Alpine Course Setting Recommendations

The following are recommendations for coaches for course setting to maximize the development for athletes at different phases in training and in competition. These recommendations are designed around the science of child development, are complementary to USSA children's and FIS rules for course setting, and account for recent evolutions in equipment, course setting and corresponding techniques. There may be some variance from children's course setting rules due to the varying developmental phases for athletes of the same chronological age based on maturational differences, particularly in phases 3-5. In these cases, the children's rules apply to competition, but the recommendations here are a good guideline for coaches in planning appropriate training. We encourage coaches to expose their racers to a variety of different courses and drills, to limit standing around and to spend as much time as possible on the hill actually skiing. Current course setting rules can be found in chapter 8 of the USSA Competition Guide and in the FIS ICR.

Alpine Training System Developmental Phases:

Foundation Stage		Pre & Post Puberty			World Class Performance Full Maturation
PHASE 1	**PHASE 2**	**PHASE 3**	**PHASE 4**	**PHASE 5**	**PHASE 6**
Biological Age Pre Puberty **Age** 2–6 years old **Play Age** 1–4 years in sport **Participation** Ski around 1 day a week 20 days a year At least 95% free skiing Play many other sports - gymnastics or balance-based sports	**Biological Age** Pre Puberty **Age** 6–10 years old **Training Age** 1–4 years in sport **Participation** Ski 2–3 days a week 50 days a year At least 90% free skiing Fun races Play many other sports	**Biological Age** Pre Puberty (Before Growth Spurt) **Age** Girls: 10–13: J4 (J5–J3) Boys: 11–14: J4 (J4–J3) **Training Age** 4–8 years in sport **Participation** Ski 3–4 days a week 70 days/year At least 60% free skiing Competition Period: (Jan.–April) Number of race starts: 10–15 Ratio 1:6 (race:training) Play complementary sports	**Biological Age** Puberty (Growth Spurt) **Age** Girls: 11–14: J3 (J4–J3) Boys: 12–15: J3 (J4–J2) **Training Age** 5–9 years in sport **Participation** Ski 4–5 days a week 100 days/year At least 30-50% free-skiing Competition Period: (Dec.–April) Number of race starts: 15–30 Ratio 1:5 (race:training) Play complementary sports	**Biological Age** Post Puberty (After Growth Spurt) **Age** Girls: 12–16: J3 (J4–J2) Boys: 14–17: J2 (J3–J1) **Training Age** 6–11 years in sport **Participation** Ski 4–5 days a week 120-140 days/year At least 15% free skiing Competition Period: (Nov.–April) Number of race starts: 25–max 45 Ratio 1:4 (race:training) Play complementary sport	**Biological Age** Full Maturation **Age** Female: 16+ J2–J1 Male: 17+ J1 **Training Age** Minimum 10+ years in sport **Participation** Ski 4–5 days a week 130–150* days/year At least 10% free-skiing Competition Period: (Nov.–April) Number of race starts: 55* Ratio 1:3 (race:training) *based on the number of disciplines

PHASE 1

Skiers start following a designated line by skiing around cones, playing follow-the-leader, and exploring the mountain. Racing introduction via NASTAR or obstacle courses.

PHASE 2

Background:

This phase represents the U10 and younger age classes. Skiers in this phase are moving into the optimal window for them to acquire and hone fundamental skiing skills. They are also in an optimal window to develop agility and quickness, and very short duration speed (5 seconds or less). They also have relatively short attention spans and do not have a well-developed anaerobic energy system for sustained high-intensity skiing over a long course. Skiers in this phase are encouraged to use one pair of skis for all events. Recommended disciplines include giant slalom, slalom, Kombi, obstacle courses and SkillsQuest.

