Cycling is a repetitive sport, with a rider averaging up to 5,400 revolutions per hour. This can cause soft tissue breakdown in the legs resulting in pain and inability to ride. Causes of overuse injuries and tissue breakdown are numerous and can be multi-factorial, including: muscular imbalances (weakness, inflexibility, leg malalignment, leg length discrepancy), improper bike fit, training error and inappropriate pedaling mechanics. Research has demonstrated that as little as a five percent change in saddle height affects knee joint kinematics by 35 percent and knee joint moments by 16 percent. Knee pain in cyclists falls into three categories and is typically associated with inappropriate bike fit or inadequate training.

Common causes of knee pain in cyclists

**Medial** pain is located on the inside of the knee due to friction between the knee cap and thigh bone. This pain may be associated with riding with a seat that is too low or having a pedaling cadence that is too slow. Decreased hip flexibility can also be associated with inner knee pain.

**Lateral** pain is located on the outside of the knee due to friction of the iliotibial band over the fat pad or bone of the femur. This pain may be associated with inappropriate cleat and pedal position, inappropriate position of bike seat, leg length discrepancy and/or improper ankle position while riding.

**Anterior** pain is located directly in front of the knee due to excessive compression forces between the knee cap and thigh bone. This pain may be associated with a seat that is too low, too far forward and/or riding with a low pedal cadence.
Injury prevention

Cyclists can help prevent overuse injuries by:

- Having their bike fit appropriately for their body
- Maintaining a pedal cadence of 88–95 rpm (revolutions per minute) or higher
- Maximizing pedal stroke to optimize muscular balance
- Using a clipless pedal position that mimics the alignment of the foot when it is dangling off of a table when in a sitting position
- Maintaining hip and low back strength and flexibility

The UW Health Sports Rehabilitation Cycling Clinic is staffed by physical therapists who have specialized training in cycling mechanics. Physical therapists evaluate a cyclist’s biomechanics and individual anatomy. The therapist conducts an evaluation of the cyclist on the bike and focuses on the rider’s posture and joint motion to optimize bike fit. Proper fit can be the most important component of preventing injury, returning to cycling after injury and enhancing performance.

Treating cycling injuries

Treatment depends on the athlete and type of injury. The UW Health rehabilitation team uses a comprehensive approach in order to allow the athlete to recover from injury and enhance performance. Care starts with a physical evaluation by a sports medicine physician or rehabilitation therapist with additional diagnostic tests if needed. A video analysis of the rider’s cycling mechanics may also be performed to assess for inappropriate bike fit or pedaling technique. Following the evaluation, most athletes are trained in a specialized rehabilitation program that may include strengthening exercises, flexibility exercises, modifications to bike fit, modifications to pedaling technique or cadence and manual physical therapy treatments. Individualized treatment plans are developed to get athletes back to cycling as soon as possible following their injury.

For more information about sports rehabilitation services, please visit uwhealth.org/sportsrehab or call (608) 263-4765.