

Skiing Simplified: Turn Defined as a Bump

Defining a Turn as a Bump

The purpose of this document is to define a skiing turn by relating it to a bump. A skier works with the forces of gravity, terrain and momentum. By changing direction in relation to both gravity and momentum, a skiing turn can be related to a bump in the terrain. The front side of the turn relates to the back side of a bump and the back side of a turn relates to the front side of a bump. The shape of the ski and the three forces cause this relationship. At the beginning of a turn the terrain seems to fall away from us like it does on the back side of a bump and at the end of a turn the terrain seems to come at us like it does on the front side of a bump. In other words, a turn seems to change the shape of the mountain (to create terrain). Therefore, balance over a bump relates to balance in a turn.

Because of Terrain, Balance Requires Movement

Defining a turn as a bump should help us understand movement required for balance during a turn. It is the same movement used to ski over a bump. If we get this movement correct, the turn will be caused by the shape of the ski. Plus, if we get the movement correct we get the balance correct. We want to balance in the center of the skis both laterally (side to side) and longitudinally (fore and aft). Plus, we balance a little ahead of our skis, so that balance point is always in the front of our boot top. But, to do this we must continually move our ankle below that point and our hips above that point. I say always because we are going up and over a bump. If we do not move, the bump will throw us off center and out of balance. The bump is a terrain change, so a turn is a terrain change. Plus, we may be required to turn in a terrain change. To stay centered when the terrain changes, sometimes our hips are moving forward and sometimes they are moving backward, and sometimes they are moving from side to side. Some people say this movement of the hips starts in the ankles. Some people say it starts in the hips. I think those muscles and bones are connected, and they work together. I know the balance point on the bottom of the foot moves in the same direction as the hips. Thinking of the turn as a bump helps understand why the balance point on the bottom of the foot must move with the hips to keep balance (pressure on the front of the boot top to stay a little ahead of our skis).

Skiing the Bump with no Turn

As indicated before, we want to keep our balance centered and a little ahead of the skis when skiing over a bump. We also want to use our muscles to take advantage of gravity. For example: after the top of a bump we push down to use gravity to balance. Any time we push our hips come forward and the balance point on the bottom of our feet moves toward our toes. On the other side of the bump, we pull our heels and hips back to keep our balance as we go up the bump. In other words, we keep our balance by sucking the bump with our legs, keeping a little ahead of our skis. When we suck or pull the bump with our legs our hips move back, and when we push our hips move forward. So, to keep our balance centered and a little ahead of the skis, the balance point along the bottom of the foot must be moving fore and aft, from heel to toe and

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toe to heel. In relation to the bump, we go up the front side and over the top on the heel and go down the back side and into the trench on the toe. In other words, we extend the legs with our toe and shorten the legs with our heel. Using gravity for balance while going over a bump, we shorten the legs from our heels, and extend the legs from our toes. Using gravity, it is not only a smoother, but shorter more efficient ride.

Skiing a Turn with no Bump

As far as balance goes, a turn with no bump is just like a bump with a beginning, and a top of the bump (the ending is the same as the beginning). As stated before, a turn makes the terrain seem to change. At the end of one turn (the transition) we are at the top of the bump. Because it is just a turn (with no real terrain changes) it is flat at the top and our skis are flat on the snow. They are flat because they have been coming out of the turn to this point. This is an important point called the pole plant.

The Pole Plant

The top of the bump relates to the pole plant. At the beginning of the pole plant we reach forward by pulling our hips and heels backward, to keep our skis on the snow with the effective terrain change. Still using a pulling motion at the middle of the pole plant we put our skis on the new edge simply by continuing to come forward with the shape of the bump. And, at the end of the pole plant after the skis begin to engage we use our toes and a pushing forward hip motion into the fall line to accelerate, taking advantage of gravity. So, at the end of the pole plant (at the end of the top of the bump) we shift our weight from the heels to the toes. Until the end of the pole plant, we are balanced on our heels in the center of and slightly ahead our skis. At the middle of the pole plant, continuing to pull our hips and heels back to match the shape of the hill with pressure on the top of the boot. Doing this to stay centered and balanced, we have moved our hips from side to side. It is done over our heels on the flat top of the bump with our weight centered and slightly ahead of our skis. If we come forward too soon with our toes, the top of the bump becomes a ski jump. We need pressure on the front of our skis from our heels before we use our toes. Because they are connected to the core of the body (the big muscles) the hips and heels are the only muscles that do this efficiently. The toes and smaller muscles are used to extend. At the end of the pole plant we shift our weight from heel to toe and begin the extension with hips and toes, a movement that ends at the next important point, the apex of the turn.

The Apex

In a turn with no bump, the apex or middle of the turn is like the entrance to the front side of a bump. At the apex, we begin coming out of the turn at the same rate we went into the turn. At the apex the terrain seems to build, and as we feel the terrain build we suck the bump at a rate that will be finished at the pole plant. So, at this point (the apex) we are done with our work, relaxing, letting the skis create the turn, but very focused on the next apex and its pole plant. At the apex, we come out of the turn using our hips and heels to keep our balance centered over the ski as the terrain increases. If we do not come out of the turn, we do not stay centered on the ski (we fall to the

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inside). Like going up the front side of a bump, if we do not move our hips back while moving the focus of our balance towards our heels, we do not stay centered on the ski (our tips hook and we fall to the inside).

Skiing a Turn with a Bump (Real Terrain in the Turn)

Real terrain in the turn (like a fall away or a suck bump) just moves the apex. With a bump in the turn the same things happen at the pole plant and the apex. We still extend on the back side of the bump and suck or contract on the front side of the bump. For example, if there is a fall-away it just delays the apex and the point where the terrain begins to build. Another opposite example: if there is a suck bump in the middle of the turn, then we suck the bump, putting just enough pressure on the fronts of the skis to make them turn. The more we focus on terrain and related terrain balance movements, the less we need to focus on turning. Balance requires continuous movement of the hips and ankles, with the balance point on the bottom of the foot moving with the hips, to keep centered and slightly ahead of the skis. Focusing on terrain, means we focus on pole plants and apexes, the places where things change. Pole plants, apexes and the shape of our skis determine where we go on the mountain.

Summary: Defining a Turn as a Bump

The purpose of this document is to define a skiing turn by relating it to a bump. A skier works with the forces of gravity, terrain and momentum. By changing direction in relation to both gravity and momentum, a skiing turn can be related to a bump in the terrain. The front side of the turn relates to the back side of a bump and the back side of a turn relates to the front side of a bump. The shape of the ski and the three forces cause this relationship. At the beginning of a turn the terrain seems to fall away from us like it does on the back side of a bump and at the end of a turn the terrain seems to come at us like it does on the front side of a bump. In other words, a turn seems to change the shape of the mountain (to create terrain). Therefore, balance over a bump relates to balance in a turn. Balance is very important. The skis will turn by themselves as we balance on them. The more we focus on terrain and related terrain balance movements, the less we need to focus on turning. Balance requires continuous movement of the hips and ankles, with the balance point on the bottom of the foot moving with the hips, to keep centered and slightly ahead of the skis. Focusing on terrain, means we focus on pole plants and apexes, the places where things change. Pole plants, apexes and the shape of our skis determine where we go on the mountain.