Alpine Ski Racing
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The understanding and execution of skiing fundamentals serve as the foundation for success. In addition, the skier must combine speed and finesse with power and efficiency, and the mental capacity to handle the demands of ski racing.

Athletic Stance
A good athletic stance is the most fundamental of all alpine skiing fundamentals. Everything begins, flows, and ends with a good athletic stance.

Athletic Stance
• Looking ahead
• Shoulders/eyes level with hill
• Open attitude of arms
• Slightly rounded back
• Hands forward & always in view
• Flexed ankles, knees, & hips
• Feet & legs are hip width
• Skis //

Skis, feet, shins, & knees are approximately hip width and //
A good athletic stance is characterized by having the **ankles**, **knees**, and the **hips** flexed.

The upper body and hips are **perpendicular** over the center of skis. This perpendicular position provides a stable platform that allows the feet to work independently and improves the skier’s ability to efficiently adapt to changes in terrain. It is imperative that the skier is **Looking ahead** in order to anticipate what’s coming next.
The **hands** and elbows are ahead of the body.

The athletic stance should be maintained throughout all the turning phases, the degree of flexion has to be constantly adjusted based on turn radius, terrain and speed.

**Separation**

Stance

Vertical separation >
Horizontal separation
**Horizontal Separation:** Horizontal separation is how wide the feet are apart. In a good athletic stance on skis, the distance your feet are apart should be no different than that when you’re standing, walking, running, or standing on your skis on a flat hill.

The horizontal separation of the feet when skiing remains pretty constant with minor adjustments. It may lessen a little as a skier moves from the transition phase of a turn toward the apex of the ensuing turn. Timing of edge change affects the amount of horizontal separation between turn transition and the apex of the coming turn. With an early edge change and high edge angle, the horizontal separation of the feet is going to be quite small. If the transition phase is quick (short), horizontal separation may be a little wider.

**Vertical Separation:** Vertical separation is the distance that the legs are separated vertically from a natural standing position. If you stand on a set of steps sideways with one foot on the tread above the other, the vertical separation of your feet is the distance in height, one foot to the other. While skiing, vertical separation of the feet is constantly changing and is directly related to edge angles that are developed. Vertical separation is usually the greatest at or just after the apex of a turn when a skier is resisting the combined forces of gravity and centrifugal force. It’s at its least during the transition phase between turns. Vertical separation must be allowed to develop during a turn and should not be forced or created by the skier. You should feel the force and not force the feel.
• Stance should begin with a functional position that is comfortable and allows good balance similar to that used when walking or standing still.
• Vertical and horizontal separation of the feet will change just like walking or running. The most dramatic of these separations will occur with vertical plane. While skiing, separation is going to be dictated by the phase of a turn, turn shape, and terrain.
• Any changes in horizontal and vertical separation are made so as not to compromise the base of support and allowing the body to remain in balance. When either is compromised, the base of support is affected resulting in poor balance and poor execution of a turn.
• A horizontal stance that is too narrow will limit balance, foot independence, and use of the inside ski.
• A horizontal stance that is too wide will cause the inside foot to carry too much of the weight and limit inclination.
• A horizontal stance that is too wide at slower speeds may make it difficult at turn transition to move the center of mass from one side of the skis to the other.

Parallel Skis & Shins

The best skiers use both skis to turn. The ratio of when one ski is being used more than the other is constantly changing and varies at different part of a turn.
The advantage in maintaining parallel skis is that it allows the inside ski to work more effectively and in harmony with the dominant outside ski. More efficiently creating clean, smooth, fast arcs are achievable when both skis are working together.

Even when the skier weights one ski more than the other, he must turn the skis simultaneously, keeping them parallel, so that each ski can contribute to the turning process. The outside ski will be dominate during a turn and the inside will always be actively involved.

Carving throughout a turn is not possible when the skis converge or diverge. Thus, it’s critical to apply pressure to the center of the skis. This can only be achieved through parallel alignment in an athletic stance.
Parallel Position – Alignment

Parallel position is achieved by the alignment of ankles, knees, hips and shoulders in a close proximity to parallel relationship. The degree of lead is dictated by gradient of the hill and radius of the turn. In general the steeper the hill, and tighter the radius the greater the lead. The parallel positions change constantly throughout the turn, and are most pronounced at the gate panel.
Parallel Position - Alignment

Parallel Alignment
An effective parallel alignment can only be accomplished in combination with a good athletic stance.

