

RACE ONE MANUAL



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1. INTRODUCTION

Ski racing is a historically significant portion of Alpine Skiing. In New Zealand, there are a number of regional training providers and club programmes which work to develop children into ski racers and work towards their goals; which can be anything from ‘becoming a better skier’ to success on the world stage. New Zealand’s pathway has developed Alice Robinson into one of the world’s best skiers with 2 victories to her name and surely many more to come. Race programmes are a fun way for kids to get more involved in skiing, improve their skills and understanding and of course have fun with some buddies on the hill.

The NZSIA’s model of teaching priorities; ‘Safety, Fun and Achievement’ is very much at the core of race coaching philosophy. Safety is paramount and will be mentioned throughout this manual many times. A fun and positive environment is the key to attracting, retaining and developing our youth skiers and ski racers. Achievement relates not to success in the competitive side of the sport but achieving task-based goals that develop our skills. Skill acquisition is a critical portion of skier development.

The controlling body for ski racing in New Zealand is Snow Sports New Zealand (SSNZ). SSNZ are also responsible for the competitive aspects of Adaptive Snowsports, Cross Country skiing, Freeskiing and Snowboarding. The Alpine portion of SSNZ consists of an Alpine Manager in a paid position and The Alpine Sport Committee reporting to the board of SSNZ.

SSNZ are responsible for communicating with multiple different bodies. At the upper end of the sport SSNZ report domestically to Sport New Zealand and abroad are responsible for representing New Zealand’s interests to the International Ski Federation (FIS). At the entry level of the sport SSNZ are responsible for creating the rules around competitions, communicating with ski areas to calendar events and presenting a structured framework for Alpine Skiing for clubs/providers to work with.

Ski racing worldwide is governed by the FIS who control the sport from the World Cup/Olympic level downwards. The FIS and SSNZ rules regarding competition are an integral part of the sport, which will be revisited later.

This manual is written as a major resource for the NZSIA Race One but is also intended to be a guide for your first coaching job and to point you in the right direction to further your knowledge.



2. ROLE OF THE COACH

Ski coaching can range from casual part-time work to a fully-fledged coaching career. Ski coaches will be responsible for some or all of the following – skiing with athletes, skill development, feedback, lesson plans, supervision, physical training (dryland), nutrition, psychological support, equipment management, parent liaison, friendship, and more! The most important thing to remember is that as a coach you are a *role model* and have a significant influence on the development of your athletes as skiers and as people.

As a rule of thumb the younger the athletes the more they will tend to copy their coach. Not only what they see, but also what they hear. The coach's views, ideals, and values of life will have an impact on shaping the views of the athlete. Young teenagers may be testing the social parameters of their environment in a natural quest to find their own individuality. They tend to be greatly affected by peer pressure, and need to be accepted by those around them. Older teenagers will have set patterns in these same areas, but may look towards the coach for alternative ideas or help.

This older group may not need the same visual role model as the younger child (already having a well-developed sense of right and wrong). However, the actions and words of the coach in front of athletes will not go unnoticed. You should always conduct yourself in a manner that you would be happy to see your athletes adopt. Coaches may become the single most influential person in an athlete's life, next to their parents.

Coaches may have to deal with athletes from different social and economic backgrounds, or even different races and cultures. How they handle these situations will be based upon their experience, beliefs, and moral values.

Some overall guidelines which should be kept in mind:

1. Help develop your athlete's positive self-image and self-esteem.

2. Promote participation, effort, and learning new skills, as well as winning. These can all be feelings of achievement and higher self-esteem.
3. Teach and promote respect for the rules, other athletes, officials and their decisions - despite the outcome of competition. A great way to define success is **“perfect effort”**
4. Treat each athlete as an individual, taking into account any cultural or social differences (remember they will all develop at different rates)
5. Be a role model that shows self-control, co-operation, discipline and proper attitudes in the use of language and personal presentation.
6. Coach with honesty and consistency. Remain objective and unbiased.

Athletes will use the skiing skills you have taught them for a few years. The social and moral skills will be used for life.

