Biking and Knee Pain

By Dr. Joanna MacDonald

Summer is finally here! Maybe it's the sunshine or perhaps you have been inspired by watching the Canadian cyclist, Ryder Hesjedal, finish 7th in the 2010 Tour de France. Regardless, more people are jumping on their bikes whether it be for commuting, exercise, or play.

Around the lower mainland there have been a number of local bike races pushing people to put some serious miles on their bikes. I have had patients competing on the road in 'The Ride to Conquer Cancer', on the trails in the 'BC Bike Race' and some patients who are continuing to train hard for the ultimate triathlon, the 'Penticton Ironman', which is now only a couple weeks away.

Whether they are riding a bike for the road, the mountain, or a cruiser, many patients are experiencing knee pain. Cycling is very repetitive; during 1 hour of cycling, a rider may average up to 5000 pedal revolutions. Therefore, even the smallest amount of malalignment, whether anatomic or equipment related, can lead to dysfunction, impaired performance and pain.

Here are some of the most common types of knee injuries related to biking that I see.

Patellofemoral Syndrome

Signs and Symptoms - this is pain located in the **front aspect of the knee**, often on the inside. Pain is worse with going up and down steps and sitting for long periods of time. There is often painful grinding and/or clicking going through any squatting maneuver. Often, the discomfort occurs after cycling, rather than during the ride.

Causes- muscular imbalances in the lower kinetic chain lead to a patellar (knee cap) tracking disorder. Specifically, over-tight outside quads and hip flexors, combined with weak inner quads and hamstrings, cause the patella to be pulled laterally and create compression of the patella on the femur. This can occur if the saddle is too low or too far forward, or if the pedal cleats have excessive internal or external rotation.

Iliotibial Band Syndrome (ITBS)

Signs and Symptoms - pain located on the **outside of the knee**. Pain can be sharp and stabbing and can contribute to decreased pedaling power. Pain is worse with running/walking downhill. Usually symptoms will become present after approximately 30-45 minutes of riding. Occasionally some inflammation will be present.

Causes – Irritation is caused by a tight ITB that rubs against the lateral epicondyle of the femur in the last 30° to 40° of knee extension. Therefore

a seat that is too high (greater than 150° of extension) or too far back results in stretching the ITB, causing the friction. Excessive internal tibial rotation, either anatomic (caused by overpronation) or equipment related (caused by improper cleat position) can also aggravate the ITB.

Hamstring/Calf Strain

Signs and Symptoms – pain is located in the **back of the knee** and is usually only present with certain movements. If pain can be reproduced with resisted plantar flexion (pointing the toes), then this can be attributed to a strain of the gastrocnemius or soleus (calf) muscles. If the pain is reproduced with resisted knee flexion then the pain is coming from the hamstring muscle.

Causes – a saddle that is too high or too far back can stress the hamstring tendon. Excessive internal rotation of the pedal cleats will also increase stress on the hamstring. Weak hamstrings or over-tight quads can create this.

Treatments

Diagnosis – having an accurate diagnosis is key to a quick and complete recovery. If you are experiencing any symptoms it is best to contact a professional who can help you pinpoint where the root of the problem is and then help to determine the most effective way to treat the structures.

ART (Active Release Technique) –this is a soft tissue technique designed to help remove adhesions (knots) in the muscle, which can build up due to overuse, making the muscle tight.

Adjustments/Alignment – Proper alignment of your spine helps ensure full neurological function and joint mobility. Subluxation in your spine or malalignment in the pelvis can impede the correct functioning of your muscles, stressing the ligaments and tendons into pulling your knee out of its proper path.

Rehabilitation Exercises – The prescription of appropriate exercises to correct any muscular imbalances helps to reduce strain and stress on the lower kinetic chain (ankle, knee, and hip).

Orthotics – if you overpronate, getting an orthotic fit for your cycling shoe can help to correct alignment of the knee and decrease or prevent medial or lateral rotational stress on the ankle, knee or hip.

Prevention Techniques

Bike Fitting – see a professional at your local bike shop or consult a coach to ensure you have the best fit for YOU.

Cross Training – because of the repetitive nature of cycling it is important to train those muscles that are not directly used, in order to ensure that no imbalances develop.

Stretching / *Yoga* – Keeping muscles such as your quads and hip flexors as loose as possible helps promote pain-free riding.

If you have any questions or want further information, stop by the office anytime!

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