

# PERFORMANCE CYCLING CONDITIONING

A NEWSLETTER DEDICATED TO IMPROVING CYCLISTS

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## The Importance of Gluteus Medius in the Cyclist

*Bernard Condevaux, PT, SCS, CSCS, Select Physical Therapy, Colorado Springs/Denver*

*Bernard is a Board Certified Sports Clinical Specialist and Physical Therapist, a Certified Strength and Conditioning Specialist, a member of the USA Cycling Medical Advisory Team and the USA Cycling Medical Provider Network. He has been directly involved in cycling since 1992, and in international cycling since 1993. Bernard worked his first Mountain Bike World Championship in Métabief, France with the New Zealand national team and the 1994 MTB Worlds with the French national team as a team liaison, assistant trainer and translator. Since 1995, he has worked with the USA National Team at every MTB World Championship, as well as multiple Pan American Championship and CycloCross World Championships. He has been a member of the United States Olympic Sports Medicine team, working with Cycling at the 2003, 2007, 2011, and 2015 Pan Am Games, as well as the 2004, 2008, and 2012 Olympic Games. He frequently works with the Etixx-Quick Step (formerly Omega Pharma-Quick Step) Professional Cycling Team, as well as with numerous other professional cyclists. He has presented numerous lectures on various aspects of cycling injuries and rehabilitation, in addition to other sports and orthopedic topics. He has written the chapter on cycling injuries in the Encyclopedia of Sports Medicine (Sage Publishing, 2011).*



Bernard Condevaux

*In addition to cycling, Bernard was a consultant with the Colorado Rockies major league baseball team from 1993-2000, and the Colorado Avalanche professional hockey club from 1995-2003.*

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thletes are repeatedly educated to strengthen their “core”. What exactly is the “core”? The “core” is the muscles of the abdomen, torso, and trunk, including the transversus abdominus (TrA), rectus abdominus, internal and external obliques, lats, erector spinae and all the small stabilizer muscles between the vertebrae. It is the key link between shoulder and hip stability. These muscles often get shut off because of back injury or pain and don’t get turned back on, resulting in long-term back problems. Engaging these muscles is not something that most people do consciously, so it is important to learn how to fire these muscles to work in tandem with the shoulder and hip muscles. The main core target is the TrA: it is (or SHOULD be) the first muscle recruited every time you move.

For a cyclist, the hips and pelvis are critical, too. If you think of the body as a bike wheel, then the pelvis/hips are the hub, and the legs are the spokes: if there is a problem with the hub, the spokes can’t function properly. Many injuries are a result of tightness in the hip and a lack of hip stability: when the body doesn’t recruit the proper muscles in the pelvic region, it puts more stress on other areas, which overcompensate and become injured. When there is proper hip/pelvic stability, the legs are allowed to lift, rotate, and drive with full range of motion and in the most effective pattern, as in the pedal stroke.

The focus of this article is on the hub of our wheel, i.e. the hips, and in particular, the gluteus medius muscle. I have treated and consulted with many cyclists in my career, from recreational to professional, and have found weakness in this key area a common factor in back pain, knee pain, ITB syndrome, loss of power, and time off the bike. Awareness of stability has certainly increased, especially in the area of the abdominal core. Changes in the bike have contributed to the increased need for hip stability, though... in particular, the narrower bottom brackets on many road and TT bikes.

There are many exercises that can target this muscle in addition to gluteus maximus, as the superior portion of the maximus also acts as a hip abductor and can control excessive hip adduction and internal rotation during weight-bearing activities. In terms

of cycling efficiency, it is important to also minimize recruitment of the tensor fascia lata (TFL), which functions as a hip abductor, but also internally rotates the hip. When weakness is present in the hip abductors, a common compensatory pattern to stabilize the hip during effort is internal rotation and adduction of the hip: in essence pulling the hip towards midline to offer stability. The problem with this is that it leads to increased recruitment of the TFL, which through its attachments to the ITB can result in lateral tracking of the patella (resulting in knee pain), potential restricted blood flow in the front of the hip (power loss), increased tension in the ITB, and altered mechanics at the back (back pain), and inhibition of the gluteal muscles.

### What and Where is the Gluteus Medius?

The gluteus medius is a muscle in the upper anterior buttock that originates at the ilium. It inserts onto the femur at the greater trochanter. To find the muscle, feel for your greater trochanter. The trochanter is the bony protuberance on the outside of your hip. Run your finger straight up towards your pelvis about an inch or two. To confirm, stand on one leg (the side you are feeling) and you should feel that muscle tighten up. When you stand on the opposite side, it should relax.

The medius works to abduct your leg. If you pull your leg away in a sideways motion you are firing the gluteus medius muscle. However, in sports, the main purpose of the muscle is to stabilize your pelvis when your opposite leg is off the ground or unloaded. In runners, weakness of the gluteus medius would cause the left hip to drop when standing on the right leg. In cyclists, the weak side will internally rotate and adduct more during the power phase (12:00 to 5:00), but also generally lead to that side coming closer to the top tube throughout the pedal stroke. This often leads to lower back muscles such as the quadratus lumborum attempting to stabilize the pelvis, resulting in opposite side back pain.

A simple way to test if the muscle is weak is to have the athlete perform lat-eral step ups: does the non-weight bearing hip off the step drop? If so, there is weakness in the weight-bearing side gluteus medius.