3. AGE SPECIFIC INFORMATION

It is obvious that different age groups have different needs. Below is information on developmental considerations for ski racers in different age groups. More information on child development is also available through NZSIA’s Children’s Certifications and in Chapter 7 – Teaching Children of the NZSIA manual (available online). You should also complete the NZSIA Children’s Cert 1 and 2 qualifications.



3.1 Ages 6–10

All exercise should be very general. Any exercise involving balance, coordination and agility should be the main focus. Boys and girls of this age are similar in weight and height so they should be quite comfortable training together. The ability to understand and comprehend at this age (psychological needs) is obviously much less than that of older athletes. Therefore, all exercises should be done in game form and should be fun. As the athlete becomes older it will become more important to tell them “why” they

are doing exercises, and what will benefit. This will provide motivation during repetition, keeping the athlete stimulated to train and develop a hard-working training ethic.

Boys aged 8 – 13 and for girls 8 – 11 respond best to learning motor skills. After these ages motor skill learning begins to slow down. This may result in a child taking longer to perfect or pick up a movement.

Activities like running, cycling, gymnastics, swimming, soccer, volleyball are all good team sports. Anything involving feet/eye coordination will be beneficial. At this stage of physical training all activities should be general and well- rounded. Change them often to keep the athletes interested. Look for signs of fatigue in young children. However, remember they also have the ability to recover from exercise very quickly.

3.1.2 Ages 6-10 – On Snow Specifics

Focus on drills for general stance/alignment and fore-aft balance mainly and where appropriate weight transfer and basic edging skills (lateral). Varied terrain and snow conditions are encouraged but should always be targeted at the skill level of the athlete. It is most important that the coach vary his/her programme from time to time to keep young skiers alert, interested and having fun.

Running courses during training should be a part of a programme for this age group, as well as some races but neither should be taken too seriously. Jumps, obstacle courses and terrain skiing (both natural and man-made) should also be included. Keep things simple, make explanations clear. This will ensure fun and decrease confusion. Keep away from technical and tactical gate drills or very specific exercises. Use small challenges, tasks and situations to develop skills.

As a general guideline 10% of on-snow time should be spent traditional gate training and 90% on freeskiing/skill development. Remember that this 90% should be mostly directed towards skill development – tasks, drills, obstacle courses, etc. Free, unguided learning/exploration is possible but by and large this age group needs direction.



3.2 Ages 11 – 14

This age group will become more specific in their training. The same areas will be worked on but motor skills will require more technical balance, coordination and agility exercises become more difficult. Girls and boys will separate physically and psychologically in this age group as they enter puberty. There are vast differences in growth as far as strength, weight and height are concerned. Generally, clubs will split

groups up based upon age category but it's



important to note that there will be vast differences in developmental stages during this period.

A chronological male skier aged 13 could be anywhere from 11–15 biological age (body development). Girls mature faster (at an earlier chronological age) than boys. The coach should be aware of special needs and show patience and understanding.

A significant portion of motor-skill learning at this level will be done by athletes trying to copy the coach; therefore it is important that the coach free ski with the athletes and provide a good image.

Dryland exercises should be working on gains in endurance, strength and flexibility. A warm up programme should be introduced before and after exercise. It is important that appropriate guidelines are given on the type of warm up to use for each activity.

From ages 13–15 weight training may be introduced using “body weight” only – this type of resistance training should only be conducted under the supervision of appropriately trained physical trainers. This body weight training also gives the athlete time to practice correct lifting techniques before weight is added.

For this age group participation in other sports should still be encouraged however it will become difficult to manage time constraints.

3.2.2 Ages 11-14 – On Snow Specifics

Short turns and easy slalom should be introduced, with the athletes being more informed about the general differences between long and short turns. A greater use of drill courses will sharpen these differences and combinations of long and short turns should be practiced. A continual focus on stance and alignment is required, as always. Rotational movements become more important as there will be a different blend required for Slalom as opposed to GS. Speed tolerance becomes a factor for athletes of this age and can be trained inside and outside of the course but should be built up gradually.

