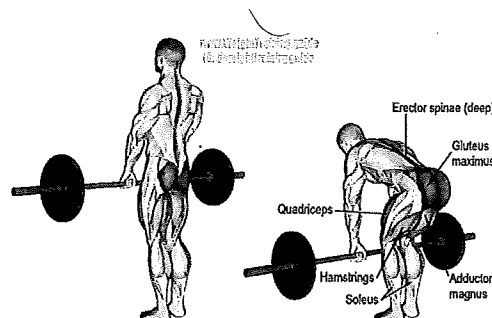


The Romanian Deadlift

The Romanian deadlift is beneficial for athletes and patients in a rehabilitation. When done correctly, the Romanian deadlift works the hamstrings, gluteal muscles, and the lower back. The progressive movements to successfully perform the exercise is broken down into the 5 functional steps shown below.



1. Isolation Exercise: Lying donkey kick
 - a. Main muscle groups: Quadriceps
 1. Rectus Femoris: Hip flexion, knee extension, anterior pelvic rotation
 2. Vastus lateralis: Knee extension and hip flexion
 3. Vastus intermedius: knee extension, hip flexion
 4. Vastus medialis: knee extension, hip flexion
 - b. Main muscle groups: Hamstrings
 1. Semi-tendinous: Hip extension, Knee flexion, Hip internal rotation, knee internal rotation.
 2. Semi-membranous: hip extension, hip internal rotation, knee flexion
 3. Biceps Femoris: hip external rotation, hip extension, knee flexion
2. Isolation Exercise with Resistance: lying donkey kick with resistance band
 - a. Main muscle Groups: Quadriceps
 1. Rectus Femoris: Hip flexion, knee extension, anterior pelvic rotation
 2. Vastus lateralis: Knee extension and hip flexion
 3. Vastus intermedius: knee extension, hip flexion
 4. Vastus medialis: knee extension, hip flexion
 - b. Main muscle groups: Hamstrings
 4. Semi-tendinous: Hip extension, Knee flexion, Hip internal rotation, knee internal rotation.
 5. Semi-membranous: hip extension, hip internal rotation, knee flexion
 6. Biceps Femoris: hip external rotation, hip extension, knee flexion
3. Isolation Exercise with Resistance and/or Stabilization: Single leg Romanian deadlift
 - a. Main muscle groups: Hamstrings
 1. Semi-tendinous: Hip extension, Knee flexion, Hip internal rotation, knee internal rotation.

2. Semi-membranous: hip extension, hip internal rotation, knee flexion
 3. Biceps Femoris: hip external rotation, hip extension, knee flexion
 - b. Main muscle groups: Quadriceps
 1. Rectus Femoris: Hip flexion, knee extension, anterior pelvic rotation
 2. Vastus lateralis: Knee extension and hip flexion
 3. Vastus intermedius: knee extension, hip flexion
 4. Vastus medialis: knee extension, hip flexion
 - c. Main muscle groups: Gluteal:
 1. Gluteus maximus: Extension, external rotation, posterior pelvic tilt
 2. Glutes Medius: Abduction, external rotation, internal rotation
 3. Gluteus minimums: abduction, internal rotation
4. Functional Exercise: Romanian Deadlift
- a. Main muscle groups: Hamstrings
 1. Semi-tendinous: Hip extension, Knee flexion, Hip internal rotation, knee internal rotation.
 2. Semi-membranous: hip extension, hip internal rotation, knee flexion
 3. Biceps Femoris: hip external rotation, hip extension, knee flexion
 - b. Main muscle groups: Quadriceps
 1. Rectus Femoris: Hip flexion, knee extension, anterior pelvic rotation
 2. Vastus lateralis: Knee extension and hip flexion
 3. Vastus intermedius: knee extension, hip flexion
 4. Vastus medialis: knee extension, hip flexion
 - c. Main muscle groups: Gluteal:
 1. Gluteus maximus: Extension, external rotation, posterior pelvic tilt
 2. Glutes Medius: Abduction, external rotation, internal rotation
 3. Gluteus minimums: abduction, internal rotation
 - d. Main muscle groups: Erector spinae muscles:
 1. Iliocostalis (lateral): extension, anterior pelvic rotation
 2. Longissimus (middle): extension, anterior pelvic rotation
 3. Spinalis (medial layer): extension, anterior pelvic rotation
5. Functional Exercise with Resistance: Romanian deadlift with dumbbells
- a. Main muscle groups: Hamstrings
 1. Semi-tendinous: Hip extension, Knee flexion, Hip internal rotation, knee internal rotation.
 2. Semi-membranous: hip extension, hip internal rotation, knee flexion
 3. Biceps Femoris: hip external rotation, hip extension, knee flexion
 - b. Main muscle groups: Quadriceps
 1. Rectus Femoris: Hip flexion, knee extension, anterior pelvic rotation
 2. Vastus lateralis: Knee extension and hip flexion

