subject.

In the Canadian Rockies, there is a beautiful gladed run through the forest, in the Ptarmigan area of the Lake Louise ski resort, in Alberta.

It's a double black diamond run, number 69, called **Turn or Burn**.

It was named by a friend of mine, who worked in the resort management team, some years after he had skied the Turn and Burn drill with me, in the Alps.

The run is steep and narrow, with trees to each side. I had the pleasure of skiing it, in powder snow, with my friend, some years ago. I asked him about the name and we discussed the drill we had skied together.

A broad smile of realisation crept across his face and he laughed.
"Yes, of course. That's where it comes from!"

He hadn't realised it at the time, but it was clear to him in retrospect.
The Lake Louise double black diamond run, number 69, **Turn or Burn**, is named after the Turn and Burn training process described above.



*Skier: Hugh Monney, BASI International Ski Teacher,
Director of the BASS Network. Photo: Peter Kuwall*

Freedom part 10. Your skiing mantra

Here is a simple affirmation that you can repeat to yourself as you ski. It has proven to be very effective for experienced skiers, allowing them to liberate excellent performances.

(I am....)

Supple, relaxed, accurate, free.

Supple - a physical quality

Relaxed - a quality that is both mental and physical

Accurate - a combination of all the technical and tactical aspects of skiing, described throughout this book.

Free - liberated, unshackled, performing with ease.

As you ski, repeat this affirmation to yourself and allow yourself to express these qualities in your performance:

Supple, relaxed, accurate, free....

Supple, relaxed, accurate, free....



Supple, relaxed, accurate, free!

***Skier: Andrew Lockerbie, BASI International Ski Teacher,
Director of BASS Megeve. Photo: BASS Chamonix***

Freedom part 11. Overcoming obstacles to Freedom

As we discussed above, **being free to** perform, move, express, develop, interpret and create, also means **being free from** fear, anxiety, expectations, preconceptions, physical blockages and habits that tie you to your past.

So let's take a look at ways to overcome some obstacles to freedom. Many skiers are held back by these common restrictions.

Each of the solutions listed here can be seen as a Golden opportunity to set your performance free.

1. Physical conditioning

The chapter *Master your body, part 1* presented and discussed seven core physical abilities which allow skiers to be more effective: aerobic base level, flexibility, coordination, agility, balance, strength and power.

Some background and safety issues were discussed, along with enjoyable, engaging activities to develop each of the core abilities. Examples were given of champions who use these activities in their own programmes.

While we all know that becoming a better athlete prepares you for progress and success in snowsports, poor physical conditioning is still one of the major obstacles to success for many skiers.

Each of the seven core physical abilities is a major opportunity in its' own right, but for the sake of this chapter, we'll combine them into one solution

Golden opportunity 1: Develop a resourceful body.



**Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Buster Cheetham**

2. Your equipment

So, you're in great shape, but what about your equipment?

Here are three key issues to consider. Getting each one right gives you a real opportunity to move forwards to a new quality of performance.

Is your basic stance flat and free of strain?

You need to be able to relax with an efficient posture in your basic stance.

The combination of your stance width and the geometry of your equipment can induce strain, both in the lateral and the fore/aft planes.

If this is happening to you, and it happens to most people to a certain extent, then much of your effort is spent overcoming deficiencies in your set up.

Here's a simple test: a good set up leaves you feeling free and agile, while a poor set up leaves you feeling clumsy and restricted.

These factors can also prevent skiers from having both feet flat in the snow, in their neutral, basic stance.

A flowing, effective performance is elusive if you're fighting with your equipment.

The ideal situation is to achieve a fit that allows **you to have both feet flat on the ground and your body free of strain**, when you are in your neutral, basic stance.

There are experts who can fit your equipment to you, reducing strain and increasing freedom. It really is worthwhile finding out about this and making sure that your equipment is adapted to fit your body in all three planes of movement.



*Skier: Steve Ricketts, BASI International Ski Teacher,
Director of BASS Val d'Isere. Photo: BASS Chamonix*

Is your equipment flexible enough for you?

This is an important issue when considering the choice of ski boots and is a consequence of the rapid development of equipment over several decades.

Along with the development of plastic boots and increased lateral stability, came the problem of reduced flexibility. This particularly affects your ankle joints, laterally and in the fore and aft planes.

At the same time that the lateral rigidity gives rise to some of the problems discussed above, (*"Is your basic stance flat and free of strain?"*), the restrictions in the fore/aft plane cause even more complicating factors.

Many skiers use a limited range of flexion and extension movements, because their boots block their ankle joints in the fore/aft plane. Moving beyond this limited range causes loss of balance fore or aft, which mis-directs the forces of the performance.

Accepting a restricted range of movement seems to be the lesser of two evils and so many skiers accept this restriction.

The real solution is to liberate your range of movement by choosing boots that are not too stiff for you.

If your equipment blocks your movements, it's not doing you any favours. Do you really need those race boots, or have you been hyped?

Are your edges and bases in top condition?

