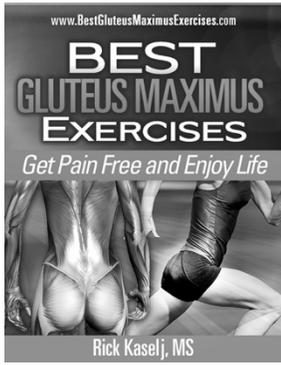


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My Story

Rick Kaselj

- BSc - 1997
- MS - 2008 / RC
- Work - physio, studio, gym, rehab
- Courses - live, webinars
- Writing - books, manuals
- Blog - ExercisesForInjuries.com

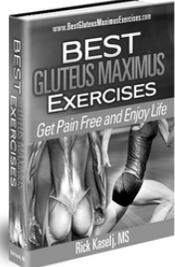


Rick Hiking 4300 km / 5 months from Mexico to Canada

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Presentation Objectives

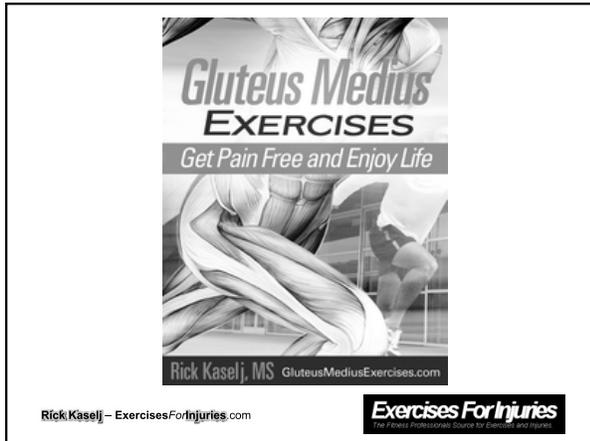


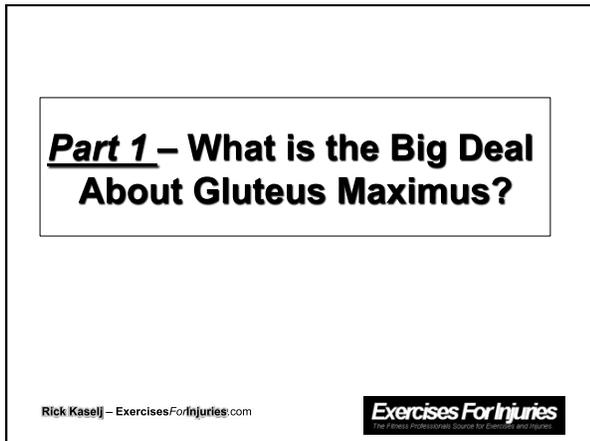
- **Part 1** - What is the Big Deal About Gluteus Maximus?
- **Part 2** - Exercise Considerations for Gluteus Maximus
- **Part 3** - 12-Week (3 Stage) Exercise Program Targeting Gluteus Maximus

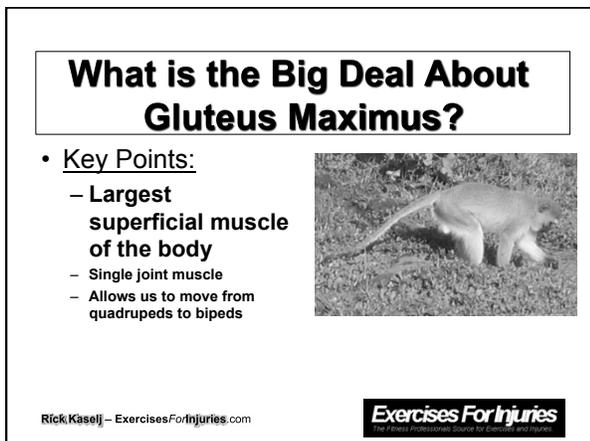
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Best Gluteus Maximus Exercises

What is the Big Deal About Gluteus Maximus?



- Key Role In:
 - Lifting
 - Walking
 - Running
 - Pelvis stability

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What is the Big Deal About Gluteus Maximus?



- What can poor pelvis stability lead to:
 - Tibial stress fracture
 - Low back pain
 - Iliotibial band friction syndrome
 - Anterior cruciate ligament injury
 - Patellofemoral pathology
 - Boren 2011

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What is the Big Deal About Gluteus Maximus?

- Key Role In:
 - SI Joint stability
 - Provides stability when activated
 - Strength for lifting
 - When performing hip extension
 - Control of gait



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What is the Big Deal About Gluteus Maximus?

