

# LATERAL HIP PAIN

## GLUTEAL TENDINOPATHY

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## Introduction

### Lateral Hip Pain – Gluteal Tendinopathy

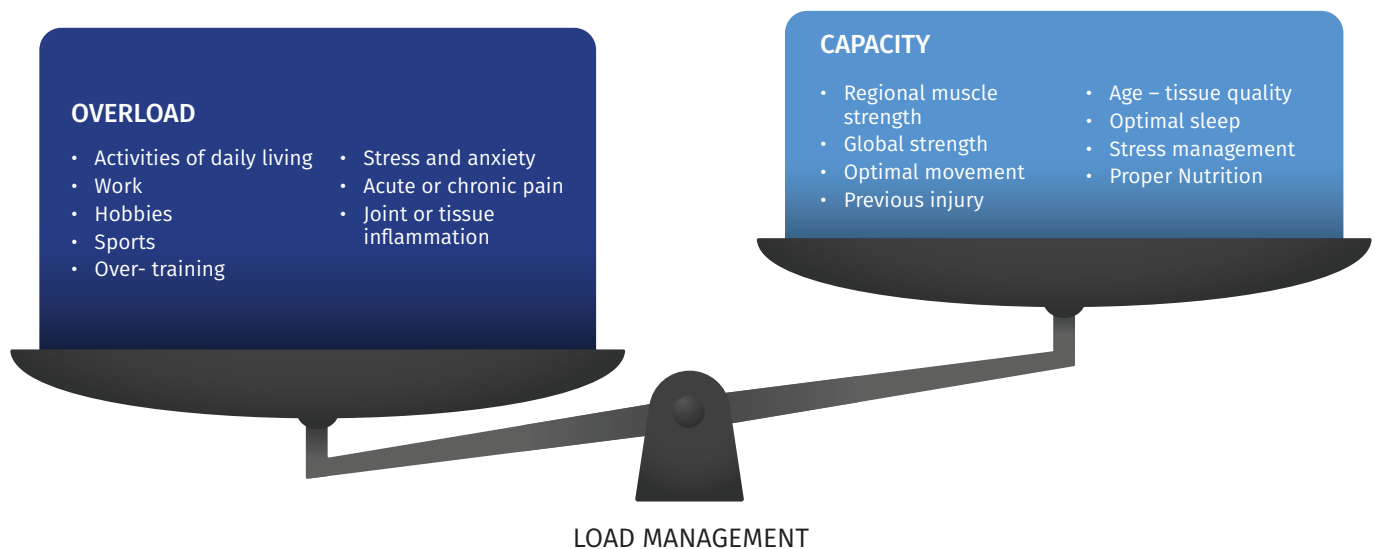
Lateral hip pain refers to pain and tenderness at the side of the hip that may radiate down the thigh. While this condition has traditionally been referred to as trochanteric bursitis or greater trochanteric pain syndrome (GTPS), gluteal tendinopathy is now accepted as the primary cause of lateral hip pain<sup>1-4</sup>. This is because ultrasound studies have found that only 10-20% of those with pain over the greater trochanter had bursal involvement with the majority being tendon related<sup>2,5</sup>. Therefore, for the purposes of this protocol, lateral hip pain +/- associated bursal pathology, will be referred to as gluteal tendinopathy.

### What is Gluteal Tendinopathy?

Gluteal Tendinopathy is the most prevalent of all lower extremity tendinopathies<sup>6</sup>. It is diagnosed when symptoms are reproduced during the following clinical tests: pressure over the greater trochanter, stretching of the gluts, resisted hip abduction and/or single leg balance<sup>7</sup>. Although it is common in both male and female athletes and non-athletes, it is most prevalent in women, affecting one in four over 50 years of age<sup>8</sup>. The pain is typically aggravated while side lying and during activities like walking, running, or climbing stairs. It often interferes with a person's sleep, activity level, and overall quality of life<sup>9</sup>. Current management of gluteal tendinopathy centers around activity modification and progressive exercise-based programs<sup>10</sup>.