Simply put, for a basic set up for your skis, you need flat bases, with great glide qualities, and smooth, well formed, sharp edges at 90 degrees to the bases. You can improve further on this by tweaking the edges with a base bevel (perhaps half a degree) and side bevel (cut back to 89 or 88 degrees).



This could be interesting! Skier: Hugh Monney, BASI International Ski Teacher, Director of the BASS Network. Photo: Peter Kuwall

Some specialised ski shops offer a hand finished tuning service that achieves this, but you can also learn to do it for yourself. There are great hand tools available, to help you get the job done.

Yes, it does take practice, like everything else, but using well tuned gear is an absolute joy. Using poorly tuned, or un-tuned equipment is not.

Yes, it does make that much difference. You'll feel it, on every curve.

Let's combine these issues into one solution:

Golden opportunity 2:

Use well tuned, well fitted equipment that leaves you free and agile.

3. Energy levels

This is all about getting into the zone.

As well as the good physical conditioning mentioned above, you need to apply yourself to maintaining your levels of **rest, nutrition and hydration** during your time on the slopes. Otherwise your performance will fade.

Exercising in the mountains, often at significant altitude, it's no surprise that skiers become tired, hungry and dehydrated.
Have a plan to deal with these issues.

This is so important that, all on it's own it qualifies as:

Golden opportunity 3: Attend to rest, nutrition and hydration.

4. Arousal levels

Still on the subject of energy levels and getting into the zone, we need to consider three types of **arousal level** for great performance.



Skier: Paul Morris,, BASI Ski Instructor. Photo: Hugh Monney

Mentally, you need to be calm, relaxed and alert.

Tension or anxiety will inhibit your performance, so use the techniques described earlier in this chapter to develop your optimum performance state.

Physically, you need to be free of undue tension, yet fired up for the activity. Different activities have different intensities and the skilled performer matches physical arousal to each activity.

For example, a target shooter needs to be very calm and relaxed, while a sprinter needs to be fully warmed up, with blood surging and muscles screaming for action.

Can you match your physical arousal level to the situation you find yourself in?

You also need to apply your **spirit** so that you can engage in each performance wholeheartedly.

When this goes well, you'll notice that you're actually having fun.

Conversely, if you're not having fun, one of the reasons could be that you're not doing attending to this aspect of performance.

Working with each of these three, separate arousal levels, is a skill that can be developed over time.

Often, a relaxation or arousal technique will allow you to adjust all three at the same time. Athletes spend a lot of time learning to do this. Do you?

Again, we'll combine these issues into one solution:

Golden opportunity 4:
Improve your arousal levels for mind, body and spirit.



***Skier: James Lamb, BASI International Ski Teacher,
Director of BASS Morzine. Photo: Hugh Monney***

So that's 4 Golden opportunities listed:

Develop a resourceful body.

Use well tuned, well fitted equipment that leaves you free and agile.

Attend to rest, nutrition and hydration.

Improve your arousal levels for mind, body and spirit.

That seems deceptively simple, but if you read this section carefully, you'll find they cover **thirteen** different aspects of performance that you can influence, to ensure your own success.

Attending to these processes will allow your performance to flourish, and you will reap the benefits of the technical and tactical developments described throughout this book.

The corollary is also true, of course.

If you do not address these issues, your technical and tactical developments alone will not liberate your performance.



Skier: Glen Radford, BASI International Ski Teacher.

Photo : Hugh Monney

Summary

This chapter deals with factors that can enhance your performance,

**refining it, liberating it and
elevating it from the mechanical to the intuitive.**

When you attend to these issues, you will begin to experience some extraordinary qualities of performance.

We frequently see these qualities in champions, but the important message here is that these qualities are available to us all.

When you see someone skiing smoothly, freely and simply, even in complex circumstances, you know that they have tuned into something special.

This chapter shows you many ways to gain access to these elusive aspects of performance.



Skier: Sean Langmuir, Olympian, formerly Coach for the British and Canadian ski teams. Photo: Hugh Monney