3. Vastus intermedius: knee extension, hip flexion
 4. Vastus medialis: knee extension, hip flexion
- c. Main muscle groups: Gluteal:
1. Gluteus maximus: Extension, external rotation, posterior pelvic tilt
 2. Glutes Medius: Abduction, external rotation, internal rotation
 3. Gluteus minimus: abduction, internal rotation
- d. Main muscle groups: Erector spinae muscles:
1. Iliocostalis (lateral): extension, anterior pelvic rotation
 2. Longissimus (middle): extension, anterior pelvic rotation
 3. Spinalis (medial layer): extension, anterior pelvic rotation

Dumbbell Step-Up with Knee Drive

Akeisha Ayanniyi, Tanner Battikha, Cody Pisz, Natasha Martinez, Sydney Jones, Howard Pope

Target population: Athletic

Muscles activated for knee drive: Iliopsoas, Sartorius, Rectus Femoris.

For step-up: Rectus Femoris, Vastus Lateralis, Vastus Intermedius, Vastus Medialis.

1) Isolation exercise

Alternating knee drives in the supine position. Quick and simultaneous.

Regression: Slower, non-simultaneous.



2) Isolation exercise with resistance

Alternating knee drives in the supine position with resistance band around ankles. Quick and simultaneous.

Regression: Slower, non-simultaneous with less resistant band.



3) Isolation exercise with resistance/stabilization

Alternating knee drives from an upright position with hands on hips.

Regression: Lower knee drive.



4) Functional exercise

Step-up onto risers, include active knee drive with opposite leg.

Regression: Lower step-up, no knee drive.



5) Functional exercise with resistance

Complete step-up with knee drive, adding dumbbells for resistance.

Regression: Lower step-up, no weight.



Functional Exercise Progression for a Squat-jump

Michaela Chapa, Miguel Diaz, Maritza Navidad, Kyra Romero, Alexandria Chavarria, Michael Nguyen

Exercise: Squat-jump

Designed for: Beginner Athletes

Primary Targeted Muscles: Quadriceps Femoris (Rectus Femoris, Vastus Lateralis, Vastus Medialis, Vastus Intermedius), Hamstring muscles (Semitendinosus, Semimembranosus, Biceps femoris), Gluteal muscles (Gluteus Maximus, Gluteus Medius, Gluteus Minimus), and Calf muscles (Gastrocnemius, and Soleus)

1. **Isolation Exercise: glute bridge and calf raise**
 - a. This step is to warm up participant's muscles. The participant will be laying in a supine position with knees bent. Participant will begin by lifting their hips off the ground pushing through their heels; keeping the core tight throughout the entire movement.
 - b. Next the participant will be performing a calf raise standing up with feet shoulder-width apart. The participant will fully come up off their heels, standing on their toes, then back down.
2. **Isolation Exercise with Resistance: glute bridge and calf raise with added weight**
 - a. Participant will go through the same movements as in step one, but light weight will be added to the movement for resistance.
3. **Isolation Exercise with Resistance and/or Stabilization: half squat into jump**
 - a. For this step, the participant will perform a half squat which has less depth than a traditional squat. To do this the participant should stop about halfway between parallel. Once the participant is in a half squat form, they will explode up into a jump. Adding the jump increases the difficulty of the isolation exercise, forcing the participant to balance themselves. Throughout the movement, the core is engaged to help stabilize the participant.
4. **Functional Exercise: Squat-jump**
 - a. Participant performs a squat-jump by starting with feet about shoulder-width apart, head facing forward, and a straight back with core engaged. Squat down by hinging at the hips, keeping the back straight and chest up. The knees should come forward slightly when squatting down, but not passing the feet. Squat down until thighs are about parallel to the floor; while swinging arms back. From here,

