

Best Exercises for the Gluteus Medius

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Disclaimer

This is not medical advice. If you are experiencing pain, use your best judgment and seek out a physical therapist by visiting www.moveforwardpt.com.

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Image made using *Essential Anatomy* application

Biomechanics are a key component to injury prevention, regardless of activity. As such, these principles are generalizable to most lower extremity (closed kinetic chain) athletics, cycling included. Looking at the knee specifically, many injuries are correlated with knee valgus [Johnston], or collapsing of the knee inwards during load acceptance. This can lead to increased strain on the iliotibial band, maltracking of the patella, and increased joint stresses [Jonston, Geisler]. Consequently, limiting knee valgus when pedaling could be a critical step to reducing knee injuries.

The post on bike fit for ITBS addressed the positional alterations that can be used to improve knee biomechanics. Muscular input however, is a critical component in controlling knee valgus. Many studies point to limiting femoral adduction and internal rotation, therefore giving emphasis on strengthening their antagonists (hip abductors and external rotators). This post focuses on the best exercises for an important hip abductor, the gluteus medius.

The following table summarizes the results of three different studies that looked at the percent maximal voluntary isometric contraction (%MVIC) of different therapeutic exercises. The higher the MVIC value, the more the gluteus medius is working in that particular exercise. In addition to the studies included in the table, Stastny et al showed a 90% MVIC of the gluteus medius with

lunges where subjects held a 25kg dumbbell in their opposite hand [Stastny]. This would make it the second strongest exercise.

Exercises to Strengthen the Gluteus Medius Muscle (%MVC)				
Exercise condition	Boren et al, 2011	Bolgia et al, 2005	Destefano et al, 2009	% mean MVC (or MVIC)
Side plank with abduction	103.11			103.11
Front plank with Hip ext	75.13			75.13
Single limb squat	82.26		64	73.13
Side-lying hip abduction	62.91	42	81	61.97
Lateral Band Walk			61	61
Lateral step-up	59.87			59.87
Skater squat	59.84			59.84
Pelvic Drop	58.43	57		57.7
Single limb deadlift			58	58
Hip circumduction, stable	57.39			57.39
Dynamic Leg Swing	57.30			57.30
Sideways hop			57	57
Sing limb deadlift	56.08			56.08
Single limb bridge, stable	54.99			54.99
Forward step-up	54.62			54.62
Clamshell	Prog 1: 47.23 Prog 2: 62.45 Prog 3: 67.63 Prog 4: 76.88 Avg: 63.5		30degrees flex: 40 60degrees flex: 38 Avg: 39	51.25
Transverse hop			48	48
Single limb bridge, unstable	47.29			47.29
Quadruped hip ext, DOM	46.67			46.67
Weight bearing (WB) with flexion left hip abduction		46		46
Forward hop			45	45
Gluteal squeeze	43.72			43.72
Forward Lunge			42	42
WB left hip abduction		42		42
Sideways Lunge			39	39
Hip circumduction, unstable	37.88			37.88
NWB standing hip abduction		33		33
NWB standing flexed hip abduction		28		28
Quadruped hip ext, non-DOM	22.03			22.03

Including some of the top exercises in your strengthening routine could be the first step towards improving your biomechanics on the bike. Most require little to no equipment to perform and therefore are easy to do at home. If a certain exercise is too difficult to perform (trust me, I'm struggling through some of these in the video), try some of the exercises with lower %MVICs and work your way up.

Sources

Boren, Kristen. "Electromyographic Analysis of Gluteus Medius and Gluteus Maximus During Rehabilitation Exercises." *International Journal of Sports Physical Therapy*, 2011.

Bolgia, Lori A., and Timothy L. Uhl. "Electromyographic Analysis of Hip Rehabilitation Exercises in a Group of Healthy Subjects." *Journal of Orthopaedic and Sports Physical Therapy*, 2005.

Distefano, Lindsay J., et al. "Gluteal Muscle Activation During Common Therapeutic Exercises." *Journal of Orthopaedic and Sports Physical Therapy*, 2009.

Stastny, Petr, et al. "Does the Dumbbell Carrying Position Change the Muscle Activity in Split Squats and Walking Lunges?" *Journal of Strength and Conditioning Research*, 2015.