It is important to form a warm-up routine for athletes in this age group. Pre-skiing activities should involve activation/mobility in the hip joint, activation of core stabilization muscles and wake up neurological pathways for movement, balance and co-ordination. Warm up should then move to drills on snow that work on balance & movements, starting at a slow speed and working up to full speed through 3-4 runs.

Tactical skiing (line choice) in a course should be introduced. This type of training should be provided as early as possible, to ensure an understanding of the importance of a good line. Learning about line will include course-inspection. Teaching kids to inspect courses takes time but is critical. Elements of course inspection that are important include distance gate-gate, off-set, rhythm/rhythm changes, combinations (SL), banana/delayed gates, snow conditions, and terrain/slope angle.



Competition will gradually become more important to athletes. Athletes are learning how to prepare themselves for successful performance and will also be able to use competition as a measure for their performance.

Coaches should spend more time talking with and listening to their athletes. Goals should be set with the athlete's input. Make goals realistic and make them achievable. Goals may still be team orientated with this age group but will change to become more individual and specific in the next age group.

4. TRAINING PLANS

Good coaches will have a well-thought-through plan but will also be flexible and willing to change should it be necessary. As ski instructors, the goals of the lesson are negotiated with guests and agreed upon at some point near the beginning of the class. As a coach the general goals are agreed upon when the athletes sign up for the programme. Race programmes are almost always multi-day programmes therefore the plan has to be made for the duration of the training, and as plans change the future programme needs to be modified.

4.1 Seasonal/Long-Term Planning

Seasonal planning is the plan for the duration of the programme – this may be every Sunday for 6 weeks, 2 weeks straight of school holidays, every weekend for the season or more. During your course you will be required to prepare a training plan of some sort. Training phases can be “periodized” into the following categories: Fundamentals, Skill Development, Skill Refinement and Competition Preparation. This will be covered in your on-snow course.

Seasonal planning should involve ‘good’ (SMART) goals for the group – Specific, Measurable, Achievable, Realistic and Time-Based. The seasonal plan needs to include the steps required to get to the group goals. It is impossible to say what exactly will be done day to day however an overall view of what boxes need to be ticked is important.

4.2 Daily/Short Term Planning

Once a seasonal plan is developed daily plans can be formed. Daily plans should follow a general structure that has been proven to work for race programmes. Children are looking for structure and will learn a lot about training through repetition of a structured day that sets them up for success. Key points of a successful training day can be found in the daily outline that will be provided during the evening session of this course.

5. SKILLS

Motor skill learning is a complicated and at times confusing/frustrating process. It is important to keep in mind that skiing is a skill-based sport, and skills can be learned or acquired in isolation as well as part of overall technique. For kids, the process of skill development can often be achieved through tasks and drills which provide puzzles for them to solve. Often times a racer will fail at a task a few times then “click” and they will have the capability to solve the puzzle. Following a breakthrough more practice time is needed and a progression to a more challenging version of the task is required to *own* the skill. Keep in mind **Fitts & Posner (1967)**'s Model for Motor Skill Development:

Cognitive Phase – Identification and development of the component parts of the skill – involves formation of a mental picture of the skill.

Associative Phase – Linking the component parts into a smooth action - involves guided practicing of the skill and utilising feedback to master the skill.

Autonomous Phase – Developing the learned skill so that it becomes automatic – involves little or no conscious thought or attention while performing the skill.

5.1 Drills/Exercises

Drills are hugely important for skill development. As a coach it is your job to have a bank of drills in your mind that you can pull out and use to develop or refine skill at any point. Drills should be taken from anywhere and everywhere – instructor manuals, USSA online resources, watching other coaches, make them up yourself!

The same drill may be used for developing or refining different skills. It is important to have a plan and outline a task in a way that makes its goal clear. Use straightforward descriptions and appropriate terrain. Present information using all communication modes (Visual, Auditory, and Kinesthetic)

For a list of possible online resources for drills and exercises, see chapter 7.

