

## Rehab Corner:

### Skilates: The Core of Ski Conditioning & Injury Prevention

by *Samantha Schoeneman, MPT, CPI*



#### **Samantha Schoeneman, MPT, CPI**

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Samantha's professional practice belief is that everybody deserves to move, function, and breathe with efficiency, awareness, balance, and control.

Our physical therapy clinic – Alpine Physical Therapy – is housed in a health and fitness center in western Montana. As you can probably guess ski season is a big deal in this area. Each year, as the snow begins to fall, folks start to kick up workouts in preparation for the upcoming season. It is about this time that I notice a lot of people performing typical plyometric and power lifting exercises at the club. While these exercises can increase speed on the slopes, usually their form is faulted, and injuries and compensations can be observed.

As an avid skier myself, I felt it would be important to educate and instruct the skiers in the area on proper core stabilization (recruitment of the transverse abdominus), the importance of stability of pelvis/neutral spine with dynamic activities – whether training in the gym or skiing in deep powder – and on key muscles in skiers that tend to get tight, improperly used, or overused due to other muscle imbalances.

So, along with Certified PSIA Ski Instructor and clinician Dudley Improta, we began Skilates – a ski conditioning and injury prevention class using Pilates-based ski/snowboard specific exercises and apparatus. Both the exercises and instruction within the class focus on principles of ski and snowboarding form, technique, and demands, as well as providing important muscle coordination and strengthening to prevent compensations and injuries.

#### Skiers and knee injuries

Skiers run the risk of many different injuries, but particularly in the knees. I've seen a lot of tears of the anterior cruciate ligament (ACL), medial collateral ligament (MCL), and the meniscus. Pilates helps skiers really focus on a dynamic and full range of motion and hamstring strengthening, which can help balance overused quads as well as serve as back up for the ACL. Exercises that emphasize the adductors can help a skier's recovery from catching an edge or keeping the skis under the center of the body, thus reducing the stress on passive structures such as the MCL.

In addition, closed chain exercises (where the foot is in contact with bar/strap/board/floor) can help simulate proper muscle recruitment and timing, as well as provide functional applicable movements for skiing. Using specific exercises to focus on VMO (vastus medialis oblique of the quadriceps) and gluteus medius are important for proper patella (knee cap) tracking and stability of the knee and hip joints.

#### Skiers and lower back injuries

Another area I see injured or overused a lot in skiing is the lower back. Injuries here often result from poor core stabilization or fatigue. Often the hip or lower extremity moves and then the pelvis and lumbar spine follow. This increases the stress on the spine and can cause unnecessary muscle imbalances, compensations, and

ultimately injuries. Rapid motion of the trunk requires increased energy as efficiency of movement is lost and speed of fatigue is gained. In the Skilates class, we help individuals gain control of trunk stability to maximize their extremity mobility and efficiency, by teaching them proper abdominal recruitment.

## Case Study

The following case study illustrates how Pilates can help skiers recover from an injury.

“Mary” is a 49 year-old female, whose ski edge hit the medial side of her knee resulting, initially, in a sore inside knee. However, two to three days later she noted increased pain on the lateral aspect of the knee. Mary reported limping for 3-5 days, then felt it was improving until she attempted to run and had sharp pain in the lateral joint line. Upon physical therapy evaluation, she presented with poor patella tracking (knee cap glided to outside), excessive tightness of the iliotibial band, and weak and poor recruitment of VMO and gluteus medius on the involved side. In conjunction with some manual techniques to address soft tissue and joint mobility, Mary was instructed on the Reformer and given stability exercises on the Pilates Chair in order to re-educate appropriate timing of gluteal and quadriceps. These exercises included basic footwork with specific cues for proper muscle synergy, side lying single leg foot work, single leg cross over hip work, forward lunge on chair, and skater series. We also used a foam roller for stretching the IT band.

Once initial irritation and inflammation was addressed, Mary was able to key in on specific muscle recruitment patterns for regaining appropriate timing and strength to the knee joint. As she built up this strength and regained proper muscle balance, she was able to gradually return to higher level activities such as running and skiing, applying the new strength and balance for decreased pressure and irritation to the knee joint.