### What is the cause?

The cause of tendinopathies can be multifactorial. However, the primary driver is thought to be caused by a load related issue. The condition occurs when tendons are either over-loaded<sup>11</sup> or chronically under-loaded<sup>12,13</sup> and adaptive changes occur within their architecture<sup>14-16</sup>. These changes can alter the ability of the tendon to manage stress and can reduce their load-bearing capacity<sup>12</sup>. Essentially, individuals only have so much tolerance for load and when the demand of an activity exceeds the tendons capacity, pain and dysfunction can develop. In more severe cases, there can even be tears in the deep portions of the tendon.



There is a constant balance between load and capacity in our bodies to maintain homeostasis or equilibrium. Load is imposed by various physical factors, such as prolonged standing, squatting, running, jumping, etc. As well as non-physical factors such as work, life stress and anxiety can also contribute. Capacity on the other hand, is the ability to tolerate those loads or demand on the body. It is depended on various things like age, tissue quality, strength, optimal movement, and previous injury. Proper sleep, rest and nutrition can also have a positive impact on capacity. While rest and recovery are beneficial, a sedentary lifestyle or long stretches of inactivity can reduce the capability to handle daily activities or sport demands.

## Treatment - Load Management Strategies

Evidence suggests that conditions such as gluteal tendinopathy respond positively to education and progressive exercise<sup>10</sup>. In fact, education and exercises have shown to be better than corticosteroid injection use for long term pain reduction, functional outcomes, and quality of life<sup>17</sup>. Activity modification can reduce compression on the tendon while exercise can build up the capacity to handle more load<sup>18</sup>. Treatment should focus on settling things down, followed by building capacity to tolerate more. The name of the game is “load tolerance” and the end goal is to increase the load-bearing capacity of the tendon to become more robust and resilient in the future.

### 1) Education - Activity Modification

Education regarding avoidance of potentially aggravating positions and careful titration of exercise volume are key components of rehabilitation for gluteal tendinopathy. Some helpful tips of positions and activities to modify include<sup>10</sup> (see appendix for images):

- **Sleeping** – avoid sleeping on your sore hip, Lie on your back or unaffected side with pillows between your knees
- **Stretching** – minimize gluteal and IT Band stretches where your leg is crossing midline.
- **Sitting** – avoid sitting cross legged, sit with your hips higher than your knees.
- **Standing** – minimize the time shifting your weight to one leg or “hanging on your hip”, Stand evenly on both feet.
- **Walking** – monitor your steps or distance to determine a tolerable baseline, slowly progress over time.
- **Stairs** – use the handrail on the opposite side of your sore hip to support or unload the affected structures.

Depending on age or activity level the load management strategy might differ. For example, an older or physically deconditioned individual may need to monitoring walking distance or minimize stair climbing to control symptoms. However, a higher tolerant athlete might need to temporary stop running or jumping drills<sup>19</sup>. The key is to track the load to determine a tolerable baseline and then build up over time. To maintain fitness, alternative activities such as water-based exercise and cycling could be explored. Recreational or sporting activity can usually be maintained in some form, provided the most provocative aspects of those activities are avoided or minimized<sup>10</sup>.

### 2) Exercise - Progressive Loading

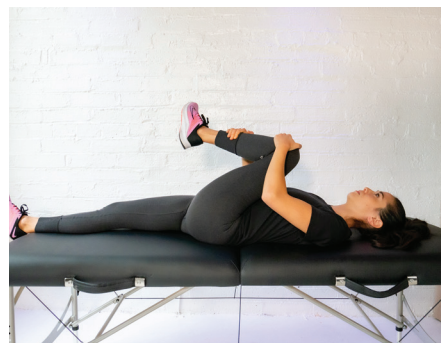
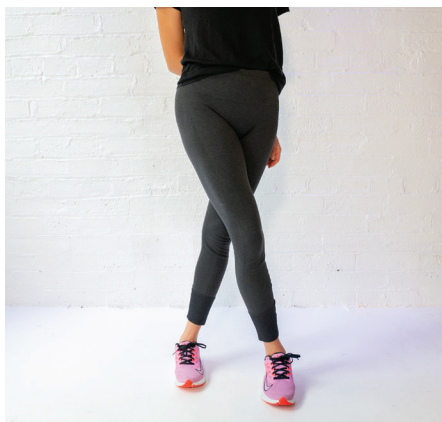
While minimizing tensile and compressive load is a key component of early recovery, initiating a progressive loading program aims to reduce pain and improve the tendon’s capacity<sup>18</sup>. Sustained Isometric exercises are one possible starting point. They are usually well tolerated and have been shown to have an analgesic effect, meaning you can experience less pain after doing the exercises<sup>20-22</sup>. The optimal isometric loading dose is yet to be determined for tendon pain, but experts suggest starting with a low intensity effort focusing on recruitment<sup>10</sup>. These early-stage exercises should be completed with minimal pain. However, to create adaptations and improve the tensile load-bearing capacity of the gluteal tendons, heavier loads are required. Low velocity, high tensile load exercise, typical of hypertrophy programs, have been shown to produce beneficial effects on tendon structure<sup>23</sup>. To achieve muscle hypertrophy, the patient must work at an adequate intensity, while minimizing exacerbation of pain. It has been suggested that 3-5/10 on the Numeric Pain Rating Scale (NPRS) is allowed during these exercises as long it eases afterwards and does not increase during the night or the following day<sup>10,24</sup>. It is safest to start slowly with a moderate level of effort and progress as tolerated over time. As the intensity builds, exercise should only be performed every second day, allowing adequate time for recovery and adaptation<sup>10</sup>. Please refer to the exercise program in the appendix for a detailed week by week plan.