PEP 305: Functional Exercise Progression: The Standard Deadlift

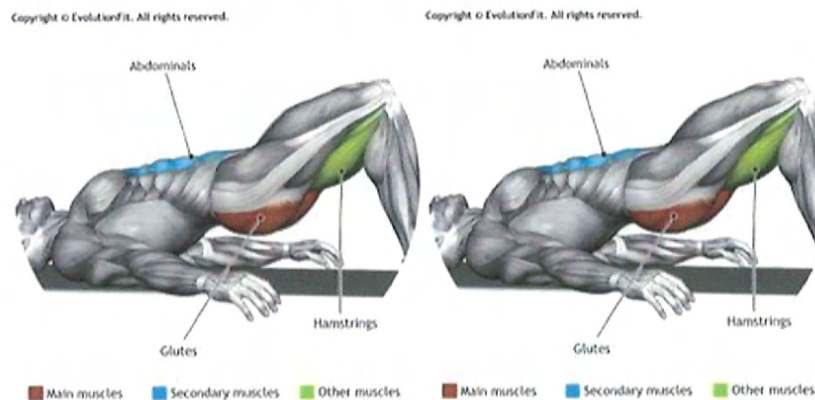
Celia Robinson, Tarryn Trujillo, Josh Bradford, Katherine Mislá, Ching Lu

1. Isolation exercise: Hip Raise

Step 1: Lay on floor supinated with knees bent, feet on the floor

Step 2: Raise your hips so your body forms a straight line from your shoulders to your knees. Pause in the up position, then lower your body back to the starting position.

Primary muscles targeted: gluteus maximus, semitendinosus, semimembranosus, biceps femoris



2. Isolation exercise with resistance: Hip Raise with medicine ball

Step 1: Lie supinated on the floor with your arms at your side and knees bent, feet firmly planted on the floor.

Step 2: Raise your hips so your body forms a straight line from your shoulders to your knees. Pause in the up position, then lower your body back to the starting position.

Primary Muscles targeted: gluteus maximus, semitendinosus, semimembranosus, biceps femoris

3. Isolation exercise with resistance and/or stabilization: Hip raise on bosu ball with medicine ball

Step 1: Lie supinated on floor with arms at sides and knees bent, with medicine ball placed on hips

Step 2: Carefully place feet on bosu ball

Step 3: Raise your hips so your body forms a straight line from your shoulders to your

knees. Pause in this position, then lower your body back to the starting position.

Primary muscles targeted: gluteus maximus, semitendinosus, semimembranosus, biceps femoris

4. Functional exercise: Air squat

Step 1: Begin in standing position with feet about shoulder-width apart, toes pointing forward.

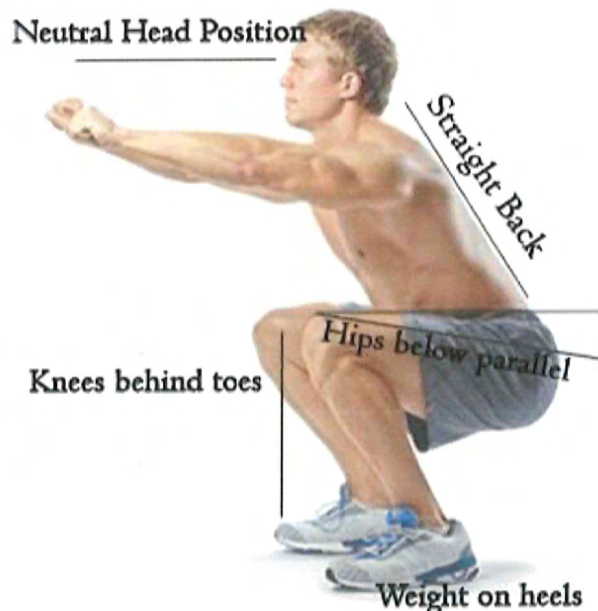
Step 2: Slowly begin to squat down by creating a hinge movement at the hips and flexing at the knees. Chest remains upright with cervical spine in neutral position.

