

# *ALPINE SKIING*



Alpine skiing is the sport of sliding down snow-covered hills on skis with fixed-heel bindings. It is also commonly known as downhill skiing, although that also incorporates different styles. Alpine skiing can be contrasted with skiing using free-heel bindings; ski mountaineering and nordic skiing - such as cross-country; ski jumping; and Telemark.



# *Basic concept*

A skier following the "fall line" will reach the maximum possible speed for that slope, whereas a skier with skis pointed perpendicular to the fall line, across the hill instead of down it, will not move at all. The speed of descent down any given hill can be controlled by changing the angle of motion in relation to the fall line, skiing across the hill rather than down it.



There are four competitive alpine skiing disciplines: slalom, giant slalom, super giant slalom, and downhill. Slalom has short tight turns, whereas giant-slalom races are set with more widely spaced turns. Super-giant slalom and downhill have few turns; the courses have gates spaced widely apart and skiers often reach 100 km/h.



# *SLALOM*

Is an alpine skiing and alpine snowboarding discipline, involving turning between poles (gates) spaced much closer together than in Giant Slalom, Super Giant Slalom or Downhill, necessitating quicker and shorter turns. Slalom is the most technical discipline and has the shortest turns with distances ranging from 6 to 15 metres apart. It has speeds that can reach 35 km/h



# GIANT SLALOM

The vertical drop for a GS course must be 250-450 metres for men, 250-400 m for women. The number of gates in this event is 56-70 for men and 46-58 for women. The number of direction changes in a GS course equals 11-15% of the vertical drop of the course in metres, 13-15% for children. As an example, on a 300 m vertical course, there would be between 33 and 45 direction changes for an adult race. Although not the fastest event in skiing, on average a well trained racer may reach average speeds of 40 km/h.



# *SUPER GIANT SLALOM*

Super giant slalom, or super-G, is a racing discipline of alpine skiing. Along with the faster downhill, it is regarded as a "speed" event, in contrast to the technical events giant slalom and slalom. Much like downhill, the other of the two "speed" events in alpine skiing, a super-G course consists of widely set gates that racers must turn around. The course is set so that skiers must turn more than in downhill, though the speeds are still much higher than in giant slalom. Each athlete only has one run to clock the best time. In the Olympics, super-G courses are usually set on the same slopes as the downhill, but with a lower starting point.



# DOWNHILL

The Downhill discipline involves the highest speeds and therefore the greatest risks of all the alpine events. Racers on a typical international-level course exceed speeds of 130 km/h (81 mph) and some courses, such as the notable Lauberhorn course in Wengen, Switzerland, and the Hahnenkamm course in Kitzbühel, Austria, speeds of up to 150 km/h in certain sections are common.





There is also a "*Combined*" event that includes one downhill race and one slalom race. In 2004, the FIS (Fédération Internationale de Ski) introduced a new event to the World Cup calendar called the super combined, or super combi, consisting of one shortened downhill run and just one slalom run, both raced during one day.



# STEMMING

Generally there are two main forms of turns used in downhill skiing. The oldest, and still common, is the concept of "stemming", turning the front ("tips") or rear ("tails") of the skis sideways from the body so they form an angle to the direction of travel. In doing so, the ski pushes snow forward and to the side, and thus by Newton's third law, the snow pushes the skier back and to the opposite side. The force backwards directly counteracts gravity, and slows the skier. The force to the sides, if unbalanced, will cause the skier to turn.



# *CARVING*

A different form of turn is the "carve". Carving is based on the shape of the ski itself; when the ski is rotated onto its edge, the pattern cut into its side causes it to bend into an arc. The contact between the arc of the ski edges and the snow naturally causes the ski to want to move along that arc.



# Ski trail ratings

In Europe, pistes are classified by a color-coded system. The actual color system differs in parts for each country - in all countries blue (easy), red (intermediate) and black (expert) are used.