SLALOM:

Training

- Progress from brushes to stubbies. Use of junior flex poles (54" or 60" shaft, 27mm diameter, light-weight hinge) once skiers are ready to practice clearing. Proper gate clearing is a skill athletes can start to work on late in this phase. Angling the junior flex poles slightly to the outside of the turn can help alleviate issues with athletes reaching across with their hands to clear. Set a stubbie or brush course alongside the junior gate course so that skiers can be moved back and forth depending on their ability to maintain proper body position.
- Frequently set very quick short drill courses to develop quickness, distances from 2-6m
- Typical course characteristics – minimal combinations, recommended distance between gates in combinations 4-5m, recommended distance between open gates 6-9m
    - Always set outside gate of hairpin/flush and delay gate in training
    - Too great an offset at this age leads to slow tempo turns, set more in the fall-line to encourage quickness
- A variety of terrain may be used, but primarily set on moderate to easy slopes
- Rather than setting one 30-40 gate training course, split the hill in 2 or 3 shorter courses (10-15 gates) and emphasize focus for each section on a specific technical task
    - Set a start and finish gate for each section so athletes always practice a strong start and skiing through the finish

Competition

- Maximum distance between turning gates: 10m
- Normal distance between turning gates: 7-9m
- Normal distance between poles in combinations: 4-5m
- Incorporate some changes in rhythm requiring different turn shapes, but not tactically challenging
- Course length: Recommend 20-30 changes of direction, winning times around 30 seconds
- Easy intermediate terrain

- To allow more runs in less time on a race day, if site has the infrastructure, set parallel courses with individual timing each course and allow all athletes a run on the red course and on the blue course – 2 race runs for one inspection and less waiting around

GIANT SLALOM:

Training

- Use brushes, stubbies, and paneled gates
- Recommend distances of 15-22m between gates; set the full spectrum within this range from day to day and even beyond on occasion
- Always set outside gate of delay gate in training
- Rather than setting one 20-30 gate training course, split the hill in 2 or 3 shorter courses (around 10 gates) and emphasize focus for each section on a specific technical task
    - Set a start and finish gate for each section so athletes always practice a strong start and skiing through the finish

Competition

- Maximum distance between turning gates: 22m
- Normal distance between turning gates: 17-20m
- Changes in rhythm requiring different turn shapes are encouraged, but should be easy to see and not tactically challenging (ie., avoid sharp turns immediately following a high speed section)
- Course set is simple over terrain
- Course length: recommend 15-20 direction changes, winning times around 30 seconds
- Easy to moderate intermediate terrain
- To allow more runs in less time on a race day, if site has the infrastructure, set parallel courses with individual timing each course and allow all athletes a run on the red course and on the blue course – 2 race runs for one inspection and less waiting around

KOMBI:

Training

- Use brushes, stubbies, and paneled gates
- Recommended distances between gates for SL sections: 6-10m, for GS sections: 12-20m
- Combinations for SL may be set, but should be with single pole, 4-6m distance
- Course should use the entire slope, working across the fall line as often as possible
- Course should be set such that a smooth transition between GS and SL sections is possible
- Course changes back and forth between SL and GS, GS sections typically 3-5 gates and SL sections 4-6 gates
- Course should include at least one jump

Competition

- Same as for training
- Recommend around 5 different sections and 20-30 turns

PHASE 3

Background:

This phase is made up of U12 and many U14 skiers, though training age and biological age need to be considered. Skiers are in the optimal window for them to hone their fundamental skiing skills. This may be the most important developmental phase of a ski racer. To take maximum advantage of this opportunity, course setting should progressively challenge the skier's technique. Variety is essential. For motor learning to take place, skiers must first demonstrate they can perform the skill and then continue try to execute it as the task gets more difficult. Training course progressions can go from rhythmic to a-rhythmic, flat to steep, or open to tight and vice versa. Kombi is a good event for this phase because it requires versatility and a variety of turn shapes. The skiers still do not have a well-developed anaerobic energy system for sustained high-intensity skiing over a long course. Recommended disciplines include giant slalom, slalom, Kombi, dual courses, obstacle courses, SkillsQuest, and an introduction to speed and terrain elements, including children's super G. Skiers should have a pair SL and a pair of GS skis.

