

# COMMON OVERUSE INJURIES ATTRIBUTED TO CYCLING, AND WAYS TO MINIMIZE THESE INJURIES

Listed are a few of the most common overuse injuries associated with cycling long distances.

1. Cervical and upper back pain.
2. Low back pain.
3. Strains and sprains of the calf muscles.
4. Achilles and Patella tendinitis.
5. Strains of the quadriceps and hamstring muscles.

Each of these will be discussed with suggestions of bike fitting, staying fit throughout the year, warm ups and stretches.

## CERVICAL AND UPPER BACK PAIN

Cervical and upper back pain can occur from the forward angle that your body is in while riding. This position puts your head forward of your shoulders rather than above the shoulders, thus causing your cervical paraspinals and upper traps to work very hard. So, what can we do about it?

### *Let's start with bike fit options*

A bike position that is aggressive, meaning lowered handle bars (short stem) and the seat is set back, can cause you to be positioned in a significant amount of forward flexion. This makes you more aerodynamic, but can hurt after long periods of time. A few options would be to lengthen the stem tube raising the bars and bring the seat forward a bit. This will bring you into more of an upright position. If you're not sure how to do this, ask a professional at a local bike shop.

### *Staying fit*

With your head positioned in front of you, the cervical muscles including the upper traps, are working very hard to keep your head from falling downward. This is a lot of work for those muscles. So here are a few tips to help strengthen these muscles when you are not cycling and a few stretches, which will alleviate the stress and tightness caused by your long rides.

### **Cervical Isometrics**

These are exercises with no movement and the best time to perform these exercises, to be optimal, would be during the off season.

#### **Cervical flexion isometric**

Position yourself on your back and raise your head just off the floor and tuck your chin downward slightly, to keep your neck straight. Hold this anywhere between 30 seconds to 2 minutes. This is a difficult exercise, because the anterior neck muscles (neck flexors) are generally the weakest muscles in the body. You can perform this exercise once a day.



#### **Cervical extension isometric**

Position yourself on your stomach with your face at ground level or with your head off the end of your bed for improved comfort. Your arms will be down at your sides, palms down. Begin to raise your head up, just off the floor and tuck your chin in to keep your neck straight, preventing you from looking upward. At the same time, lift your arms off the floor, squeezing your shoulder blades together. Hold this position from 60 seconds to 4 minutes. You can perform this exercise once a day.



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## Stretches

The stretches can be performed prior to a ride, in the middle of your ride, and definitely after your ride! But not while you are riding!! Hold these stretches for 30 seconds. If you can't hold the stretch for 30 seconds, you're probably pulling too hard, giving yourself too much of a stretch, thus decreasing your stretch time. So, stretch easily keeping the time to at least 30 seconds.

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### Upper trap stretch:

Reach over your head and gently pull your ear towards your shoulder; hold for 30 seconds. Repeat for the other side. This stretch can be repeated 1 to 3 times a day.



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### Cervical extensor stretch

With both hands behind your head, move your head downward to stretch the muscles in the back of your neck. Don't pull your head down, just use the weight of your arms to assist in the stretch. Hold for 30 seconds. This stretch can be repeated 1 to 3 times a day.



In addition, long periods of shoulder stabilization while holding onto the handle bars can cause the muscles around your shoulder blades to become sore (Rhomboids, middle, and lower trapezius muscles). Try to loosen/relax your grip a bit, and relax your shoulder blades as well. You can try anti-vibration tape around your handle bars and change hand position occasionally throughout your ride. The hand holds are the top of the bars, front of the bars and the bottom of the bars.

During the off season, perform the doorway stretch described at right and add cable column pull downs and rows to your exercise regiment to keep these muscles strong along with increased endurance. You will need that during the riding season, and this will also address postural issues associated with cycling!

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### Doorway stretch

This is where you put both of your forearms onto the door frame, step through the doorway with one foot and lean forward slowly, stretching out the pectoral muscles. Hold for 30 seconds. This stretch can be repeated 1 to 2 times a day.



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### Shoulder stretch

To stretch out the right shoulder, move your arm across your chest. With your left hand, grab the right arm just above the elbow and slowly pull your arm over to the left side until you feel a good stretch. Hold this stretch for up to 30 seconds. This stretch can be repeated 1 to 2 times a day.



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## LOWER BACK PAIN

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Low Back Pain can be attributed to high frequency and long durations of riding, in an aggressive position. In addition, the back pain can be attributed to not moving into a different position at times and/or weak abdominal strength.

### ***Bike fit***

See bike fit above, in the cervical and upper back pain paragraph.

### ***Staying fit***

While in a flexed position for long periods of time there are a few things you can do to alleviate your low back pain. When you get off of your bike stand straight up and then slowly begin to extend the spine by bending backwards, hold for about 10 seconds and repeat 2-3 times. Also, the position that we are in while cycling does not promote core strength. So in the off season and during the riding season, be sure to incorporate core strengthening exercises into your routine.

