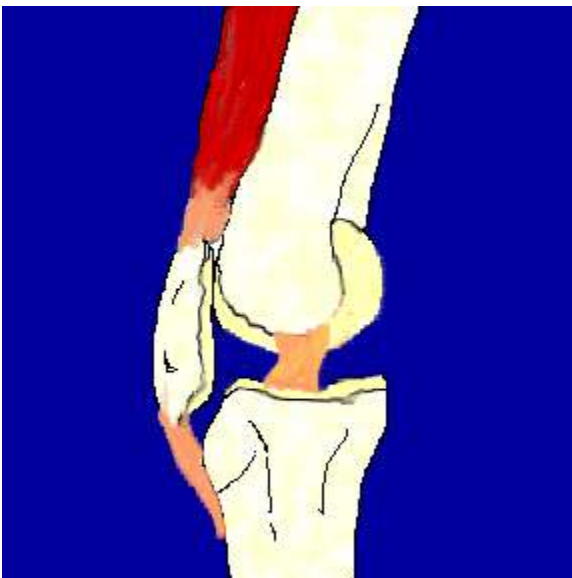
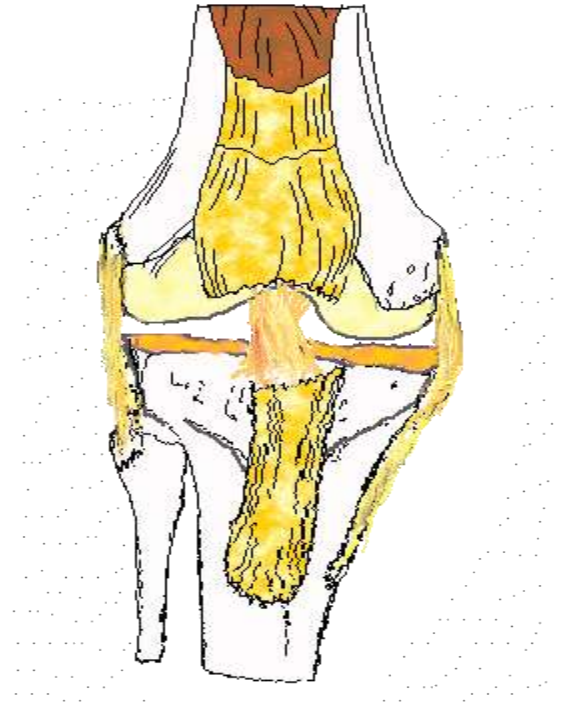


Telemark Knee Injuries

Most telemark skiers worry the most about injuring their knees while earning their turns. The study certainly supports this concern as the most common injury is to the knee (about 30-35% of all injuries reported). There are basically 2 groups of injuries: sprains and ligament tears. Mild sprains heal rapidly and may involve the medial collateral ligament (MCL). The more significant season-ending injuries are those that involve the MCL and/or the anterior cruciate ligament (ACL).

The combination of torsional stress and valgus force on the knee results in the common MCL/ACL injury shown in the animated sequence here on the right. This injury is commonly found when the skier catches the inner edge of a lightly weighted or non-weighted ski. This can occur when the uphill ski, early in the initiation of a turn, is not weighted properly or is flat on the snow instead of being used to carve the early part of the turn.

Solitary ACL tears usually occur when the skier falls back and off to the side of their uphill ski that is rear weighted. With this fall, the skier's hips drop below and behind the knee, pulling the femur back as the knee flexes. This type of fall generates a force that drives forward the tibia while the knee is flexing, shearing the ACL. This is shown on the animation on below.



Oooh, this looks pleasant! How do I avoid it?

Both of these injuries have one common feature, they evolve when the rear ski is not properly edged and/or weighted. In other words, the inside edge of the rear ski is cutting into the snow instead of the outside edge. In the combined MCL/ACL injury, the front inside edge is caught then the ski is pulled out away from the body and center of balance, twisting the knee using the ski tip as the fulcrum. In the pure ACL injury, the tail of the ski is usually weighted and contacting the snow, and as the skier falls back on to the tail, it pushes the lower leg forward, placing shearing forces across the flexed knee.

What technique training can be done to prevent these injuries? The following principles will very likely reduce your risk of injury if you can put them into practice.

1. If you think you are about to fall, avoid falling back on the tail of your skis.

Instead, try to fall along the fall line or to the side. Keeping hands forward will encourage you to fall forward and not sit down on your tails. This will prevent the majority of the forces that cause knee injuries from coming into play. It places the knee in a more stable position (less hyperflexed) and keeps the ankles and hips flexed as well. Unlike alpine skiing, the forward fall is quite a bit safer with a free heel boot. The risk of sustaining a tibial fracture is negligible since the heel will readily lift off the ski and the toe flexes forward easily in tele gear.

2. Keep your weight centered over the both skis with your ankles flexed

forward. This positions you to fall forward in the event of a sudden edge catching on the snow- a common cause of injuries at lift areas.

3. Practice edging with your inside (uphill) ski. You learned the stem technique early on and must get used to weighting the rear ski as you cut turns. As you gain more skill in weighting the rear ski (up to a max of 50% of the total between the two skis), you can start the process of learning the use of both skis to edge the turn equally. One exercise to help with this technique is to work on deliberately weighting your inside ski early in the turn, before you turn down the fall line, followed by weighting the downhill ski. [*Do this on an easy slope as it is an exercise that feels very awkward for most at first*]. This will cause your inside ski to carve a tighter turn than the downhill ski, causing a slight flare with the tips of your skis. This feels very different from the stem turns that you learn on but forces you to edge, and therefore use, the uphill ski properly in your turn. Ideally, after you have mastered the use of the uphill ski, then you focus less on early turn initiation with the uphill ski and move back to using both skis together. But now, they will be weighted more equally and carve parallel to each other the entire turn.

4. Get air. If you unweight well between turns, you are less likely to catch your edge. Again, moderate flexion of the ankles, hips, and knees will allow for a light spring-like effect to unweight both skis when transitioning between turns. Also, once you feel a fall is inevitable, getting your skis out of the snow will keep them from getting caught and taking your knees with them. In other words, when you know you are losing it, pop up out of the snow to lift your feet and edges out of the snow. Though you may feel that you are being asked to take all your falls head on, remember-- you need your knees, not your head, to ski.

From: <http://faculty.washington.edu/mtuggy/kneeinfo.htm>