

# The Importance of Core Strength In Cycling

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Cyclists spend many hours in the same position while pushing hundreds of watts through the pedals. When riding, some muscles will be used to hold the Cyclist in position, while others are working to generate power through the pedals. When looking at core strength in cycling, the focus should be on effectively recruiting core stability and power generating muscles in order to be more effective on the bike, while decreasing the chance of overuse injury.



When the cyclist cannot hold a stable lumbo-pelvic position on the saddle, excessive side to side movement is both inefficient and level the athlete susceptible to overuse injuries. When cyclists effectively initiate the correct muscles for both power generation and stabilisation, they create a stable base for the powerful gluteals, quads and hamstrings to work off, while protecting the back and knees from injury. Use of deep back muscles and deep hip stabilisers overlayed with effective gluteal activation means the athlete will cycle efficiently and optimise power output.

Cyclists who use the incorrect muscles for stabilisation and power production will often risk back, hip and knee pain and injury. Common cycling injuries that can develop from a lack of core stability and /or lack of effective recruitment of the gluteals include:

- Low back pain from lack of support from stabilising muscles. In the cycling position if back muscles are not working, then over time the disc, nerves and ligaments will become stressed and possibly irritated.
- Hip and groin pain from excessive side to side movement of the pelvis on the bike seat.
- Sciatic nerve pain due to excessive movement through the lumbo pelvic region and irritation of spinal nerve.
- Excessive use of hamstrings and lateral thigh muscles to compensate for lack of gluteal strength layered over a stable pelvic base.
- Excessive use of quadriceps and hip flexors to compensate for lack of hip and spinal extensor strength.

- Stiffness and pain in the mid-back and neck regions as the cyclist tries to stabilise the body via the arm muscles and handlebars.
- Pins and needles in the hands, and hand problems from stabilising and weight bearing through the arms.

When building cycling core strength, it is important to also focus on the deep stabilisers of the spine while implementing specific gluteal strengthening exercises. A poor bike setup may also cause the spine to be quite flexed as cyclists spend many hours in hip flexion. Over the long term, a curved spine on a bike will result in muscles working ineffectively (some too little, others too much), spinal stability muscles will fatigue much faster, often causing pain and injury in other muscles and parts of the body which are required to compensate.

Properly training the mind and the body to correctly use muscles requires a specifically focused program. Initially the deep back and deep hip stabilisers are recruited in isolation to improve their recruitment and build stabiliser muscle endurance. Once the connection between the brain and the muscle has been developed, and Type 1 muscle fibre endurance is developed, the exercises become cycle specific in joint range and movement patterns. Such a program will require doing specific exercises off the bike initially for 20-30 minutes, 3-4 times per week. But the reward will far outweigh the effort once the body and muscles work correctly on the bike.

Not only will there be less pain on those long rides but it is likely that both pedal action and endurance will significantly improve. The correct bike set up however is also vital to optimal performance.

## A sample of exercises to Optimise Cycling Core Muscle recruitment

### MULTIFIDUS

Grade 1



Sit on the ball with feet shoulder width apart.

To commence ensure you are sitting in the neutral spine position and gently draw your shoulder blades toward each other. Try to gently draw your pelvic floor up and your lower stomach in towards your spine. You will be shown a variety of ways to make your deep back muscles work in the class. Remember what works for you and tense the muscles at the base of your spine. They may well be a little contracted as they help you to sit up. Hold this contraction for 10-20 seconds as you continue to breathe.

### GLUT MAX Grade 1 in hip extension

Grade 1



Lie on your stomach with your knees bent and lower legs resting against the ball.

Gently tense your bottom muscles without moving and keeping the back of your legs (hamstrings) relaxed. Hold for

10 seconds. It may take a while to be able to relax the back of your legs but it will come with practice.

### **GLUT MAX Grade1 in hip flexion**

**Grade 1**



Lie on your back with the ball against the wall and one foot resting on the ball knee bent. The other foot flat on the floor with knee bent. Activate your deep stabilising muscles. Gently contract your bottom muscle and push the ball into the wall trying to keep the back of your thigh as relaxed as possible. It helps to think about trying to push the ball away by straightening from your hip rather than your knee.

### **ECCENTRIC CALF**

**Grade 2**



Standing on a step with the front of your foot on the step, knees straight and holding onto something to steady yourself. Come up onto your toes and then slowly drop down so that your heels are lower than the step. Aim to maintain the inside arch of your foot throughout the exercise and make the movement slow and controlled. During this exercise it is a good time to practice drawing up with your pelvic floor on the way up and keep it on as you lower down.

### **GLUT MAX, GLUT MED, PF, TA, MULTIFIDUS**

**Grade 2**



Lie on your back with your knees bent and feet flat on the floor. Put your fingers on your hip bones.

Activate your deep stabilising muscles. Imagine you are gently drawing your hips into their sockets then drawing the two hip bones together. As you do this, you should feel your bottom muscles tense gently. Use your bottom muscles to lift your hips off the floor. Don't tuck your pelvis under or flatten your back into the floor and try to keep your legs as relaxed as possible.

### **GLUT MED overlaying lumbo-pelvic stability**

**Grade 2**



Sitting on the ball with your knees wider than hip width apart and hands placed on the outside on the outside of your knees.

Think about flaring your sitting bones away from each other and then gently push into your hands not letting legs actually move. Slowly move from side to side on the ball, keeping your hips and shoulders in line.

**GLUT MAX, GLUT MED overlaying lumbo-pelvic stability      Grade 2-3**



body side to side

Lie on your back on the ball with your knees bent and feet flat on the floor.

Gently activate your deep stabilising muscles. Make sure you keep your pelvis level. Try to use your bottom muscles to hold you up while keeping the back of your legs relaxed.

If you have found it helpful in the past, use the “U” cue of drawing your hip bones into their sockets and then towards each other. Progress to moving ball and upper

**DYNAMIC LUNGES      Grade 3**



Take a large step forward and come into a lunge by bending through both hips and knees. As you straighten up return to the front leg to the starting position and continue to lunge by swapping legs each time. Try to be continually moving in a controlled manner.

**DYNAMIC GLUT MED overlaying lumbo-pelvic stability      Grade 4**



1 Legged stance, put ball on wall at thigh level with foot closest to wall off ground. Bend forward at hips holding onto chair, leg movement back & forth.

**GLUTEALS/LOWER LIMB MUCLES building strength      Grade 4**



Progress speed of hip extension. Initially concentrate on activation of gluteal and spinal stability muscles