5.2 Progressions

The NZSIA manual on progression building (Section 1.7 pages 32-38) offers different ways an instructor can build a progression. These include:

- Static-Active-Complex-Whole
- VAK
- Experiential Learning
- Whole-Part-Whole
- Chaining

- Shaping

Progressions are a hugely important part of motor skill learning and are often ignored by coaches. Drills and exercises offer repetition in a specific movement, position or activity but they do not simply morph themselves into the athletes' skiing. It is critical that you look at the knowledge, understanding and skills of an athlete and figure out how to help the athlete own the skill you are trying to impart onto them. Provide the athletes with information – what they are trying to achieve through a drill, why this is beneficial and how to implement it in their skiing.



5.3 Gates vs Freeskiing

As a coach you will be responsible for deciding how best to use the time you have on snow. Time can be spent in a 'closed' environment – a training course of some form or in the 'open' environment – anywhere else on the mountain. In the open environment there are various levels of freedom ranging from doing a very specific drill to totally unguided freeskiing on the mountain. Being comfortable freeskiing and adapting to changing terrain, snow and other

factors is a great way to prepare athletes for the adaptations they will have to make in the race course.

5.4 Using Terrain

Terrain is an incredibly useful coaching tool both in and out of the course. When used correctly the terrain is essentially a puzzle in the same way as a drill is. Think critically about ways in which you move to adapt for terrain and ways you manipulate your skis to interact with terrain. Use this knowledge to set tasks for skill development using terrain. Not only is terrain incredibly valuable for learning, kids find it FUN!

5.5 Drill Course-Setting

The official rules for course-setting allow for some elements of flexibility but are somewhat limiting when it comes to skill development. Training in the 'closed' environment should involve many different puzzles to highlight, acquire and develop particular skills. There are an infinite number of possibilities for creative courses using gates, brushes, stubbies, dye or other obstacles. As a coach never be afraid to try different things with your courses, provided the environment is kept safe. Develop a bank of different types of course-sets which you are aware of, be creative, and learn from what you see other coaches doing. Be sure to set the drills in a safe way that promotes aggressive skiing not defensive (appropriate pitch) and make sure you apply the idea of progressions to your course setting.

For a list of online resources for drills for 'open' and 'closed' environment training see chapter 7

5.6 Movement/Motion

As coaches, we should always encourage dynamic skiing. It is important that kids learn to ski dynamically with constant motion. Static skiing should be avoided. Even if movements are not ideal movement is better than no movement and even bad moves will come in handy in the racecourse at some point.

5.7 Tactics

Tactics is using the right line in the right environment to apply your technical skills. Coaching tactics is very important as they are a vital skill in ski racing and as athletes grow older and more mature they are able to understand tactics more clearly. Tactical coaching should be used on an individual basis and will change run to run, course to course and day to day. Tactical coaching includes (but is not limited to):

- Mental/emotional approach
- Line (high, mid, low, tight, wide, etc.)
- Speed – looking for speed or controlling speed
- Terrain – fallaway, fall in, roller, compression, flats
- Snow conditions
- Weather
- Light

SEARCH FOR SPEED

Remember, at the end of the day racers are here to find and make speed not control it. A common mistake among new coaches especially from an instructor background is to fixate on image and technique. You must teach them to go FAST!

5.8 Feedback

The way feedback is delivered and received is very important. There are some concepts which you should be aware of as a coach:

- Inherent Feedback vs Augmented Feedback:

Inherent feedback is sensory information from the movement, such as how the snow felt – smooth or bumpy, hard or soft. Pressure on the back of the leg is a sensation that informs the skier that her center of-mass is aft. Hearing very little sound from the skis might indicate a carved turn. For inherent feedback to have value, the ski racer should have an established reference-of-correctness (that's where the coach comes in). They can then compare the intrinsic feedback or sensations with a desired orientation. Inherent feedback is the more beneficial type of feedback for learning or adjusting a previously learned motor skill.

Augmented feedback is typically the verbal communication that a coach uses to let the athlete know something about what they just did. Augmented feedback is information that is made available about the task that is supplemental to, or augments, the inherent feedback.