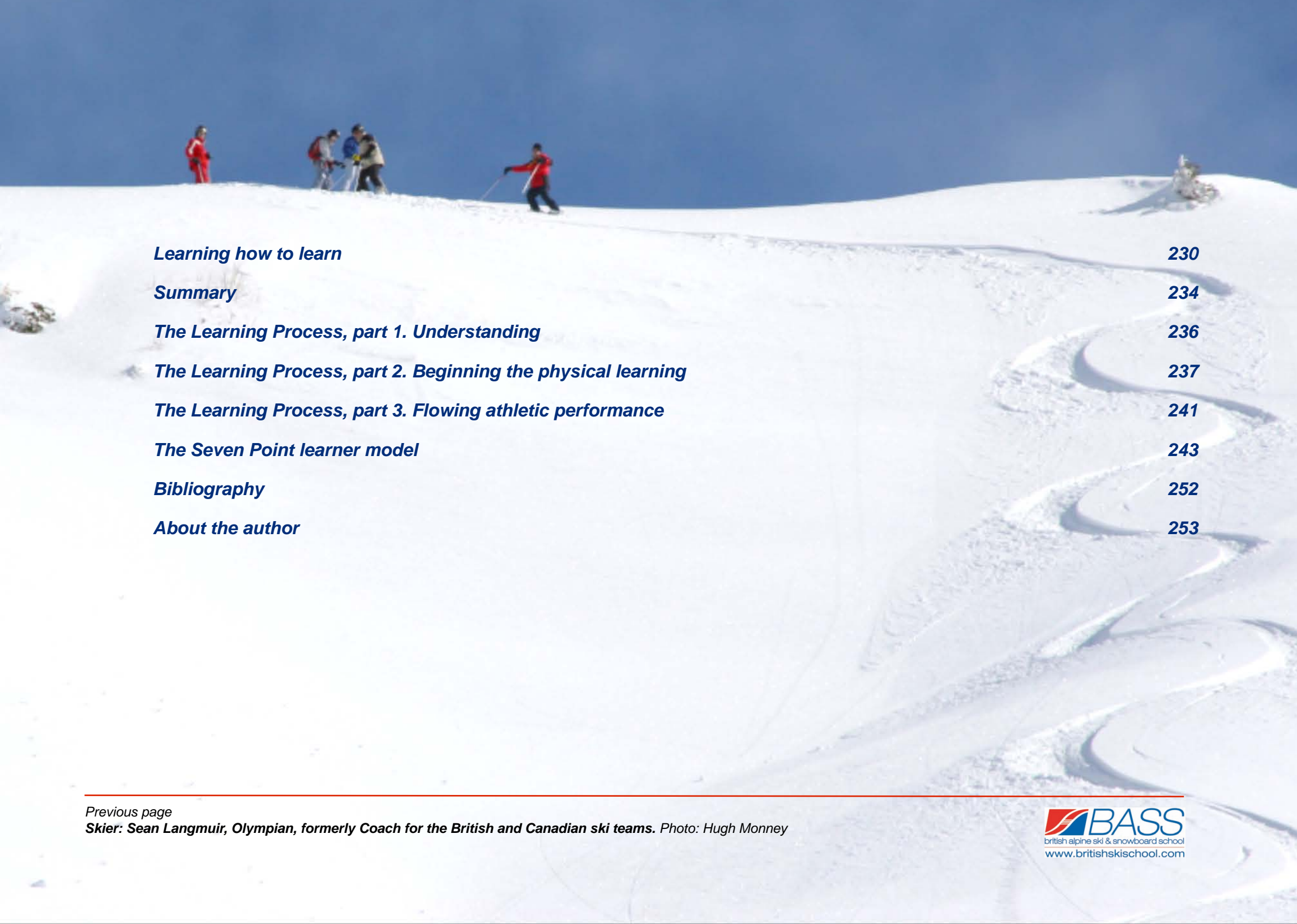


Ski Performance Breakthrough



Chapter 8

Learning how to learn



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Learning how to learn

This chapter helps you to become a more effective learner, so that you can achieve maximum results from the energy and care that you give to your skiing development.

We'll continue to collect **Golden opportunities** for your development, a process we that began in the previous chapter.

Learning how to learn is the key skill.

If you make progress with this, everything else will change.

The first point to make here, is that it's helpful to identify the common ways in which people can obstruct their own learning. You can use that knowledge to turn the tables, which will help you to get out of your own way.

Overcoming obstacles to learning

Learning can be challenging and uncomfortable.
Some people take to it more easily than others.

For example, *denial* is a natural reflex that's designed to save us the trouble of changing. But, if we want to learn and develop, we need to change.

Sometimes people feel threatened and insecure when facing up to the need for change. Learning *means* changing, however.

So we need to change.

How can you manage this process better?

Firstly, choose to welcome change; find it interesting.

Be alert for anything that seems even slightly different from your current understanding. Have an enquiring mind.



Photo: Hugh Monney

For example, develop the habit of receiving a new idea with the response: “That’s different, what does that mean? What are the consequences? How can I use it?”

If you actively collect these opportunities, you’ll overcome your denial reflex and, in it’s place, you’ll develop a new reflex:
“That’s new, that makes it interesting.”

Of course, in general life, the denial reflex saves us from the chaos of changing everything we do, all of the time. But in the context of your performance development,

you need to learn to switch off your denial reflex,

to get the most from your skiing.

Will you be held back by what you think you know, or will you be open to realizing that, perhaps, you only have part of the picture? So here it is:

Golden opportunity 5: Welcome change.

Secondly, you can save yourself a lot of time, even a lifetime of effort, by adopting a simple strategy for learning.

Many people think they need to really understand issues before they can use them. This can be useful, but it can also hold you back in certain circumstances.

For example, a coach or instructor might suggest a new tactic, or technique or coordination. If you assume that you already know what they have to offer, you’re misleading yourself and obstructing your own progress.

You would have to put in years of study to match his or her understanding.



Photo: Hugh Monney

Sometimes people find that the penny does indeed drop, some years down the line. Don't let that happen to you.