### **Pelvic tilts**

While lying on your back and both knees bent, place your index and middle fingers on the front of your pelvis. Begin to push the small of your back down into the floor, while tightening your lower abdominal muscles. Your pelvis will rock upward during this movement. You can repeat these for up to 3 sets until fatigue.



### **Segmental bridges**

While lying on your back and both knees bent, initiate the pelvic tilt described above and then continue to move up one vertebra at a time until you have moved into a bridged position. As you begin to move back down, initiate your movement from the upper most vertebrae on the floor and lower yourself back down one vertebra at a time until you roll back out of the pelvic tilt. You can repeat these for up to 3 sets until you fatigue.



### **Crunches and/or sit ups**

With your hands on your chest or behind your head, initiate an abdominal contraction, lifting up the head and shoulders off of the floor; and slowly lower your shoulders back to the ground. You can hold the crunch for ~5 seconds. Repeat until you fatigue performing 2-3 sets. Sit ups will work your abs very well too, and will engage your hip flexors, strengthening them as well. Have someone hold onto your legs and feet for assistance.



### **Hamstring stretches**

The hamstring stretch described here is for the rider who may have low back pain and bending forward is painful. Lying on your back, raise your leg up with your hands, keeping the knee straight. Hold this stretch for 30-60 seconds. You can also use a yoga belt or karate belt to assist you in raising your leg. The belt would go around your foot and pull the rope with both hands.





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## INJURIES TO THE LOWER EXTREMITIES

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Injuries to the lower extremities, associated with cycling, are strains of the quadriceps, hamstring, and calf muscles, along with overuse (tendinitis) of the Achilles and patella tendons.

### ***Bike Adjustments***

Overuse of the calf muscle and Achilles tendon can cause pain behind the lower part of your leg and behind the ankle, and can be attributed to a seat that is adjusted too high. This will cause you to reach for your pedal, forcing the calf muscle to contract on a constant basis. Lower your seat to a point so that your knee has a slight bend in it at the bottom of the pedal stroke, and this will allow the calf muscle and tendon to relax a lot more during your rides. Lowering your seat will also help alleviate saddle sores.

For patella tendon pain, located just below your kneecap, check that seat height! If the seat is too low, this causes the knee to flex more causing the quads to work harder and the gluts to work less. This increased angle will also increase pressure on the patella and femoral joint surfaces, which can cause joint pain in the knee. Another adjustment you can make for patella tendinitis while cycling is to lower the gear(s) down a bit, which will increase your cadence and decrease the stress in the knee area.

### ***Knee angle adjustment***

There are several methods of adjusting saddle height and the method described is the LeMond method, which works very well. While sitting on the saddle and your foot on the pedal, your knee angle should be between 25-35 deg., with 25 deg. being optimal for most riders. Be sure that the pedal is at the bottom of the down stroke when you check this angle. The angle can be checked with an inclinometer or goniometer. There are also apps available, for your smart phones, that check these types of angles. Place the side of your phone in line with your thigh to check the angle. You will need someone to measure the angle for you, while you are on the bike.

### ***Stretches for the lower extremities***

Hold these stretches for 30 to 60 seconds each. If you can't hold the stretch for 30 seconds, you are probably pulling too hard.

#### **Quad stretch**

Standing up straight, raise one leg up with your hand towards the buttocks. Keep your leg straight and don't lean forward, stay straight. Hold the stretch for 30 seconds. If your balance isn't that good, hold onto a stable surface to prevent falls.



#### **Hip flexor (Psoas) stretch**

Kneeling down, begin to lean forward putting the lower leg's hip flexor muscles on stretch. If you want more of a stretch, reach for the back foot and bend the knee until you feel a good stretch and can tolerate it for 30 seconds.



*Stretches for the lower extremities continued on next page*

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## Stretches for the lower extremities continued

### Hamstring stretch

Several ways are shown to stretch your hamstrings. Hold these stretches for 30 seconds. Bouncing a stretch may increase your chance of straining the muscle.



### Piriformis / pigeon stretch

The first stretch is a piriformis stretch. Place one foot over the other thigh. Reach behind your leg with both hands and begin to lightly pull towards your chest. You will feel a stretch in the buttocks area. Hold for 30 seconds. The second stretch shown is a pigeon stretch. This will stretch the gluteus muscles on one side and the hip flexors on the back leg. As shown, place your left leg in front with your foot in front of you and position your right leg behind you, keeping it inline with your body, not out to the side. Hold this stretch for up to 30 seconds and repeat on the other side.



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## TIPS

- Train during the off season to strengthen the essential muscles for cycling.
- While cycling, be sure to keep these muscles flexible and give your body time to rest.
- Eat good whole foods, protein, produce, and be sure to stay hydrated!

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