Augmented feedback is not limited to verbal feedback. This communication can be by demonstration, pointing to a body part, video replay or other methods.

VIDEO – Video is the most important part of augmented feedback. The most effective video is in the moment using ipad or phones. Video feedback should speak for itself – show the athletes what is the right movement and action and they will create mental images of themselves and copy!

- Descriptive vs Prescriptive feedback

The way which feedback is communicated aurally can be descriptive or prescriptive. Descriptive feedback simply provides commentary on what is happening. Prescriptive feedback gives someone a recipe to change. For example: “you were dropping your inside shoulder” (descriptive) vs “keep your inside shoulder up” (prescriptive). Descriptive feedback is most relevant when athletes need to improve their understanding or when explaining cause and effect, but in general **prescriptive feedback is more effective** when coaching.

- Positive vs Negative tone

Prescriptive feedback can be split into positive and negative tone. For example: “stop dropping your hands” vs “drive your hands forward”. Stick to using the positive tone as a prescription for change. Think of the classic example – don't think of an elephant. Wait, now you're thinking of elephants, right?

6. RULES & REGULATIONS

SSNZ rules and regulations govern competition for Alpine Skiing in New Zealand. The complete Alpine Handbook can be found [here](#). It is advisable to familiarise yourself with the rules and regulations before taking a job as a coach, as you will need to educate your athletes about the rules. The complexity of the rules will seem perplexing at first however as you attend competitions and work in the race environment things will make sense. Other coaches are a wealth of knowledge and experience – use them.

Check List for Vertical Drop (VD), Number of Gates (NG),
Number of Direction Changes (DC), Number of Gate Combinations (GC)
and Gate Distances (GD)

EVENT			SSNZ	
			National Points	Interfield
DH (Art. 700) Downhill	L M	VD	X	X
		NG		
		GD		
SL (Art. 800) Slalom	L M	VD	100 - 160m	60 - 120m
		DC %	30%-38% (+/-3)	30%-38% (+/-3)
		GD	Open: 7 - 11m Vertical Combination: 4 - 6m Within Combos 0.75 - 1m Delay: 12 - 15m	Open: 6 - 10m Vertical Combination: 4 - 6m Within Combos 0.75 - 1m Delay: 11 - 14m
		GC	Vertical Combinations: Flush 1 - 2 Hairpins: 1 - 3 Delays: 1 - 2	Vertical Combinations: Flush 0 - 1 Hairpins: 0 - 1 Delays: 0 - 1
GS (Art. 900) Giant Slalom	L M	VD	200 - 350m	125 - 250m
		DC %	11% - 19%	No rule
		GD	Open: 15 - 25m Delay: 10m with max distance turning pole to turning pole 35m	Open: 12 - 21m Delay: 8m with max distance turning pole to turning pole 30m
SG (Art. 1000) Super-G	L M	VD	250 - 450m	X
		DC %	6% - 14%	
		GD	Open: 25 - 50m Delay: 15m with max distance turning pole to turning pole 50m	
P (Art. 1220) Parallel	L M	VD	60 - 150m	60 - 100m
		NG	12 - 25	12 - 18
KK (Art. 608.9) Kinder Kombi	L M	VD	X	120 - 180m
		GD		Slalom: 6 - 10m GS: 12 - 20m
		GC		4 sections

Gate Panels: 0.75 x 0.50 red course / blue course



The [SSNZ Alpine Handbook](#) is a resource for the online test so look at the layout and be ready to look up relevant rules if necessary. Children's kombi is the most unique and important training and course setting skill you will need for NZSIA Race One and training your junior athletes.