Why not, just try the suggestion wholeheartedly, as if you fully believe in it, so you can feel what happens, right there and then?

The new physical experience may well give you a new insight, which will change everything. But only if you set aside any reservations you may have.

You'll be surprised how many skiers drag their heels and lose out on this direct opportunity for success.

There's an old phrase "You can't see the view till you've climbed the mountain." Which means that perhaps you won't understand something until you can do it.

The lesson here is to give yourself the chance of a new physical experience in your performance, by applying the advice you receive.

Even if don't yet fully understand why, your body may be able to achieve results that your mind isn't ready for.

This is the big physical short cut to success:

Golden opportunity 6:
Trust the advice and behave as though you believe.

There's a third issue to consider while we're on the subject of overcoming obstacles to learning.

It's related to the other two, but deserves special consideration because it is at the root of a great deal of self defeating behaviour. It also needs special consideration because it will be very upset if it feels slighted.



Photo: Hugh Monney

We're talking about your **ego**.

This is not the place for a deep discussion of psychology, but there's a really important advantage to be discovered here.

Your ego thinks that it's *you*, and even if it's not, it insists that it's in charge. Which is the problem.

Which part of *you* is the source of the denial based behaviour?

Which part of *you* insists on *understanding*, insists on more *details*, insists on more *feedback*?

Which part of *you* insists on trying to control your body, even though it's not wired in?

While your *ego* a very valuable part of who you are, and it's role is critical to how you live your life, your learning will go more smoothly when it learns to become a better team player.

The team here is the *whole you*, different aspects of which have been referred to as mind, body and spirit.

Your ego is part of your mind, but not all of it; and perhaps a part of your spirit, too, but not all of it.

It can really work *for* you when it understands its' place in the greater whole and lets go of its' tyrannical grip.

Golden opportunities 5 and 6 are related to addressing this issue.

Golden opportunity 7: Learn how to get out of your own way.

Your performance development depends upon it.



Photo: Hugh Monney

Summary

In this section, and the section of the previous chapter that addressed how to overcome obstacles to performance, seven golden opportunities, have been highlighted.

Between them, they cover sixteen specific factors that you can work with, to ensure your own success.

They cover two essential aspects of performance development:

Overcoming obstacles to performance

Overcoming obstacles to learning

Taken together, they help you to apply yourself to all of the other suggestions in this book.

They are the secret methods that ensure that your performance develops.

Now that we've identified ways for you to open yourself up to learning process, let's take a look at the learning process itself.



Photo: Hugh Monney

The Learning process

The development your performance depends upon your ability to get out of your own way and work *with* the learning process.

So, let's turn our attention to **the learning process** itself and discuss how you can work *with* it for maximum results.

There are many models of physical learning, or *motor skill acquisition*, as it's described in the professional journals and texts.

One of the simplest was developed by Fitts and Posner.

Despite its simplicity, it's a very effective model, which, gives us a number of advantages.

Other, more complex, models, such as those proposed separately by Adams, Gentile and Newell, broadly agree with Fitts and Posner and reinforce it's key principles.

The model suggests that people go through **three specific processes** while learning and developing a physical skill.

The three phases represent different processes that combine, to produce the final result of an *acquired skill*.

The main advantage of using the model is that it allows teachers and learners to identify *what needs to be done*.

When this is allied to an understanding of learning methods, and the structure of practice, we also get very clear directions about *how to go about it*.



Photo: Hugh Monney

This means that it becomes possible to design a training programme that maximises the rate of learning and minimises wasted effort.

The Learning Process, part 1. Understanding

The first phase is about developing an understanding of the activity.

At the very beginning of a learning cycle, the learner may be completely unaware of a particular issue.

This is actually great news, because it means that the issue can be a major opportunity for rapid development.

Unfortunately, the denial reflex can kick in here, for reasons discussed above, so learning can be blocked. This is the ego trying to defend it's previous position. A resistant ego sabotages learning here!

Golden opportunity 8:

Get over your denial reflex, something new is good news.