	Phase 1: MANAGE <i>pain and muscle recruitment</i>	Phase 2: RESTORE <i>functional capacity</i>	Phase 3: DEVELOP <i>functional strength endurance</i>
	Day 1- 2 weeks	2 weeks – 8 weeks	8 weeks– 12 weeks
Phase Objectives	<ol style="list-style-type: none"> <li>1. Education: activity modification</li> <li>2. Decrease load + establish a baseline</li> <li>3. Introduce isometrics – analgesic</li> <li>4. Initiate local hip muscle activation and recruitment</li> <li>5. Initiate pool program</li> </ol>	<ol style="list-style-type: none"> <li>1. Address local hip strength</li> <li>2. Address core and pelvic control</li> <li>3. Retrain basic movement patterns (squat, hip hinge, split squat)</li> <li>4. Improve neuromuscular control and balance</li> </ol>	<ol style="list-style-type: none"> <li>1. Progress lower quadrant strength</li> <li>2. Progress trunk strength and pelvic stability</li> <li>3. Load and train base movement patterns (squat, hinge, lunge, step up, SL squat)</li> <li>4. Optimize neuromuscular control and balance</li> </ol>
Clinical + Functional Testing	<p><b>Hip Strength</b> Glut activation: Side lying hip abduction test, 10x</p> <p><b>Single Leg Stance for 30 seconds (SLS)</b> Establish baseline</p> <p><b>Activity Assessment</b> Establish a baseline for walking or running tolerance</p>	<p><b>Hip Strength (HHD)</b> Limb symmetry index (LSI) &gt;80% with hip abduction If a dynamometer is unavailable use Manual Muscle Testing</p> <p><b>Single Leg Stance for 30 seconds (SLS)</b> Pain &lt;3/10</p> <p><b>Activity Tolerance</b> Able to walk or run for 10 minutes with &lt;3/10 pain</p>	<p><b>Hip Strength (HHD)</b> Limb symmetry index (LSI) &gt;90% with hip abduction If dynamometer unavailable use Manual Muscle Testing</p> <p><b>Single Leg Stance for 30 seconds (SLS)</b> Pain &lt;1/10</p> <p><b>Activity Tolerance</b> ble to walk or run for 10 minutes with &lt;3/10 pain</p>
Ooutcome Measures	VISA-G	VISA-G	VISA-G

## Activity Modification

### Postural Hygiene

Avoid these high compression positions



### Sleeping Positions



#### High compression

Lowermost hip: direct compression  
Uppermost hip: flexed and adducted

#### Reduced compression

Keep affected hip up: slightly flex hips and knee  
If pain is bilateral try using an eggshell mattress

#### No compression

Slight hip abducted (knees wider than hips)

## Exercise Parameters

### Frequency

The exercises in phase 1 are to be performed every day. This is because the overall volume and intensity is low. The goal is to get comfortable with the positions and introduce load to assist with pain management and muscle recruitment. In phase 2 and 3 the exercise progressions are to be performed 3 days per week, no more than every other day. As the intensity builds the rest days allow the body to recover and adapt to the exercise stimulus.