7. SAFETY

Safety is the most important consideration for any race coach. The race environment will involve a higher level of risk than the recreational ski world, therefore careful risk analysis and management needs to be conducted. Some unique factors of the race world are:

- Competitiveness
- Equipment – DIN, longer skis, sharper edges, heavier, stiffer boots, etc.
- Skiing in adverse conditions – recreational skiers will often give up while racers are still out there
- Training and racing venues – tight and often with multiple parallel lanes, possibly with faster and larger athletes
- Higher speed
- Parent pressure

In a competitive environment athletes will sometimes take more risk than they would if they were skiing recreationally. As a coach be sure to build a profile of all of your athletes. You should know whether they are risk tolerant or risk adverse; leaders or followers; and of course what their skill level is. Monitoring these factors will help mitigate risk in the competitive environment.

'Closed' environment training (gates, stubbies, etc.)

When setting up a 'closed' training environment remember to be aware of all possible hazards and do whatever you can to mitigate these. This includes (but is not limited to) snow conditions, physical objects (such as snowmakers, lift towers, other courses, fences), visibility/light and terrain. It is critical to know about these factors prior to setting the course – the way you set will influence how big of a hazard these are. For instance on a steep slope with hard snow it will be more dangerous to set a straight/open course because athletes will pick up a lot of speed.

The area outside the race line where athletes could potentially arrive is called the 'spill zone'. Spill zones indicate where potential hazards are. Try to imagine what would happen if an athlete fell where they could potentially slide to. Whatever direction your center-of-mass is traveling when you fall is where you will go. In a turn this means that you will slide on a *tangent* to your arc. The most common time to fall is during the initiation/early control phase (falling inside at the top of the turn) but it is possible to

fall at any point. Hazards in spill zones can be mitigated with multiple layers of netting if these are available.

- Congested areas



In New Zealand there are many ski resorts that have congested areas, and many of these are 'slowzones'. It is tough to find the space needed to do the drills you want to do...it's kind of like the All Blacks trying to practice in the middle of a shopping mall! Always be aware of the public's presence and educate your athletes on how to behave in congested areas or slow zones.

The main thing that you must do as a coach is to remain aware. Be observant! Ignorance leads to mistakes. Try to imagine each scenario with all possible outcomes. One of the many benefits of ski racing is that it teaches athletes how to manage risk. Do not be afraid to have conversations with your athletes about what is dangerous and why. In the same time do not baby your athletes – they need to figure things out for themselves and this requires a healthy amount of risk, which you have to manage as a coach.

8. CONCUSSION PROTOCOLS (SSNZ)

Concussions have come to the forefront of all sports in recent years. It is imperative that you have a process in place for concussion management. The official SSNZ concussion document must be read and can be found [here](#). ACC Sport Concussion Guidelines can be found [here](#). Your examiner will also bring a pocket concussion recognition tool which can be found [here](#).

9. EQUIPMENT

Equipment is a hugely important factor as coaching and training is impossible if athletes are not on the correct and properly tuned equipment.

BOOTS

Boots should be the right size (MOST SHOPS WILL SIZE TOO BIG) and the right flex – not too soft not too stiff. It is also very important to note the calf size – smaller calves mean the athlete will likely need an additional spoiler padding to make sure the calf and shin are connected to the boot.

SKIS

Skis need to be proper race skis – sandwich construction and a racing model. Generally u-10 and u-12 athletes will have one pair of skis; as they progress into U-12 this will move to 2 pairs – Slalom and Giant Slalom. Length needs to be correct also – as a rule of thumb eye level usually works.

Servicing skis needs to be done regularly. This includes regular waxing and maintaining sharp and smooth edges. BLUNT SKIS WILL INHIBIT ATHLETES' LEARNING AND CAN MAKE THE WHOLE DAY A WASTE OF EVERYONE'S TIME AND MONEY! Athletes need to be able to trust their platform.



10. RESOURCES FOR DRILLS

[USSA Center of Excellence TV](#)

There are numerous drills and tests for athletes at all levels on this page with video demonstrations and different levels of mastery

[USSA L100 Updates](#)

More drills from USSA in pdf format

[FUNdamentals](#)

Some ski resorts in New Zealand use the FUNdamentals programme with kids. Ask your supervisor, they may have a FUNdamentals booklet that includes drills or find them online through this link.

[CSCF Snow Stars](#)

Developmentally based drills from the Canadian system