SLALOM:

Training

- Progress from brushes to stubbies, then incorporate junior flex poles (60" shaft height and 27mm diameter with light-weight hinge is recommended). Gate clearing habits learned here will stay with these skiers for some time. Coaches must demand proper clearing and using age-appropriate gates can help phase 3 skiers clear correctly (think of the lighter bat for youth baseball players or lower hoop for youth basketball). Set a stubbie or brush course alongside the junior gate course so that skiers can move back and forth depending on their ability to maintain proper body position. All three types of gates should be used regularly in this phase.
- Typical characteristics – recommended distance between gates in combinations 4-5.5m, recommended distance between open gates 6-10m
    - Always set outside gate of hairpin/flush and delay gate in training
    - Regularly vary the turn shape and distances, from very quick short distances to longer and more across the hill sets
        - These variations are usually made from day-to-day, or in different sections, rather than all in one course
- Rather than setting one 30-40 gate training course, split the hill in 2 or 3 shorter courses (10-15 gates) and emphasize focusing on a specific technical task in each section
    - Set a start and finish gate for each section so athletes always practice a strong start and skiing through the finish

Competition

- Maximum distance between turning gates: 10m
- Normal distance between turning gates: 7-9m
- Normal distance between poles in combinations: 4-5.5m

- Changes in rhythm requiring different turn shapes, but not tactically challenging
- Course length: recommend 25-35 direction changes, winning times around 30-40 seconds
- Moderate slope
- Dual format is encouraged for race efficiency as in phase 2 (timing runs independently)

GIANT SLALOM:

Training

- Use brushes, stubbies, and paneled gates
- Recommend distances of 17-24m between gates
- Always set outside gate of delay gate in training
- Maximize variety, in a progressive manner (start easy and increase challenge using slope, offset, vertical distances, rhythm variability)
- Add more training on steeper terrain, but majority of training time still spent on moderate terrain
- Seek out more variety in terrain (set over knolls, roads, etc.) while keeping set basic over terrain
- Rather than setting one 20-30 gate training course, split the hill in 2 or 3 shorter courses (around 10 gates) and emphasize focus for each section on a specific technical task
    - Set a start and finish gate for each section so athletes always practice a strong start and skiing through the finish

Competition

- Maximum distance between turning gates: 22-25m
- Normal distance between turning gates: 18-22m
- Changes in rhythm requiring different turn shapes, but not tactically challenging
- Course length: recommend 15-25 direction changes, winning times around 30-40 seconds
- Courses remain short in length, but terrain should be more challenging than in phase 2
- Dual format is encouraged for race efficiency as in phase 2 (timing runs independently)

KOMBI:

Training

- Use brushes, stubbies, and paneled gates
- Use both GS/SL Kombi and GS/SG Kombi
- For GS/SL Kombi, recommended distances between gates for SL sections: 6-10m, for GS sections: 12-20m
- For GS/SG Kombi, recommended distances between gates for GS sections: 12-20m, for SG sections: 18-28m
- For GS/SL Kombi, course changes back and forth between SL and GS, GS sections typically 3-5 gates and SL sections 4-6 gates
- For GS/SG Kombi, course changes back and forth between GS and SG, sections typically 3-6 gates between transitions
- Course should use the entire slope, working across the fall line as often as possible

- Course should be set such that a smooth transition between sections is possible
- Course should include at least one jump

Competition

- Same as for training
- GS/SL Kombi contains 5-6 different sections with around 25-35 turns
- GS/SG Kombi contains 3-5 different sections with around 20 turns

SUPER G:

Training

- Emphasis is on elements training – jumping and gliding skills
- Course setting should be appropriate for skiers on GS skis
- Recommended distances between turns range from 22-35m

Competition

- Set on moderate terrain
- Distance between turns from 22-35m, use full spectrum, but make sure course maintains rhythm and flow
- Sets are generally basic and control the skier's speed, no abrupt turns or terrain at speed
    - Remember it is to be expected and appropriate that skiers in this phase will be racing children's SG on GS skis, set with this in mind
- Jumps are encouraged. Jumps, if included, should go with flow of course and direction of turns. Skier should easily be able to attain a balanced position at the lip of the jump. Jumps have appropriate landings, and are generally on the upper part of the course. Flight is minimal.

