

5 Keys to Skiing F



Figure 1 U.S. Ski Team's Ted Ligety, 2011 World Cup GS Champion, demonstrates flexed, tensed, and equal ankle angles while winning the first GS of the 2011-2012 season in Sölden, Austria.

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Photos: Getty Images

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A fast time in a race course is achieved by the ski racer that has the highest average speed from start house to the finish line. To achieve this, there are critical technique keys will assist you in skiing faster this year. These keys revolve around simple technique adjustments that can be incorporated from day one.

Technique has two purposes. First, it needs to allow you to stay in balance; and secondly, to make available a body posture or position so you can negotiate a fast path through the gates.

Balance in a race course is constantly challenged by speed, line, and the snow surface. To create a balanced stance you need some key elements in your stance. This will endow you with a technique to cope with turns of different size and radii, while being in balance on any snow surface.

We will briefly look at five aspects of great stance and technique. Your ability to achieve these on a consistent basis will be reflected in your results.

Ankle Flex Figure 1

Keeping fore and aft precision comes from the ankles. Hands forward and pushing the hips forward are nice, but the real movement of your center-of-mass comes from the skis in which you are levering from. The real key behind "ankle flexion" is not just the position, but the tension in the muscles of both ankles. The look of a flexed ankle is important, but the muscle tension is what is necessary to keep fore/aft balance. You can feel this tension at home. Walk around the room on your heels only. You



Figure 2 U.S. Ski Team's Lindsey Vonn shows how her body angles match the angles created by her ski lead on the way to winning the women's first GS of the 2011-2012 season in Sölden, Austria.

should eventually feel a warm or even burning spot on the front of your shins. This is the muscle that creates the ankle flexion. This is what you want to be firing making you ready for action while on the race course.

Even though we are outside-ski dominant, we should be reminded that ankle flexion needs to be in both ankles. Ideally you want to be creating a similar angle in both ankles.

Ski Lead Figure 2

"Ski lead" is one ski being slightly ahead or farther forward than the other ski. The uphill ski will always be the one forward. Since we are constantly going from right to left with our ski turns, the uphill ski will

change from right foot to left foot every turn, which means the ski lead will also change for each turn.

Ski lead is dependent upon the previously-mentioned ankle flexion. Master ankle flexion in both ankles, and your ski lead will fall into place.

With one ski farther forward, the corresponding knee, hip, shoulder, and possibly even the hand should be at a similar angle forward. This technique characteristic will leave you in a biomechanically efficient position. You can now create usable angulation in the hip and will be better able to hold the edge at the end of the turn.

Since ski lead is constantly changing throughout the turn, be sure to mimic this change up the entire body. The larger the

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Figure 3 Ted Ligety achieving a high edge angle, possible due to hip flexion allowing his inside leg to get out of the way so he can create angulation during his winning run in Sölden this year.

turn the slower this will be, while gates set tighter will require a quicker adjustment.

Hip Flexion Figure 3

Achieving the correct amount of edge is critical for making the desired turn radius. Since going fast involves a tight or small radius turn, we usually are looking for higher degrees of edge angle with the outside ski. The outside ski is the ski that is on the outer perimeter of the arc and is the one that can resist the greatest forces due to our biomechanics. To allow the outer ski to achieve this needed high edge angle requires that the ski racer move the inside ski and leg out of the way. Flexing at the hip and concurrent knee flexion will allow the body to create an angled body position (angulation).

To become proficient at this position requires precise pressure control of the skis. While increasing weight to the outside ski, feel the inside ski get proportionally lighter. When this is mastered you will be able to change the rate and tempo at moving the hip in which is not only fast in itself but will allow the outside ski to do its job.

Moving Forward Figure 4

Ending up in the backseat is a common problem. The solution is not to stay out of the backseat, but knowing *when* and *how* to move forward to re-center.

After the gate, we begin to flatten the ski so we can change edges. This flattening-out period is a critical moment for the ski turn. If performed efficiently, the ski racer has plenty



Figure 4 Ted Ligety moving forward to start the new turn during his winning run in Sölden this year.

of time between gates. If not—we've all had this feeling—the gates will seem to come way too fast.

It is at this flattening-out moment that you want to move forward onto the ball of the foot to initiate the new turn. This forward movement will also make it possible to rotate or steer the ski if you need a bit of adjustment to arc the remaining part of the turn. This is a strong position biomechanically and mechanically. Biomechanically, we are very agile when our center-of-mass is above the ball of our foot. This also positions us over the middle of the ski, making it very efficient mechanically to rotate the ski as needed.



Figure 5 Lindsey Vonn is perpendicular to the slope while switching edges between turns by moving her body forward and down the hill. Below: Bode Miller is perpendicular in a fore/aft plane in Sölden this year.



To feel this forward movement, skate across flat terrain or to the ski lift. As you become better at skating, try skating down a very slight incline and then after the skate make a small turn. Moving forward and then on to the new edge are the skills you want to master.

Perpendicularity Figure 5

We live most of our lives in a horizontal world. People even get anxious when a picture on the wall is a bit tilted. Indeed being straight-up vertical is part of our makeup.

Meanwhile, the world of ski racing is performed on a slope. Since race courses are not level, we must adapt.

Being in balance in the off-kilter world of ski racing requires the same perpendicular attitude we have in our normal daily world. The only difference is, we must now get perpendicular to the ski slope.

Making the ski flat against the snow at turn initiation is best accomplished by the reorientation of our body such that we will be at right angles with the slope. At this critical moment of linking turns, the entire body more or less will be vertical relative to the slope.

The fore/aft balance challenge and the reason we get in the backseat is also a result of this tilted world of ski racing. If we remain upright or vertical relative to our normal horizontal world we will be in the backseat when we are referenced to the ski slope.

To be perpendicular requires the same ankle tension we mentioned as the first key to skiing fast. This now takes us full circle with our five keys. Incorporating these into your repertoire will find you speed in the race course this year.