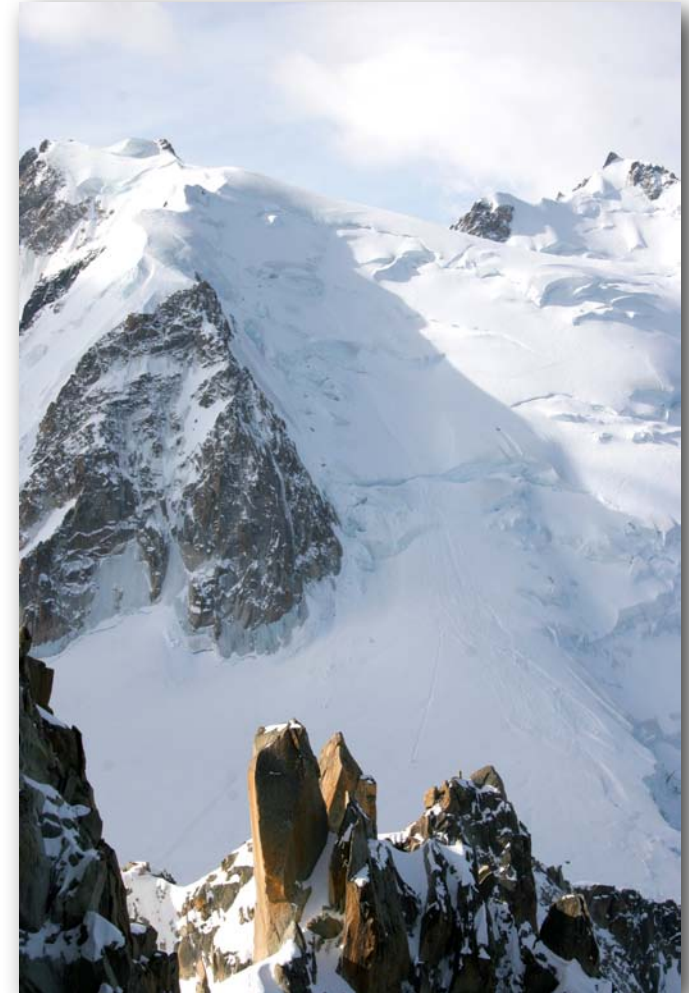
Quite quickly, it's possible to move beyond initial confusion and develop a partial understanding. This means that the learner is getting the idea, though not the complete picture.

When you are in this situation, it's important to keep working to develop your understanding further. Don't assume that you've understood the whole deal. Don't be afraid to ask questions. There's no such thing as a stupid question.

Golden opportunity 9:

There's no such thing as a stupid question. Keep asking.

Fairly soon, it becomes clear that "the penny has dropped". The learner gets the 'aha!' experience.



Glacier des Bossons, Chamonix. Photo: Hugh Monney

Getting to this stage takes quite a bit of self control and a real willingness to discover new ideas and accept change.

This is not easy work. It can be frustrating and challenging. You may feel confused and angry. This is the ego feeling wounded or challenged.

Letting go here is an important part of growth.

Golden opportunity 10:

Learning can be emotionally challenging. It's a good sign.

Work through it!

The Learning Process, part 2. Beginning the physical learning

The second phase of learning, in the Fitts and Posner model, is about getting physical with the new activity. This is sometimes called the practice phase.

Early on in the physical learning, the learner is so busy *doing* the new content, that very little attention can be given to noticing the result.

The learner needs feedback from the outside, to support or adjust what he or she is doing. This is where coaches and instructors can really give the learner a big boost.

Initially, this feedback might be instantaneous, for example supportive or corrective comments, during the performance.



Photo: Hugh Monney

As the learner's experience of the new issue develops a little, this might change to supportive or corrective advice after the learner has had a moment to reflect and comment on the performance.

It seems obvious, but sometimes, thankfully rarely, learners will stubbornly resist this feedback. In this phase, you can accelerate your learning by relying on feedback from a trusted source.

Golden opportunity 11:
Let the feedback shape your performance, in early practice phase.

However, it's important to know that the name for the this phase, used by Fitts and Posner, is the *Associative* phase.

The work here is to explore, through physical experience, the *relationships* and *associations* between the elements of the performance, intensities, outcomes, environmental factors etc.

The intention here is not to reproduce a narrowly defined replica of a model performance, especially for open skills such as snowsports.

That would develop a fragile, limited performance, which would break down in difficult circumstances. Unfortunately, this is the approach often used by instructors and students alike.

"Trying to get it right" often results in narrow, restricted performance which creates very little scope for future growth and development.

"Just tell me what to do and I'll do it", is one way that the ego tries to sabotage physical learning.



Photo: Hugh Monney

By taking a more open approach, in the true spirit of the *Associative phase*, your body is allowed to perform lots of different experiments, so that it gets a feel for how things “hang together”.

Learners need the patience to map out the physical variables and experiment with different coordinations.

**Golden opportunity 12:
Experiment. Be patient as you build up physical experience.**

Later in the practice phase, the learner still needs to think about some aspects of the performance, AND can also start feeling the results for him/herself.

This is a very important phase that is often mis-understood.

The key issue here is that the learner can feel what is going on and can use this as feedback to shape the performance.

**Golden opportunity 13:
Feel the results for yourself, in late practice phase.**

Importantly, external feedback at this stage will short circuit your sensitivity and put you back into early practice phase.

This really does obstruct your progress.

So a skilled instructor or coach will be reluctant to give external feedback at this stage.

Instead, he or she will help you to do the work of tuning in and becoming a sensitive, self managing performer.

Golden opportunity 14: Don't become a feedback junkie.



Photo: Hugh Monney

It's important to ski lots of disciplined, varied mileage at this stage, tuning in to specific qualities that are drawn to your attention by your instructor or coach.

This will achieve two very specific results for you.

Firstly, the quality of your performance will soar – accuracy, consistency and sensitivity are developed here. This feels great, you'll start to have even more fun.

Fun becomes a very important feedback process from here on!

Golden opportunity 15:
Develop accuracy, consistency, sensitivity and a sense of fun!