PHASE 4

Background:

Phase 4 skiers generally are in U14 or U16 age groups. Skiers in this phase are into their growth spurt. For many skiers, the challenge will be to maintain their technical skills through this phase. Gate training becomes a greater percentage of training time. Course setting should begin to challenge the skiers' tactics to a greater degree through more substantial rhythm changes. Variety is still very important. While skiers in this phase can start to make great gains in stamina, they still do not have a well-developed anaerobic energy system, so a mix of short and long courses can be used. Recommended disciplines include giant slalom, slalom, super G, duals, and terrain and jumping elements. SkillsQuest helps skiers in this phase stay focused on maintaining their fundamentals from the earlier phases.

SLALOM:

Training

- 27mm diameter, full-length gates are appropriate, though brushes and stubbies are still used frequently in training
- Typical characteristics – recommended distance between gates in combinations 4-6m, recommended distance between open gates 7-11m
    - Set the full spectrum of these distances, vary turn shapes and rhythm in single courses
    - Always set outside gate of hairpin/flush and delay gate in training
- Set more often on steeper terrain and over more terrain variations
- Rather than setting one 30-40 gate training course, split the hill into shorter courses frequently and emphasize focus on a specific technical task for each section
    - Set a start and finish gate for each section so athletes always practice a strong start and skiing through the finish

Competition

- Maximum distance between turning gates: 10-12m
- Normal distance between turning gates: 7.5-10m
- Normal distance between poles in combinations: 4.5-5.5m
- Changes in rhythm requiring different turn shapes
- Venues should not have excessively long flat sections
- Course length: recommend 30-40 direction changes, prefer shorter course with more technical challenge over longer course with easy terrain

GIANT SLALOM:

Training

- Recommend distances of 18-27m between gates
    - Set the full spectrum of these distances
- Always set outside gate of delay gate in training
- Maximize variety, in a progressive manner (start easy and increase challenge - slope, offset, vertical distances, rhythm variability)
- Set over terrain elements frequently (rolls, roads, banks, etc.) with more speed and/or tactical challenge
- Rather than setting one 20-30 gate training course, split the hill in shorter courses and emphasize focus on a specific technical task for each section
    - Set a start and finish gate for each section so athletes always practice a strong start and skiing through the finish

Competition

- Maximum distance between turning gates: 25-27m
- Normal distance between turning gates: 21-25m
- Changes in rhythm requiring different turn shapes
- Venues should not have excessively long flat sections
- Course length: recommend 20-30 direction changes, prefer shorter course with more technical challenge over longer course with easy terrain

SUPER G:

Training

- Emphasis is on elements training – jumping and gliding skills
- Recommended distances between turns range from 25-45m

Competition

- Set on moderate terrain
- Distance between turns from 25-40m, use full spectrum, but make sure course maintains rhythm and flow
- Sets are generally basic and control the skier's speed, no abrupt turns
- Terrain or jumps, when incorporated, should work with the flow of the hill and course, with skiers having room to approach from a balanced position without excessive loading of the skis

PHASE 5

Background:

Phase 5 skiers generally are in the U16 or U18 age classes, though some girls move into phase 5 while still a U14 and some boys are U21. Skiers in this phase are starting to grow into their new bodies after the growth spurt, with the benefit of increased stamina. Strength gains can be quite rapid in this phase, and skiers can be expected to generate more power through their turns throughout the course. The anaerobic system starts to become developed, allowing skiers to ski with greater intensity from start to finish. As a result, course setting in this phase should start to mirror that at the elite levels, as skiers begin to manage higher speeds and more difficult terrain over longer courses.

SLALOM:

Training

- 27-31mm diameter, full-length gates are appropriate, though brushes and stubbies should still be used in training progressions throughout the season
- Typical characteristics –recommended distance between gates in combinations 4-6m, recommended distance between open gates 7-12m
    - Set the full spectrum of these distances
- Pairing of combinations is practiced, with hairpins into flush, delay into hairpins, etc.
- More challenging tactical situations (flushes on steep pitch, etc.)