### Intensity or Effort

The difficulty of the exercises will increase as you progress through the program. There is also an option to progress or regress our exercises to make them easier or harder based on your symptoms and level of fatigue. The goal is to find the sweet spot to challenge yourself without aggravating your symptoms. Keep in mind that the stimulus needs to be great enough to create adaptations, there is a dose response.

### Volume

The number of sets and reps combined will reflect overall volume. Volume can be modified to be easier or harder by adjusting the sets or reps of each exercise. A small recommended range will be provided in each phase, allowing you to adjust based of symptoms and level of fatigue. If you are finding the exercise too easy and exceeding the recommended reps, you should consider trying one of the exercise progression. Likewise, if you are finding an exercise too difficult or your pain is greater than the acceptable limit, try one of the exercise regressions provided.

### Tempo

Tempo tells you HOW to do the exercise. It is broken up into three phases that will instruct you on the speed of the movement and the holding time that is required.

**Example: squat 3s : 3s : 3s**

<b>INITIATION</b> From start position and take 3 seconds to lower	<b>PAUSE</b> Hold squat position for 3 sec	<b>RETURN</b> Come slowly up from squat over 3 seconds
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### What about pain with exercise?

It is acceptable to have pain < 3/10 during the exercises as long as it goes away when the exercise is finished. As you gradually increase your load monitor symptom response over the next 24 hours. Ideally you shouldn't have an increase in morning stiffness or pain the next day greater than your baseline symptoms. This can happen, but don't worry. Just take the day off and repeat the same workout to see how you respond. If your pain persists, consult with your therapist or rehab practitioner.

### Pain during exercise



**0** No Hurt



**2** Hurts a Little Bit



**4** Hurts a Little More



**6** Hurts a Even More



**8** Hurts a Whole Lot



**10** Hurts Worse

## MANAGE pain/muscle recruitment 2 weeks

### HIP OPENER

**Instructions:** Lying on your back with pelvis on the floor. Perform a slow, smooth equal opening with both legs over 3 seconds. Hold open position for 30 seconds and then control the return to midline over 3 seconds. Be sure to slowly ramp your force up and down to start and end the exercise.



Sets 3-5 | Reps 1 | Tempo 3s:30s:3s

Load Band or belt | Frequency Daily

#### Regression

- Lighter band
- Reduce hold time

#### Progression

- Thicker band
- Move from 3 to 5 sets

### BRIDGE

**Instructions:** Lying on your back with pelvis on the floor. Perform a slow, smooth lift of your hips off the ground over 3 seconds, followed by a controlled return to midline over 3 seconds. Do not arch your lower back at the top of the bridge.



Sets 3 | Reps 10-15 | Tempo 3s:0s:3s

Load Band | Frequency Daily

#### Regression

- Reduce range of lift
- Remove band

#### Progression

- Arms off ground
- Stronger band

### SIDE LIE LEG LIFT

**Instructions:** Lying on your side with the sore hip up. Perform a slow, smooth lift of your top leg over 3 seconds to about 45 degrees. Followed by a controlled return down over 3 seconds. Do not let your foot descend below your hip on the way down.



Sets 3 | Reps 10-15 | Tempo 3s:0s:3s

Load Body Weight | Frequency Daily

#### Regression

- Only do sore hip up
- Reduce lever – knee bent to 90 degrees

#### Progression

- Add band or ankle weight

## BIRD DOG

**Instructions:** Start in a 4-point crawl position with your hands under your shoulders and your knees under your hips. Slowly perform a smooth lift of your opposite arm and leg over 3 seconds. Hold for 20-30 seconds and then control the return to midline over 3 seconds. Do not arch your lower back at the top.



Sets 3 | Reps 1 | Tempo 3s:30s:3s

Load Body Weight | Frequency Daily

### Regression

- Kick back with leg only, hands down
- Narrow your base of support

### Progression

- Hover your lower foot off the ground
- Widen your base of support

## WALL SQUAT

**Instructions:** Stand with your back against the wall with your feet off the wall. Slowly slide your back down the wall over 3 seconds. Hold for 20-30 seconds and then slowly return to the start position over 3 seconds. Keep your hips, knees, and ankle in line. Do not let your knees cross your toes.