Secondly, the high mileage in this phase moves your performance to the subconscious processes that your body relies on, to produce excellent coordination.

You'll begin to think less, while the performance starts to take care of itself.

A word of caution here: if your ego insists on telling your body what to do, it will block this important transition. Give your ego the job of *allowing* this transition to take place, rather than trying to control it.

Golden opportunity 16:
Move it and groove it in late practice phase.

To put this in perspective, hundreds of varied repetitions are required, as a minimum. Sometimes thousands.

There is evidence in the literature showing that grooving and improving techniques continues after *millions* of repetitions.



Mt Blanc. Photo: Hugh Monney

In snowsports, our bodies will probably have worn out before this stage, so take care. But the message is clear

Golden opportunity 17:

Have a lot of fun with high mileage skiing, to get through to the next level of performance.

The Learning Process, part 3. Flowing athletic performance

The third phase, described by Fitts and Posner as *Autonomous*, relates to flowing athletic performance,.

By this stage, the techniques have been understood, shaped by external feedback, then by internal feedback, grooved sensitively with varied, high mileage training and have finally become automatic, yet shaped by a sensitive awareness to the quality of every curve.

So the emphasis, now, is mainly on skilful application and adapting to the complex demands of the mountain.

Golden opportunity 18:

Focus on skilful application. Fit into the situation.

Some performers progress beyond this to creative, even playful performance, literally creating solutions as they ski along.

Golden opportunity 19: Play with the terrain, be creative.

Training for performers in these phases focuses on challenging their tactical and problem solving skills and moving into more challenging environments.



Photo: Hugh Monney

Often, even more attention to physical preparation is needed, to allow the performance to have full expression.

Golden opportunity 20:

Get even fitter, to get the most from your performance.

Summary

This section presents another 13 Golden opportunities, for you and they all address the key issue of:

Working with the learning process.

When you become skilful with this, your learning really accelerates and your performance becomes open ended.

When you adopt these processes, every curve you ski will develop your performance further.

Now that we've seen the overview of the learning process, we can see the pattern of performance development and the broad influences that affect it. So let's take a closer look, to identify the important details.



Photo: Hugh Monney

The Seven Point learner model

The Fitts and Posner model, discussed above, identifies three phases of learning, each of which is a broad area of development.

You can chart your progress through these phases using the **Seven Point Learner model**, which identifies some key landmarks on the journey.

More than that, your improved understanding of where you are on the journey, allows you to be more effective at each stage.

Let's take a look at the seven key points and the major factors that will influence you at each stage.

We'll also take a look at some of the strategies your instructor or coach might use to help you.

This will help you to work more effectively with them, accelerating your progress.

Point 0 - You are unaware of a particular concept or idea

The situation is that your instructor or coach needs to introduce a subject that you literally haven't heard of before.

It's a completely new idea and you have to find a way to get to grips with it.

In this situation, **newcomers to the sport** might experience some or all of the following reactions:

I'm confused,
I'm afraid,
I don't feel part of this sport,
I don't feel part of this group,
Loss of confidence: "Can I do this?" "This is strange!"
Where are we going? What's going to happen to me?



Photo: Hugh Monney

The equipment feels heavy, clumsy, strange.
I hope this will be fun.
Am I really motivated for this?

Skilful coaches and instructors will find ways to deal with these important issues, while appearing to be running a “simple” beginners lesson.

When this work is done well, the concerns dissolve and everyone in the group has an enjoyable and successful time. This does not happen by accident.

If you experience this, you can be sure that your instructor or coach was carefully addressing these “hidden” issues on your behalf.

In the same situation, **experienced performers** might experience some or all of the following reactions:

Will I be able to do this?
Why should I change?
Surely, if this was important, I'd know about it already?
Disappointment (Oh no I have to change again!)
Loss of confidence, sense of loss, damage to self esteem
Peer pressure: “Will I look foolish”
I hope this will be fun.
Am I really motivated for this?

Again, there's a lot of skilful work to be done to overcome these anxieties, just to get the learning process underway.

Your opportunity

You can use some of the advice, presented in the last 2 chapters, to remove most of these obstructions yourself and work with your teacher towards the objective.



Photo: Hugh Monney

Point 1 - You understand, but....

You have a **partial understanding**.

This might be from your prior experience, or it might be the result of the current session with your instructor or coach.

You do not yet fully understand the content or concept and so it might be almost entirely absent from your performance.

You might experience some or all of the following reactions:

Some confusion.

Self doubt: "Am I stupid? Why don't I get it?"

I don't get it, so the idea must be wrong.

Frustration.

Loss of confidence.

Motivation issues.

Your opportunity

Again, you can use some of the advice, presented in the last 2 chapters, to remove most of these obstructions yourself and work with your teacher towards the objective.

Recognising these reactions in yourself helps you to identify where you are in the process. Recognise that there is a little more to the idea and keep investigating.



Photo: Hugh Monney

Point 2 - Aha! I get it.

You have understood and accepted the idea.

The idea can now appear in your performance, from time to time.