- What Effect Does Ankle Sprains Have on Gluteus Maximus?
 - patients suffering from ankle sprain injuries have been shown to have reduced activation levels of gluteus maximus
 - Bullock-Saxton 1994

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What is the Big Deal About Gluteus Maximus?

- What if There is Poor Activation of Gluteus Maximus?
 - pelvis stability maybe compromised
 - compensations in lower back and SI joint
 - Wilson 2005

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What is the Big Deal About Gluteus Maximus?

- What About Back Pain and Gluteus Maximus?
 - Those with LBP often avoid painful movements and therefore have reduced activity of gluteus maximus and decrease muscle endurance through disuse
 - Wilson 2005

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Best Gluteus Maximus Exercises

Key Structures Involved in Gluteus Maximus Exercises



- **Greatest EMG Occurred with:**
 - Resisted hip extension, external rotation and knee extension
 - Wilson 2005

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Key Structures Involved in Gluteus Maximus Exercises

- Gluteus Maximus
 - *Origin* – posterior gluteal line of the inner upper ilium, posterior surface of the lower part of the sacrum, side of the coccyx

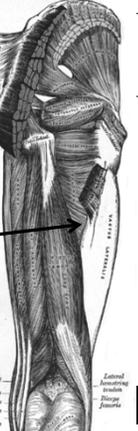


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Key Structures Involved in Gluteus Maximus Exercises

- Gluteus Maximus
 - *Inserts* – (upper fibers) passes across the greater trochanter and inserts into the iliotibial band of the fascia lata & (lower fibers) deeper fibers insert into the gluteal tuberosity between the vastus lateralis and adductor magnus



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Best Gluteus Maximus Exercises





Key Structures Involved in Gluteus Maximus Exercises

- Gluteus Maximus
 - *Inserts* - (upper fibers) passes across the greater trochanter and inserts into the iliotibial band of the fascia lata &

Gluteus maximus Gluteus medius

Iliotibial tract

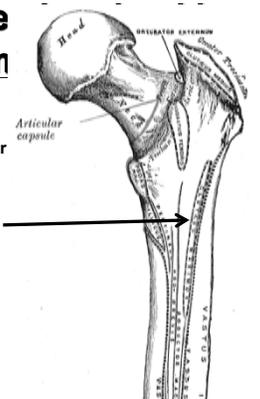
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Key Structure Gluteus Maxim

- Gluteus Maximus
 - **Inserts** - & (lower fibers) deeper fibers insert into the gluteal tuberosity between the vastus lateralis and adductor magnus



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Key Structures Involved in Gluteus Maximus Exercises



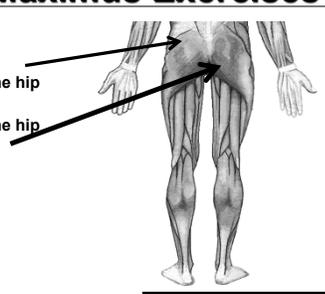
- Gluteus Maximus
 - **Primary** - hip extension and external rotation of the hip (lateral rotation)
 - **Secondary** -
 - Stabilizes the pelvis
 - Moving the body back into an erect position
 - Steadies the femur due its connection to IT band
 - Stabilizes the knee in extension

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Key Structures Involved in Gluteus Maximus Exercises

- Gluteus Maximus
 - **Upper fibres** - abduction of the hip
 - **Lower fibres** - adduction of the hip



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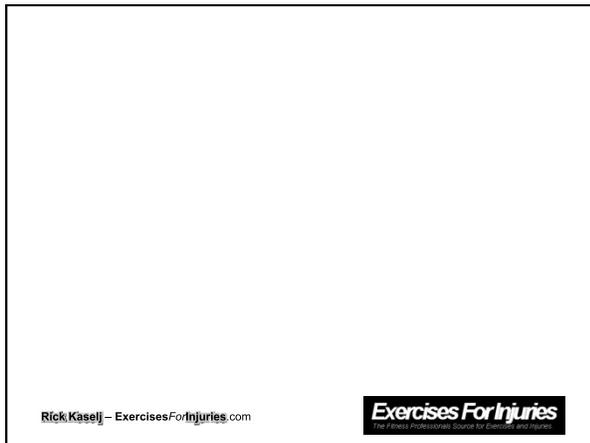
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Assessing Gluteus Maximus



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Part 2 - Exercise Considerations for Gluteus Maximus

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Best Gluteus Maximus Exercises

Important Training Technique Considerations for Gluteus Maximus

- **In the Older Adult, What is Better a Chair Squat or Bodyweight Squat for Gluteus Maximus?**
 - In older adults (70 to 85) a squat into a chair places greater demand on the hip extensors and greater hip flexion, whereas bodyweight squat places greater demand on the knee extensors and ankle plantar flexors plus knee and ankle flexion (dorsiflexion).
 - Flanagan 2003