Step 3: Squat to a desired depth that can be safely controlled with no movement compensations.

Step 4: Begin the upward phase by contracting the gluteus maximus and applying force through the heels as the knees and hips are extended.

Step 5: Finish the movement by standing up until hips and legs are fully extended.

Primary Muscles Targeted: gluteus maximus, rectus femoris, vastus lateralis, vastus medialis oblique, vastus intermedius.



5. Functional Exercise with resistance: The Standard Deadlift

Step 1: Place feet shoulder-width apart, toes pointing forward

Step 2: Approach the bar and grab the bar on the ground with about a shoulder width grip

Step 3: Hinge at the hips and bend at the knees until shins touch the bar

Step 4: Brace your core/back and extend knees, standing up fully

Step 5: Lower the weight back to the ground in a controlled manner

Primary muscles targeted: gluteus maximus, hamstrings (semitendinosus, semimembranosus, biceps femoris), upper and middle trapezius, rhomboids, erector spinae, adductor magnus, soleus, levator scapulae, rectus abdominis, obliques



Functional Exercise Progression: Squat

Targeted Population: Recovering PT Patient

By: Amber Vialpando, Sofia Alderete, Kylie Morana, Maya Dawson, Kaitlin Martinez, Gabrielle Sanchez

Introduction:

This squat progression is targeted towards recovering PT patients. It gives multiple progressions in order to allow the patient to work the targeted muscle regardless of their experience. As they become familiar with the movements and cues to be aware of while doing a squat, they can progress to the final squat with resistance that includes all the components taught in the beginning stages.

Primary Targeted Muscles: Quadriceps femoris (Rectus Femoris, Vastus Intermedius, Vastus Lateralis, Vastus Medius) and Gluteal muscles (Gluteus Maximus, Gluteus Medius, Gluteus Minimus)

Part 1: Isolation Exercise

Exercise 1: Seated hip flexion



Begin by having the patient sit in a chair with his or her feet flat on the floor and shoulder-width apart. The patient should sit up straight and tall and engage their core. The patient will lift one of their legs to a 45-degree angle and then put it back down. Repeat this motion on the same leg for multiple repetitions and then do the same amount on the other leg.

Exercise 2: leg kickback



Next, the patient will get onto the ground and stabilize himself or herself using their hands and knees. The patient will kick back and straighten one leg until it forms a 90-degree angle with the other leg and then bring the leg back down into the starting position. Repeat this for multiple repetitions and then do the same amount on the other leg.

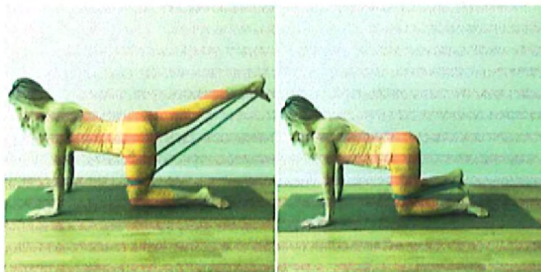
Part 2: Isolation Exercise with Resistance

Exercise 1: seated hip flexion with resistance band



Beginning in the seated position, the patient should put a resistance band around their thighs, close to the knees. Do repetitions of legs lifts, lifting to about a 45-degree angle, doing the same amount on each leg.

Exercise 2: leg kickback with resistance band



Next, have the patient get onto the ground, supporting themselves on their hands and knees. With the resistance band in the same location as before or one side tucked under the supporting knee, have them kick back one leg, creating a 90-degree angle between the legs. Do this with multiple repetitions on each leg.