**Lateral Balance & Fore/Balance**
To move the center of mass into a centered position over the skis, or sustain such a position, the skier relies on for/aft and lateral movements.
The degree to which the skier can take advantage of the design characteristics of the skis hinges largely on the amount of edge angle he or she can achieve through proper lateral movement. The edge angles are created through a combination of body inclination and ankle, knee and hip angulation.
Lateral Balance

The inside hip should be kept fairly high relative to the gradient of the hill.

Lateral balance aided with a relatively high inside hip.

The steeper the hill, the more the inside leg is retracted creating a higher inside hip.
Looking ahead is important in order to choose the right line, appropriate edge angle, and pressure for the subsequent turn.
Dynamic Visual Acuity

Visual acuity (VA) is acuteness or clearness of vision especially form vision, which is dependent on the sharpness of the retinal focus within the eye and the sensitivity of the interpretative faculty of the brain.

In ski racing, it is important that you be able to clearly see objects while you are moving fast. Without good “dynamic” visual acuity, you are going to have a difficult time in a sport like skiing. There are several components that comprise dynamic visual acuity.

Good dynamic visual acuity in skiing is dependent on a level field of vision. If the head is cocked to the side due to a poor athletic stance, dynamic visual acuity will be adversely affected.

The following are important elements of good dynamic visual acuity:
Eye tracking helps you maintain better balance and react to the situation more quickly.

Visual Concentration is the ability to screen out these distractions and stay focused on the ball or the target.

Peripheral vision in skiing is important. It's important to increase your ability to see action to the side without having to turn your head.
**Visual reaction time**, or the speed with which your brain interprets and reacts to the action coming at you on the race hills is very important.

**Depth perception** enables you to quickly and accurately judge the distance between yourself, the next gate, two gates ahead, upcoming terrain, boundary lines and other objects.
**Edge Pressure**
The fastest skiers have an almost uncanny ability to keep their skis in the fall line by setting the skis on edge early. Early edge engagement allows the skier to disperse pressure more evenly throughout the turn, which helps eliminate the big forces that develop at the bottom of the turn.
**Dynamic Balance**

It is important that the width of the stance is of personal preference. Also the type of boots, insoles and canting can alter your stance.

In Slalom a balanced stance is essential. This will give greater freedom and options from which the skier is able to manipulate the skis and apply varied pressure to the edges.

The weight distribution from inside ski to the outside skis changes throughout the turn.
Phases of a turn

Turn Transition – Initiation

The turn initiation starts by moving the center of mass inside the skis through inclination (tipping the body). The shoulders and hips should be near parallel to each other. It is crucial to apply pressure to the front of the ski in order to engage the edges.

In the Transition phase of the turn the skier prepares for turn initiation by extending the knees and hips in a forward motion (over the new outside ski).

The old turning leg flexes and correspondingly the new outside leg stretches as the body and skis move down the hill in slightly different paths.
To be fast, skiers must persistently work on the timing and rhythm of their movements. These movements have to be fluid and smooth, yet powerful. An athlete achieves perfect timing only when he or she has executed the basic skiing elements well.

Rhythm is a defining characteristic of good skiers regardless of whether they’re racing or just out to carve up the mountain.

**Transition**

There is a moment during the transition between turns when the skis run perfectly flat and the skier should be in a balance athletic stance.

**Turning Phase**

As the fall-line approaches, the outside leg is almost extended and the outside ski is tipped on edge.
Inclination and angulation combined allow to effectively pressure the edge of the ski, and maintain edge hold when forces build up throughout the turn.

The degree to which the ski must be tipped on edge depends on the speed, designed turn radius and snow conditions.

The ankles and knees should be relaxed to absorb / adapt to the varying snow conditions and to maintain snow contact.

The skier’s ability to blend the individual turn elements (phases) is paramount to be fast.
The power and efficiency of the modern turn relies, in part, on the skier’s ability to carve. This, in turn, is aided by the side cut design of shaped skis. Shaped skis are designed to carve and thus increase ski-to-snow contact.
The turn exit is one of the most important factors to be fast. Therefore the start of the transition from turn to turn must take place while the skis are still in fall-line.

This can only accomplished if the parallel alignment and athletic stance are correct.

**Pole Plant (Tap)**

The pole plant/tap marks the beginning of the transition phase and helps prevent the skis from overturning and stay in the fall-line toward the end of the turn. The pole plant/tap should be pointed to the inside of the turn and toward the oncoming turn.

The actual pole plant happens between the turn completion and the transition phase, through the flicking of the wrist and starts immediately after the pole guard strikes the gate.

The pole plant is far less pronounced on a flat or straight course.

**Gate clear**

It is important not to reach for the gate.
If the timing of the turn and gate clear are correct, the pole will leave an indent in the snow that is pointed at the upcoming turn.