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Important Training Technique Considerations for Gluteus Maximus

- **What Targets Gluteus Maximus Better, a Forward or Backwards Trunk Position During a Lunge Exercise?**
 - **Lunge Trunk Forward** - increases were noted in peak hip flexion angle, hip extensor and ankle plantar flexor impulse, as well as gluteus maximus and biceps femoris when compared to the no-lean lunge condition.
 - **Lunge Trunk Extended** - increase was noted in peak ankle dorsiflexion and a significant decrease was noted in peak hip flexion angle compared to the no lean lunge.
 - Farrokhi 2008

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Important Training Technique Considerations for Gluteus Maximus

- **Of 12 Common Hip Rehab Exercises, which One Targets Gluteus Maximus the Best?**
 - **Gluteus maximus and medius had similar activation for:**
 - single-limb squat
 - single-limb deadlift
 - **Gluteus maximus had greatest activation during:**
 - single-limb squat
 - single-limb deadlift
 - Distefano 2009

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Best Gluteus Maximus Exercises

Important Training Technique Considerations for Gluteus Maximus

- Of 12 Common Hip Rehab Exercise, which One Targets Gluteus Maximus the Best?
 - Gluteus medius activity was significantly greater during:
 - side-lying hip abduction (mean +/- SD, 81% +/- 42% MVIC)
 - lunges (48% +/- 21% MVIC)
 - hop (48% +/- 25% MVIC) exercises
 - 2 types of hip clam exercises(40% +/- 38% MVIC, 38% +/- 29% MVIC)
 - Distefano 2009

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Important Training Technique Considerations for Gluteus Maximus

- What about Open Kinetic or Closed Kinetic Exercises for Gluteus Maximus?
 - Closed is better than open
 - Open has a rehabilitation role
 - In the program you will see a mix
 - Wilson 2005

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Important Training Technique Considerations for Gluteus Maximus

- What about the Squat and Gluteus Maximus?
 - Most active during the ascent phase(2.25 times greater) and during 90 to 60 degrees of hip flexion
 - With high loads there is greater gluteus maximus activation with a wide stance squat compared to a narrow stance
 - Wilson 2005

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Best Gluteus Maximus Exercises

Important Training Technique Considerations for Gluteus Maximus

- What about the Running and Gluteus Maximus?
 - more gluteus maximus activation was seen with incline running at 4.5 m/s at 30% incline compared to level running
 - Wilson 2005

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Important Training Technique Considerations for Gluteus Maximus

- What Activates Gluteus Maximus Better, Dominant Leg on the Bottom or Top During a Plank?
 - Five of the exercises recruited gluteus maximus with values greater than 70% MVIC:
 - front plank with hip extension (106% MVIC)
 - gluteal squeeze (81% MVIC)
 - side plank abduction with dominant leg on top (73% MVIC)
 - side plank abduction with dominant leg on bottom (71% MVIC)
 - single limb squat (71% MVIC).
 - Boren 2011

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Important Training Technique Considerations for Gluteus Maximus

- For Lateral Tubing Walking Where Should the Tubing Be to Target Gluteus Maximus the Best?
 - Looked at gluteal activation during 'Monster Walks' and 'Sumo Walks' with three resistance band placements (around the knees, ankles and feet)
 - Tensor fascia latae (TFL) demonstrated a progressive activation moving the band from the knee to the distal band placement, but not between the ankle and foot placements.
 - Gluteus medius demonstrated a progressive activation moving distally between band placements.
 - Gluteus maximus was preferentially activated only during the foot placement.
 - Cambridge 2012

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Important Training Technique Considerations for Gluteus Maximus

- **What had Greater Gluteus Medius Activation, Squat on a Stable or Unstable Surface?**
 - single limb squat on an Airex cushion
 - single limb squat on a firm surface
 - single limb stance on an Airex cushion
 - single limb stance on both a firm surface
 - bilateral stance
 - Krause 2009

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Important Training Technique Considerations for Gluteus Maximus

- **What happens to the muscles in the hip and back when doing lateral tubing walking with the hips neutral, internally rotated and externally rotated in the stance and moving leg?**
 - Gluteus medius average EMG activation was greater for the stance limb than moving limb
 - Erector spinae activation was greater in hip internal rotation than neutral rotation and the moving limb was greater than the stance limb.
 - Gluteus maximus EMG activation was greater for the stance limb than moving limb
 - Clinicians may wish to consider using the involved limb as the stance limb during resisted lateral band walking exercise
 - Youdas 2012