# Green

(Spain, France, Scandinavia, UK, Poland) Learning or Beginner slopes. These are usually not marked trails, but tend to be large, open, gently sloping areas at the base of the ski area or traverse paths between the main trails. Can sometimes be marked as a Green circle.



# Blue

An easy trail, similar to the North American Green Circle, and are almost always groomed, or on so shallow a slope as not to need it. The slope gradient shall not exceed 25% except for short wide sections with a higher gradient. Sometimes described as a blue square



# Red

An intermediate slope, similar to the North American Blue Square. Steeper, or narrower than a blue slope, these are usually groomed, unless the narrowness of the trail prohibits it. The slope gradient shall not exceed 40% except for short wide sections with a higher gradient. Sometimes marked as a red rectangle.



# Black

An expert slope, equivalent to the North American Black Diamond or Double Black Diamond. Steep, may or may not be groomed, or may be groomed for moguls. Black can be a very wide classification, ranging from a slope marginally more difficult than a Red to very steep avalanche chutes like the infamous Couloirs of Courchevel. France tends to have a higher limit between red and black. Sometimes marked as a black diamond.





# Double or triple black diamond

(Scandinavia) Very or extremely difficult piste.



# Orange

(Austria, Switzerland, certain other areas)  
Extremely difficult.



# Yellow

In recent years, many resorts reclassified some black slopes to yellow slopes. This signifies a skiroute, an ungroomed and unpatrolled slope which is actually off-piste skiing in a marked area. Famous examples are the Stockhorn area in Zermatt and the Tortin slopes in Verbier. In Austria, skiroutes are usually marked with orange squares instead.





# EQUIPMENT



# BOOTS

Reinforced plastic boots are specific to the competition discipline. Raising of the boot sole is permitted to increase the ability to pressurise the ski. The maximum distance between boot sole and foot is regulated, presently at 50mm for men and 45mm for women.



# GLOVES

Made of leather or synthetic material. Slalom gloves also have a plastic forearm guard for protection when skiing through the gates.



# GOGGLES

Ski goggles protect the eyes against weather, glare and the effects of speed on the eyes. Goggles can be worn with a variety of lens colours to maximise contrast and visibility.



# HELMET

A helmet is compulsory for downhill and super-G and is often worn in slalom and giant slalom. Some skiers choose to attach a chin guard.





# POLES

In the downhill and super-G, poles are curved to fit around the body to reduce air resistance. In the slalom events, poles are straight and often have plastic guards covering the knuckles to help skiers knock the slalom poles out of their path.



# SKIS

Skis are generally made of various material (wood, composite fibres) specially adapted to the wear and tear they undergo during a race. Their "performance" on the snow depends also on their length, width and shape which vary, depending on the course, and the speed. Metal edges on the skis are sharpened for every race to make the ski hold during the turn on the icy surface.



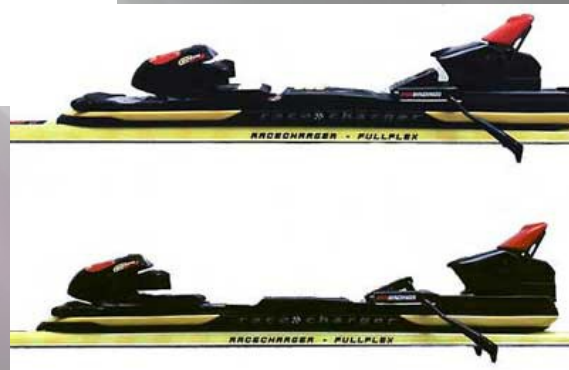
# SUIT

Skin-tight racing suits are worn to reduce air resistance and suits must meet minimum requirements for air permeability. Padding may be worn under the ski suit a plastic back protector is usually worn in downhill. In slalom events, pads are frequently worn on the arms, knees and shins.



# BINDINGS

Bindings are the link between the boots and the skis. Safety bindings will release when the torsion or impact is strong enough. The maximum height (distance between the bottom of the running surface of the ski and the ski boot sole) is regulated at 55mm.



Thank you for watching! 😊