### Strengthening the Gluteus Medius

So, the coach or athlete has determined there is weakness in the gluteus medius... how best to strengthen it without recruiting TFL, or other compensatory muscle groups, and still be appropriate for cycling? Selkowitz, Beneck, and Powers in the February 2013 JOSPT researched which exercises were best to target the gluteus medius without activating the TFL. They used EMG signals from the gluteus medius, superior gluteus maximus, and TFL muscles using fine-wire electrodes as subjects performed 11 different exercises.

The results showed that to preferentially activate the gluteal muscles while minimizing TFL activation, the best exercises were the clam, sidestep, unilateral bridge, and quadruped hip extension exercises. I have incorporated these exercises with excellent results, with a focus on optimizing them for cyclists.

Incorporating these exercises into a cyclist's off-season strengthening pro-gram, as well as during in-season core sessions, will prevent (or alleviate) many causes of LBP and knee pain during extended saddle time, as well as improve pedaling mechanics, and as a result, potentially power, too. They should not replace abdominal core exercises, they should supplement them.

### Clams

Lying on your right side, knees bent to 60 degrees, feet together. Contract your TrA then open your legs like a clam. Go as far as you can without your low back rotating back. Perform 2 sets of 30 reps (done slowly), and then switch sides. KEYS: Do not let your low back roll back: you are trying to dissociate hip and low back movement. Form is very important. TO PRO-GRESS: add a band around your legs (above knee) for resistance.

**Chain Link:** Click [HERE](#) for YouTube demo



### Bridge with Knee Extension

Lying on your back with knees bent, heels on ground, and arms at your side. Raise your butt off the floor until hips, knees, and shoulders are in a straight line. Hold that position while you slowly straighten your left knee. Hold for 2-5 seconds, then bring left foot to the ground and straighten right knee. Do not let the hip on the straight knee side drop! Tighten opposite gluteus medius to prevent this (right glute for left hip, etc.). Start with 20 reps, and progress to 2-3 minutes continuous. KEYS: Initiate movement with your glutes, keep your TrA contracted, and do not arch your back. Hips must stay level: if you can't hold hips level, rest and then start again.

**Chain Link:** Click [HERE](#) for YouTube demo

### Band Side Steps

Stand in a 1/4 squat position, with feet hip width apart and band around legs (above knees). Take 15 short steps to the right, and then return with 15 steps to the left. Start with 2 sets. KEYS: Keep chest up and back flat. Keep your knees apart and over your toes, with tension in the band at all times. Do not step too far out to the side.

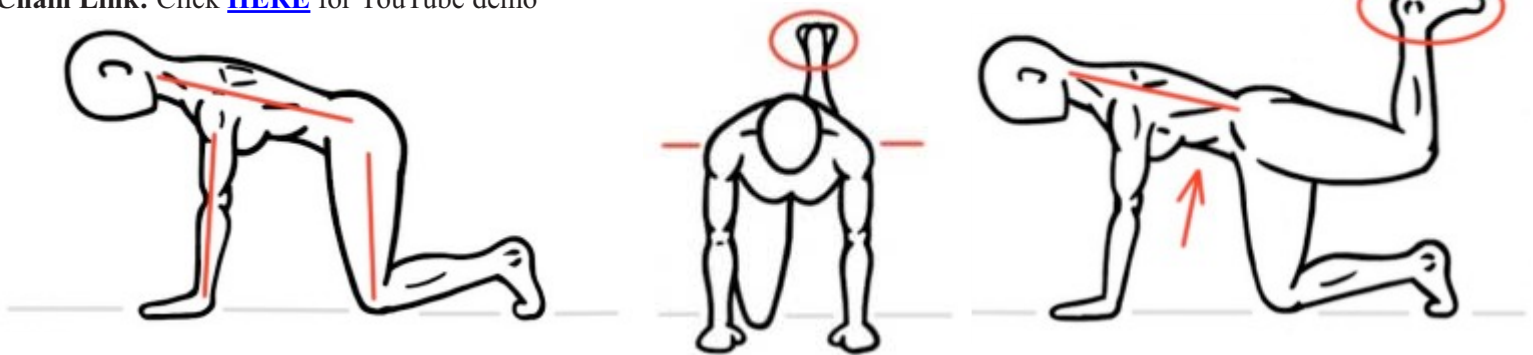
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### Quadruped Hip Extension

Start in a quadruped position (on your hands and knees). Contract your TrA to stabilize the spine. Focus on contracting the left glute without tightening your back (you may need to feel the muscles to make sure you have it right). Slowly lift the left leg up while keeping a 90-degree bend at the knee until your left thigh is nearly parallel with the ground. Slowly lower to the start position and repeat 15 reps per side. To increase the intensity of this exercise, add an ankle weight or use resisted bands. Note: Performing this exercise on a Pilates Trapeze Table (if possible) is optimal for isolating glutes. KEYS: Do not let back sag. Keep hips square (do not let weight-bearing hip angle inward). Initiate movement from glute, and only go to parallel (to avoid recruiting quadratus lumborum and back extensors).

**Chain Link:** Click [HERE](#) for YouTube demo



In addition to strengthening, a lack of flexibility through the hips (ham-string, hip flexors, hip adductors, gluteus muscles) can contribute to compensatory movement and low back pain, so it is important to address this, too. Just remember that stretches should be pain-free, and you should stretch only to the point of mild stretch and hold that for a prescribed time. Flexibility improves gradually: if you overstretch, the muscles will actually tighten to prevent potential injury (if you are interested in physiology, read about the Golgi Tendon Organ and muscle spindle). If you feel discomfort, either you are stretching too hard/far, or you aren't ready for that stretch...have a coach, trainer, or therapist check your form.

Chain Link: [bcondevaux@gmail.com](mailto:bcondevaux@gmail.com)