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Important Training Technique Considerations for Gluteus Maximus

- **Are Leg Lifts Good for Targeting Gluteus Maximus?**
 - Sidelying hip abduction (Gluteus Medius), sidelying hip abduction with External Rotation (TFL) and Clam Exercise (anterior hip flexors) are not good exercises for targeting Gluteus Maximus.
 - McBeth 2012

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Best Gluteus Maximus Exercises

Essential Components of an Exercise Program For Gluteus Maximus

- **What Muscle Activation Level Do We Need to do In order to Get Strength Gains in Gluteus Maximus?**
 - To obtain a significant strengthening effect, the level of activity required must exceed 66% of maximum voluntary isometric contraction (MVIC). - Wilson 2005
 - 40% of maximal voluntary isometric contraction (MVIC) is needed in order to obtain strength gains. – McBeth 2012
 - This in healthy subjects

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Essential Components of an Exercise Program For Gluteus Maximus



- **Education**
 - What is gluteus maximus?
 - What make it worse?
 - What to do about it?
 - How to do the exercise program properly?

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Part 3 – 12-Week (3 Stage) Exercise Program Targeting Gluteus Maximus

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Best Gluteus Maximus Exercises

The Exercise to DO to Improve Gluteus Maximus

	Stage 1	Stage 2	Stage 3
#1 - Activation	Wall Leg Raise	Clam Exercise with 30 Degrees of Hip Flexion	Wall Hip Abduction
#2 - Hip Extension	Single Leg Bridge	4-Point Heel Lifts	Plank with Heel Kick
#3 - Squatting	Standing Gluteus Squeeze	Standing Squat	Deadlift
#4 - Balance	Single Leg Balance	Single Leg Squat	Single Leg Deadlift
#5 - Stepping	Hop Forward	Step Ups	Lateral Step Up
#6 - Lunge	Lateral Lunge	Static Lunge with Trunk Forward	Transverse Lunge






- **#1 - Activation**
 - Wall Leg Raise (19)
 - Clam Exercise with 30 Degrees of Hip Flexion (484)
 - Wall Hip Abduction (530)



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- **#2 - Hip Extension**
 - Single Leg Bridge (531)
 - 4-Point Heel Lifts (97)
 - Plank with Heel Kick (492)



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Exercise Rehabilitation Program

- **#3 – Squatting**
 - Standing Gluteus Squeeze (486)
 - Standing Squat (205)
 - Deadlift (513)



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Exercise Rehabilitation Program



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- **#4 – Balance**
 - Single Leg Balance (810)
 - Single Leg Squat (206)
 - Single Leg Deadlift (529)



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Exercise Rehabilitation Program



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- **#5 – Stepping**
 - Hop Forward (496)
 - Step Ups (466)
 - Lateral Step Up (520)



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Exercise Rehabilitation Program



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Exercise Rehabilitation Program

- **#6 - Lunge**
 - Lateral Lunge (494)
 - Static Lunge with Trunk Forward (509)
 - Transverse Lunge (495)



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Exercise Rehabilitation Program

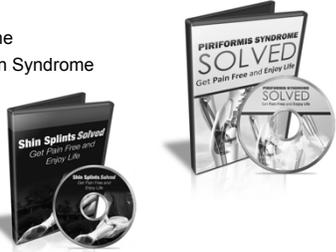


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Other Injuries

- Shin Splints
- Piriformis Syndrome
- Patellofemoral Pain Syndrome
- Meniscus Tear
- Sacroiliac Pain



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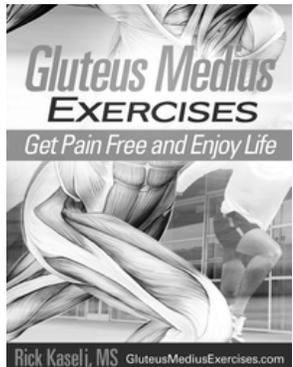
Other Injuries

- Plantar Fasciitis
- Lumbar Fusion
- Achilles Tendinitis
- Jumper's Knee
- Tennis Elbow
- Recovery Workouts



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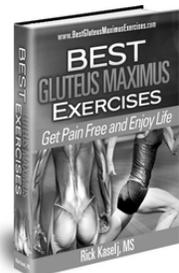
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Presentation Objectives



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- **Part 1** – What is the Big Deal About Gluteus Maximus?
- **Part 2** – Exercise Considerations for Gluteus Maximus
- **Part 3** – 12-Week (3 Stage) Exercise Program Targeting Gluteus Maximus

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Thank You

- **Send me your questions!**
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End

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