Sets 3 | Reps 1 | Tempo 3s:30s:3s

Load Body Weight | Frequency Daily

### Regression

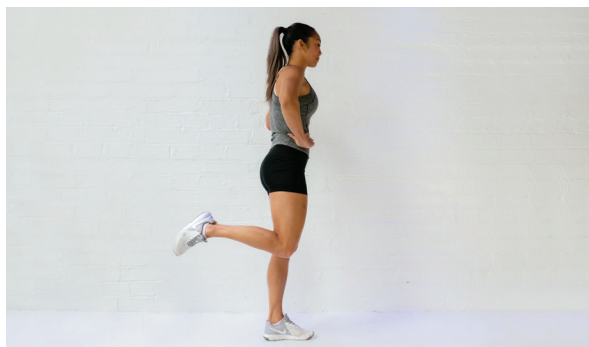
- Shallower squat

### Progression

- Add band
- Deeper squat

## SINGLE LEG BALANCE

**Instructions:** Stand beside a wall and slowly shift your weight to the outside leg over 3 seconds. Keep your pelvis level. Hold for 20-30 seconds and then slowly return to the start position over 3 seconds. Use a hand or finger closest to the wall for support if needed.



Sets 3 | Reps 1 | Tempo 3s:30s:3s

Load Body Weight | Frequency Daily

### Regression

- Wall support
- Back foot - toe touch for assisted balance

### Progression

- Remove wall support
- Eyes closed



## RESTORE Functional Capacity

4 weeks

### MODIFIED SIDE PLANK HIP OPENERS

**Instructions:** Lie on your side with a band around your knees. Stack your elbow under your shoulder and plank up between your forearm and knee. Over a 3 second count slowly lift your top knee until you feel a moderate amount of resistance on the band. Don't twist, try to stay in lateral midline. Hold for 20-30 seconds and then slowly return to the start position over 3 seconds. Use your top hand on the floor to support your weight if needed.



Sets 3 | Reps 1 | Tempo 3s:30s:3s

Load Band | Frequency Daily

#### Regression

- Remove band
- Keep knees together and hold

#### Progression

- Stronger band
- Upper leg knee straight

### SINGLE LEG BRIDGE

**Instructions:** Lying on your back with your pelvis on the floor. Lift one leg off the floor so that your hip and knee are flexed to 90 degrees. Perform a slow, smooth lift of your hips off the ground over 3 seconds driving your top knee up to the sky. Followed by a controlled return to midline over 3 seconds. Do not arch your back at the top of the bridge.



Sets 3 | Reps 10-15 | Tempo 3s:0s:3s

Load Body Weight | Frequency Daily

#### Regression

- Double leg bridge with low marching
- Hands down for support

#### Progression

- Longer lever- extend knee
- Arms off ground

### SQUAT

**Instructions:** Stand with your feet shoulder width apart. Slowly squat down for 3 seconds, imagine sitting into a chair. Keep your weight evenly distributed between both legs and balanced pressure across the soles of your feet. Hold for 1 second at the bottom and then slowly return to the start position over 3 seconds. Throughout the movement keep your hips, knees, and ankle in line.



Sets 3 | Reps 10-15 | Tempo 3s:1s:3s

Load Body Weight | Frequency Daily

#### Regression

- Shallow squat
- Reduce repetitions

#### Progression

- Add band around knees
- Add weight

## HIP HINGE

**Instructions:** Stand with your feet shoulder width apart. Slowly hip hinge or bow forward, keeping your back flat with a slight bend in your knees. Slide your hands down your thighs just past your knees over a count of 3 seconds. Hold for 1 second and then slowly return to the start position over another count of 3 seconds. Do not let your lower back round.



**Sets 3-5 | Reps 20-30s | Tempo 3s:1s:3s**

**Load Body Weight | Frequency 3x per week**

### Regression

- Lighter band

### Progression

- Thicker band

## SPLIT SQUAT

**Instructions:** Stand in a split stance position with 70% of your weight on your front leg and 30% on your back leg. Square your hips forward and allow your back heel to come off the ground until you feel like you are on the balls of your feet. Squat in this position, keeping your knees facing straight ahead and your pelvis level. You may hold on to a dowel or wall at first with the hand opposite the front leg. Move slowly 3 seconds down and 3 seconds up. Do not let your trunk or pelvis sway or sag out to the side.