At this early stage of applying the advice from your instructor or coach, you might experience some or all of the following reactions:

frustration at clumsy attempts

fatigue, discomfort,

trying to get it right, not achieving this and seeing yourself as failing.

Your opportunity

Accept that your body needs to make many experiments, to accumulate information. All of these early attempts help your body to begin the process of performance development, so be patient and be kind to yourself.

There is plenty of opportunity to require discipline from yourself, later in the process.



Photo: Hugh Monney

Point 3 - I can't feel it. Is this OK?

You understand the issue being presented and you have begun to incorporate it into your performance.

Although the coordination and accuracy are rudimentary, this performance forms a good basis for future development.

At this early stage of applying the advice from your instructor or coach, you might experience some or all of the following reactions:

Frustration – I know what to do but I'm not quite doing it.
Confidence & Motivation issues. Doubt.
Peer pressure.

When the you begin feel to feel results, these can turn to :
Relief, happiness, exhilaration, a sense of achievement.

Your opportunity

Again, you can use some of the advice, presented in the last 2 chapters, to remove most of these obstructions yourself and work with your teacher towards the objective.



Photo: Hugh Monney

Point 4 - It's OK as long as I concentrate

Your coordination and accuracy have developed considerably.

You still use CONSCIOUS EFFORT to maintain the quality of the performance.

You can feel the quality of your results and you are learning to use this information to shape your performance.

You might experience some difficulty allowing your conscious mind to relax its grip, so that your body can play its part properly.

The use of imagery (using Visual, Auditory and Kinaesthetic channels) can help with this.

Your opportunity

Again, you can use some of the advice, presented in the last 2 chapters, to remove most of these obstructions yourself and work with your teacher towards the objective.

Accept that your body has better systems than your mind, for athletic performance. Allow them to do their job for you.



Photo: Hugh Monney

Point 5 - I don't have to think about it

You can maintain the quality of your performance without conscious attention, using the body's natural abilities to blend and shape complex movements at the SUBCONSCIOUS level.

Your performance breaks down under more challenging circumstances.

Your opportunity

Continue to work with the neuromuscular aspect of performance, develop resilience in difficult circumstances, improve your ability to apply your performance to your environment.



Photo: Hugh Monney

Point 6 - I can trust my performance, even when the going gets tough

At this point on the journey, your performance is applied with flair and creativity, using your body's natural abilities to blend and shape complex movements at the SUBCONSCIOUS level.

Your application of techniques adapts freely to the changing conditions of the mountain.

Your opportunity

is to use less to do more.

You can tune into the enormous forces available (from your kinetic energy and momentum interacting with the ski and the snow) and learn to use those as the source of power.

You can move into a new AWARENESS phase by recognising a new opportunity for development, to a higher level of skill.

Summary

Each point is a landmark on the learning journey.

The issues described above explain some of the processes that can be used to help a learner move from one point to the next.

Importantly, this journey is cyclical.

You can always aspire to a higher level of skill and accomplishment.

Even as an accomplished skier, when you start to work with a new concept, you will begin the journey from point 0 or 1 in the system and integrate the new content into your performance, by going through the processes outlined above.



Photo: Hugh Monney

When you see someone skiing smoothly, freely and simply, even in complex circumstances, you know that they have tuned into something special.

Wouldn't it be great to have a clear pathway to achieving this wonderful experience?

This book has set out to take you directly there, so that you can enjoy excellent skiing, in extraordinary places.

The Greenland icecap flowing into the sea.
Photo: Hugh Monney



Bibliography

All of the books I have ever read have had their influence, of course, though the biggest influences of all come from the physics of Isaac Newton, from the collective input of all my clients and from the handful of books listed here.

Ski Books

These books are timeless, because they are based on the sound principles of physical science or human behaviour. I've selected them because they are exceptional works, by master practitioners. These books are as relevant today as they were when they were published. Few ski books are their equal.

Skilful Skiing - John Shedden, 1982. EP Publishing, ISBN 0 7158 0800 1

I think that John was one of the first to have the mechanics of skiing fully resolved. His influence on ski teaching, worldwide, is underestimated. Read this book, if you can find it.

Skiing from the inside - Sarah Ferguson, 1989. Simon & Schuster Ltd. ISBN 0 671 69711 0

Sarah did a lot of innovative work on the psychology of performance, ie getting the best from yourself.

Skiing an art... a technique - Georges Joubert, 1978. English translation, Poudre, ISBN 0935240 01 2

Professor Joubert's comprehensive treatise is timeless.

The Centred Skier - Denise McCluggage, 1977. Tempest Books. ISBN 0 963248 44 8

Astounding. Sadly, it's out of print.

Other influences

A twist of the wrist - Keith Code, 1983, revised 2002. Code Break. ISBN 0 918226 08 2

Just like skiing - but it's all about riding motorbikes.

Embrace tiger, return to mountain - Master Chungliang Ai Huang, 1979, revised 1997.

ISBN 0 89087 504 9

Tai Chi is the practical study of human movement and the resolution of forces that pass through your body. So is skiing.