Competition

- Maximum distance between turning gates: 12m
- Normal distance between turning gates: 8.5-10.5m
- Normal distance between poles in combinations: 4.5-6m
- More challenging tactical situations
- Course length: recommend 40-60 direction changes

GIANT SLALOM:

Training

- Recommend distances of 20-32m between gates
    - Set the full spectrum of these distances
- Maximize variety
- Incorporate terrain

Competition

- Maximum distance between turning gates: 30m
- Normal distance between turning gates: 24-26m
- Changes in rhythm requiring different turn shapes
- Course length: recommend 30-40 direction changes

SUPER G:

Training

- Sections and full-length courses
- Emphasis on gliding and terrain elements, use of timing
- Inspection skills rehearsed in training
- Set full spectrum, some sets more downhill oriented, some more GS oriented
- Courses incorporate more terrain, though sets are kept basic through difficult terrain
- Course setting with existing or available safety installations in mind, appropriate fencing is in place before training begins

Competition

- Setting within rules of FIS or USSA, encourage full spectrum
- Courses incorporate terrain, but sets are kept basic through difficult terrain
- Course setting with existing or available safety installations in mind, course setter assists with fencing installations when needed

DOWNHILL:

Training

- Sections and shorter full-length courses
- Emphasis on gliding and terrain elements, use of timing
- Inspection skills rehearsed in training
- Jumping progressions – course set should control speed above the jump, athlete has time to be in balanced position for jump takeoff
- Overly difficult tactical/technical elements and large jumps are avoided, particularly on the lower part of the course
- Course setting with existing or available safety installations in mind, appropriate fencing is in place before training begins
- Setting done by or with the assistance of an experienced speed event course setter

Competition

- Overly difficult tactical/technical elements and large jumps are avoided, particularly on the lower part of the course

- Course setting with existing or available safety installations in mind, setter assists with fencing setup as needed
- Setting done by or with the assistance of an experienced speed event course setter

PHASE 6

Background:
This phase is made up mostly of U21 and older skiers, though some girls will move into phase 6 at U18. Skiers in this phase are moving into mastery of all aspects of the sport. Some will begin to specialize toward certain disciplines, though a well-rounded training approach is still encouraged. Course setting should test and challenge all the skills the skiers possess. Course setting will mirror that on the NorAm, Europa Cup, and World Cup levels.

SLALOM:
Training
- 27-31mm diameter, full-length gates are appropriate, though brushes and stubbies may still be used
- Typical characteristics –recommended distance between gates in combinations 4-6m, recommended distance between open gates 7-12m
    - Set the full spectrum of these distances
    - Training courses for certain goals run a broader range of distances, from 1m picket fences to 18 meter over-round sets
- Pairing of combinations is practiced, with hairpins into flush, delay into hairpins, etc.
- Challenging technically and tactically

Competition
- Maximum distance between turning gates: 12m
- Normal distance between turning gates: 8.5-11m
- Normal distance between poles in combinations: 4.5-6m
- Corridors of equal spacing and offset are not used, rhythm changes regularly, but course setter varies distance and offset to maintain flow
- Set within FIS or USSA rules

GIANT SLALOM:
Training
- Recommend distances of 20-30m between gates
    - Set the full spectrum of these distances, with occasional sets going beyond this range
- Maximize variety, challenging tactically

- Use all available terrain, setting over abrupt terrain such that sometimes the knoll will be in the turn transition, and sometimes in the middle of the turn

Competition

- Maximum distance between turning gates: No max, gate count based on vertical drop
- Normal distance between turning gates: 24-27m
- Changes in rhythm requiring different turn shapes including chicanes
- Use all available terrain
- Set within FIS or USSA rules

SUPER G:

Training

- Sections and full-length courses
- Set full spectrum, some sets more downhill oriented, some more GS oriented
- Courses incorporate lots of terrain
- Course setting with existing or available safety installations in mind, appropriate fencing is in place before training begins

Competition

- Setting within rules of FIS or USSA, encourage full spectrum
- Courses incorporate terrain
- Course setting with existing or available safety installations in mind, course setter assists with fencing installations when needed
- Courses set by experienced speed event course setters familiar with the hill

DOWNHILL:

Training

- Sections and full-length courses
- Jumps may be present at any part of the course
- Course setting with existing or available safety installations in mind, appropriate fencing is in place before training begins
- Setting done by or with the assistance of an experienced speed event course setter

Competition

- Course setting with existing or available safety installations in mind, setter assists with fencing setup as needed
- Setting done by or with the assistance of an experienced speed event course setter