**Sets 2 each | Reps 10-15 | Tempo 3s:1s:3s**

**Load Body Weight | Frequency 3x per week**

### Regression

- Use dowel or wall for support
- Decrease depth

### Progression

- Reduce support with dowel or wall
- Add weight with dumbbells in each hand or midline goblet position

## SINGLE LEG BALANCE WITH TOE TOUCHES

**Instructions:** Start with your feet and knees together and lower into a 1/4 squat. Square your hips forward and keep your pelvis level throughout. Shift your weight to one leg. With the opposite leg reach and tap your foot back 45 degrees into a skating position. Repeat 10 times without stopping with each leg.



**Sets 2 each | Reps 10-15 | Tempo 1s:0s:1s**

**Load Body Weight | Frequency 3x per week**

### Regression

- Dowel or wall for support
- Reduce reach distance

### Progression

- Deeper squat on stance leg
- Add ankle weight or increase repetitions
- Eyes closed

## DEVELOP Functional Strength Endurance

6 weeks

### MODIFIED SIDE PLANK LEG LIFT

**Instructions:** Lie on your side. Stack your elbow under your shoulder and plank up between your forearm and knee. Over 3 seconds slowly lift your top leg until you feel a moderate amount of resistance, approximately 45 degrees. Hold for 20-30 seconds and then slowly return to the start position over 3 seconds. Use your top hand on the floor to support your weight if needed.



Sets 3 | Reps 1 | Tempo 3s:30s:3s

Load Body Weight | Frequency Daily

#### Regression

- Side plank clam position

#### Progression

- Add band around knees
- Lower leg knee straight – side plank from foot

### SIDE STEPS

**Instructions:** Place a band around your knees or ankles. Start the movement in an athletic ready position or a ¼ squat. Push the ground away to move your body in a lateral or sideways direction. Try to keep tension on the band as you sidestep 5x to the left and return 5x to the right. Try to keep the pace at 1 second per step for each foot. Remember to push the ground away with your trailing leg, do not reach with your lead leg. Do not let your trunk sway or sag out to the side.



Sets 3 | Reps 10 | Tempo 1s:0s:1s

Load Band | Frequency -x per week

#### Regression

- Band around knees
- No band

#### Progression

- Band around ankles or feet
- Hold lower squat position for side steps

## SPLIT SQUAT

**Instructions:** Stand in a split position with 70% of your weight on your front leg and 30% on your back leg. Square your hips forward and allow your back heel to come off the ground, rolling onto the balls of your feet. Keep your knees facing straight ahead and your pelvis level. You may hold on at first with the hand opposite the front leg. Move slowly 3 seconds down, hold for count of 5 and 3 seconds up. Do not let your trunk or pelvis sway or sag out to the side.



Sets 3 | Reps 10-15 | Tempo 3s:5s:3s

Load Body Weight | Frequency 3x per week

### Regression

- Reduce hold time

### Progression

- Add weight with dumbbells in each hand or midline goblet position

## STEP UP

**Instructions:** Set up with your hips square and your pelvis level. Step straight up without side bending. Push the step down to raise up over 3 seconds, hold for 1 second at the top and return down over 3 seconds. Keep your pelvis level throughout the movement. Do not reach for the ground, rather slowly lower yourself with the leg that is on the step.



Sets 3 | Reps 6 | Tempo 1s:1s:1s

Load Body Weight | Frequency 3x per week

### Regression

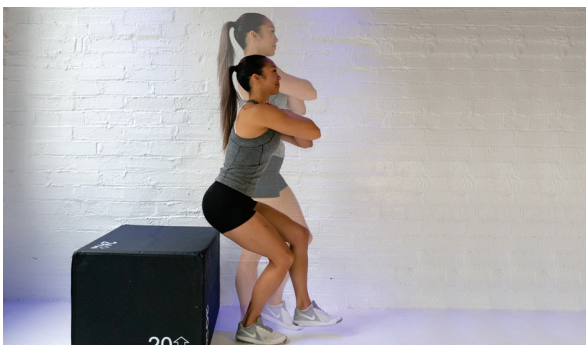
- Lower step
- Dowel support

### Progression

- Higher step
- Hurdle hold at top for 3 seconds

## SINGLE LEG SQUAT TO BOX

**Instructions:** Start with your feet and knees together and shift your weight to one leg. Keep your hips square and our pelvis level throughout. Lower your hips back and down to the box over 3 seconds. Slowly tap your hips to the box or chair, without resting on the box/chair. Hold single leg squat for 1 second at the bottom. Return to the start position over 3 seconds.