Head First - Tony Buzzan, 2000. Thorsons. ISBN 0 7225 4046 9

Multiple intelligences - how to make the most of your abilities to learn.

Quantum Learning - Bobby DePorter, 1992. Piatkus Publishers. ISBN 0 7499 1213 8

Learning how to learn - the key skill.



Off piste in the Andes. Photo: Hugh Monney

About the author

Hugh Monney, Performance Coach

M.Phil, BSc. (Hons), Grad Cert. Ed., BASI International Ski Teacher Diploma

Director

The Bass Network

The network of elite snowsports schools across the Alps

Chamonix - Chatel - Courchevel - Les Gets - Les Contamines

Megeve - Meribel - Morzine - St Gervais - Tignes - Val d'Isere

Formerly a research chemist, for the Cancer Research Campaign, Hugh has a Master's research degree and is a qualified science teacher. He spent 10 years in the science departments of British universities before switching to a career in skiing.

He began skiing in 1975 and became a full time ski teacher in 1984, to get out of the lab and into the mountains.

He has skied extensively throughout Europe and also in Argentina, Canada, Chile and Greenland.

He is a Trainer and examiner of instructors for the British Association of Snowsports Instructors, for 22 years, from 1989 to 2011.

He represented Britain as a member of the GB Demonstration Team, at the 1991 Interski Congress, in St Anton.

Hugh wrote and presented the 1991 Channel 4 TV and video series "The Complete Skier" and in the same year he founded BASS, The British Alpine Ski and Snowboard School. The BASS Network of elite snowsports schools now extends to 11 resorts across the Alps.

His main interests, in addition to his family, are: Alpine & Telemark skiing, working to develop the Ski Teaching profession, developing the quality of service to clients of the BASS Network, Photography, Science, Tai Chi Chuan, Motorcycling, Archery, Cycling, Walking a slack line and Music, including playing guitar.



Photo: by Ross Nelson

Overleaf: **The Mont Blanc Massif.** Photo: Hugh Monney



Ski Performance Breakthrough

What people say...

...about this book...

"...beautifully simple, effective and motivating." Sean Langmuir, Olympian.
Formerly Coach for the British and Canadian ski teams.

Formerly Training Manager, British Association of Snowsports Instructors

**"... filled with very direct, specific and well organised content.
It has a clarity and value that are second to none."**

James Lamb, Director, BASS Morzine

Trainer, British Association of Snowsports Instructors

"....a detailed natural progression. A great job, well done."

Andrew Lockerbie, Chairman, British Association of Snowsports Instructors

**"... I love the section on "pressure". It really helps to clearly explain
this area, which is often the source of much confusion for good skiers
and instructors alike"** Derek Tate, Director, BASS Chamonix,

Trainer, British Association of Snowsports Instructors

...about the training methods described in this book...

**"It was the best skiing training I have ever had, I met some great people,
developed as a person and loved it!"** MT

**"I had a great 2 weeks and I can honestly say it was the most rewarding
and enjoyable 2 weeks of my skiing career to date."** ST

**"Hugh's unique approach ensured I was more tuned in to my skiing than
ever before, so the considerable improvements I made during the
course can be built on in the future."** RR

**"Thank you for a transformational experience . My skiing friends in
Chamonix were amazed to see the progress achieved in 5 days, after 7
years in France!"** EL

**"I had a fantastic week in all senses. It was great to get some real results
from my skiing and feel in control after all these years."** YS

...about the author...

**"Hugh is a technical expert and an innovator, continually pushing the boundaries with his exciting and dynamic ideas, many of which have put BASI
at the forefront in the field of of Snowsports organisations and training organisations generally."**

Andrew Lockerbie, Chairman, British Association of Snowsports Instructors

**"Hugh has pioneered "British Ski Teaching" in Europe over the last 20 years, creating and leading the most successful network of elite snowsports
schools in the world. "** Derek Tate, Director, BASS Chamonix, Trainer, British Association of Snowsports Instructors

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SKI TRAINER



SKiA

SWEETSPOT
SKI TRAINER

CHANGE the way you ski FOREVER

Instruction & Training Manual
How to take your skiing performance to the next level!
Hugh Manney, Director of the British Alpine Ski School



CHANGE the way you ski FOREVER



FITS ALL SIZES OF BOOTS
Holds 100g

"Great skiing depends upon great balance, and the SweetSpot Trainer is a fantastic tool in developing the natural, co-ordinated movements necessary for skilful skiing. The SweetSpot Trainer is a powerful training aid that will benefit every single skier, regardless of ability."
James Lamb, BASI International Ski Teacher and Director of BASS Morzine.

The ski trainer that works for every ability

BASS
british alpine ski & snowboard school

Chamonix
Chatel
Courchevel
Les Gets
Les Contamines
Megeve
Meribel
Morzine
St Gervais
Tignes
Val d'Isere



Elite snowsports schools
www.britishskischool.com

"The BASS Network endorses the use of The SkiA SweetSpot Trainer as a highly effective performance development aid for skiers." [You can get hold of it here!](http://www.britishskischool.com)