Sets 3 | Reps 8 | Tempo 1s:1s:1s

Load Body Weight | Frequency 3x per week

### Regression

- Limit depth of squat
- Support with dowel or wall

### Progression

- Increase depth
- Add weight in midline goblet position

## SINGLE LEG HINGE

**Instructions:** Balance on one leg. Slowly hip hinge or “bow” forward for a count of 3 seconds. Keep your hands out to the side for balance like an airplane. Hold for a 1 second count and then slowly return to the start position over a count of 3 seconds. Keep your back flat and pelvis square to the floor, with a slight bend in your knee on the balance leg.



Sets 3 | Reps 8 | Tempo 3s:1s:3s

Load Body Weight | Frequency 3x per week

### Regression

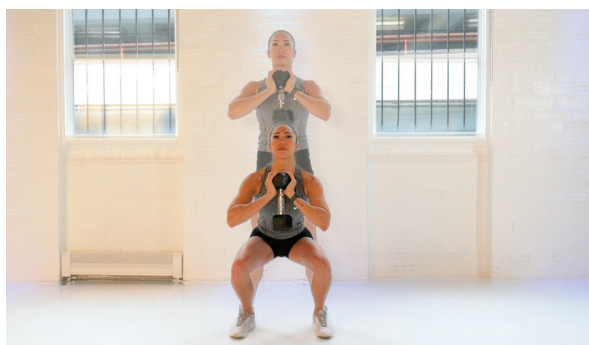
- Limit depth of squat
- Support with dowel or wall

### Progression

- Increase depth
- Add hold time in “T” position to 5 seconds

## GOBLET SQUAT

**Instructions:** Stand with your feet shoulder width apart. Hold a dumbbell or kettle bell in front of your chest with both hands. Slowly squat down for 3 seconds, imagine sitting into a chair. Keep your weight evenly distributed between both legs and balanced pressure across the soles of your feet. Hold for 1 second at the bottom and then slowly return to the start position over 3 seconds. Throughout the movement keep your hips, knees, and ankle in line. Do not let your knees cross your toes. Choose a weight that you can complete the recommended dose but the last rep or two should be challenging so that you only have 1-2 reps left in your tank.



Sets 3 | Reps 8-10 | Tempo 3s:1s:3s

Load Weighted | Frequency 3x per week

### Regression

- Limit depth of squat
- Remove weight

### Progression

- Increase depth
- Increase weight

## Pool Program

### Common goals of aquatic exercise include:

- Improving flexibility
- Improving balance and coordination
- Building muscle strength and endurance
- Enhancing aerobic capacity
- Assisting with gait and locomotion
- Reducing stress and promoting relaxation

It is important to note that buoyancy has a direct effect on therapeutic exercise. Buoyancy enables the body to be unloaded. The greater the depth of submersion, the less the effect of gravity on body weight. A basic breakdown of buoyancy and the unloading of gravity on a patient is approximately as follows: waist deep 50%, chest deep 75%, neck deep 90% of body weight. With the decreased effects of gravity, buoyancy provides relief between joint, bones, lessens pain and facilitates movements that are difficult on land.

Buoyancy can also be assistive and resistive to exercises at the same time. For example, as you perform a standing side leg lift, the limb is assisted by buoyancy. During the limb's return to midline, increased groin muscle force is required to overcome buoyancy. By increasing the speed of movement, the resistance of the water becomes greater. In other words, the harder you push, the harder water pushes back.

You should be able to do more work in the water, this will help to build up strength and endurance for functional daily activities. Remember to keep it within the 0-3 range from the pain scale.

### Pool Exercises

Recommendation: Repeat the below circuit 2-4x per session, 3x/week at chest deep water

1. Squats 10x
2. Marching – with single leg balance in a hurdle hold position for 5 seconds - 10 exchanges
3. Side steps 10x
4. Forward back leg swings 10x each leg
5. Lunge step backs – 10x each leg
6. Treading water with cycling motion 1 min
7. Walking forward/backward chest high water X 1 min

\*Pain free swimming as tolerated - flutter kick should be the easiest to manage. If painful use a pull bouy to support the legs to still get a conditioning benefit.

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