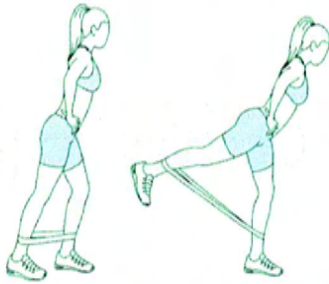
Part 3: Isolation Exercise with Resistance and Balance

Exercise 1: Standing hip flexion with resistance band



Patient begins in the standing position and has resistance band just above the knee. Then they lift their knee until it's about 45 degrees from their body. They should repeat this exercise on both legs and performs this movement without holding on to anything else, unless they are doing the regression exercise. This exercise is focused on engaging the quadriceps.

Exercise 2: Standing leg kickback with resistance band



Patient begins in the standing position with a resistance band around their ankles. They slightly bend forward, keeping their chest upright and hips square, and pull one leg behind them as high as they can get it. They repeat this motion on each leg the same amount of repetitions. This is focused on initiating the glutes.

Regression options:

Part 4: Functional Exercise

Exercise: Squat



Beginning in a standing position, the patient should stand with their feet shoulder-width apart. Instruct the patient to bend at the knees, squatting down as if they were sitting back in a chair. Their weight should remain in their heels throughout the movement to maintain stability. The patient should aim to bend the knee at a 45° angle. It is important to communicate with the patient the importance of engaging the core to stabilize the body. Since this is a compound movement, it is important to explain specific technique with the patient. For example, you should instruct the patient to always point their knees outwards, resisting the impulse of the legs to bow. This movement should be repeated per the patient's ability.

Regression options: Half squat

Part 5: Functional Exercise with Resistance

Exercise: weighted squat



This final stage of the squat will add resistance to the final movement. We will be using a medicine ball to add a light amount of resistance to the exercise. First start by reminding yourself of all the muscular cues: core tight, knees out, drive through your heels. It's important to customize this movement dependent on your patient's physical abilities. Once they feel comfortable with all the previous progressions taught, it should be safe to try out some resistance in order to build muscle more efficiently in the areas need.

Regression options: half squat with the medicine ball, or using a chair to squat onto.

Tyrell Natewa, Samuel Martinez, Gavin Lynch, Domenic Flores
Nicolas Cesacci Richard Ramoso

Exercise Name: Hamstring Bridge

Target Population: Athlete returning from a hamstring injury.

Primary Targeted Muscles: Adductor magnus, semitendinosus, semimembranosus, biceps femoris, gluteus maximus, transverse abdominis, rectus abdominis, internal and external oblique abdominals

1. Isolation Exercise: Lying Single-Leg Curl



2. Isolation Exercise with Resistance: Lying Single-Leg Curl with Resistance



3. Isolation Exercise with Resistance and Stabilization: Standing Single-Leg Curl



4. Functional Exercise: Hamstring Bridge



5. Functional Exercise with Resistance or Stabilization: Hamstring Bridge with Dumbbell or Hamstring Bridge with Physioball



6 February 2019

Functional Exercise Progression Assignment: Squat w/ Side Step-Out

This exercise progression is designed to help recovering athletes of all sports.

1) Isolation Exercise

- a. Hip abduction
- b. Variation: Laying Down instead of standing
- c. Muscles Used:
 1. Gluteus Maximus, Medius, & Minimus
 2. Tensor Fasciae Latae

2) Isolation Exercise with Resistance Band

- a. Banded hip abduction
- b. Variation: Laying Down instead of standing
- c. Muscles Used:
 1. Gluteus Maximus, Medius, & Minimus
 2. Tensor Fascia Latae

3) Isolation Exercise with Stabilization

- a. Hip abduction on stabilization ball
- b. Variation: Bench instead of stabilization ball
- c. Muscles Used:
 1. Transversus Abdominis
 2. Gluteus Maximus, Medius, & Minimus
 3. Tensor Fascia Lata
 4. Sartorius

4) Functional Exercise

- a. Squat
- b. Variation: Partial Squat instead of going to parallel in a full squat
- c. Muscles Used
 1. Gluteus Maximus, Medius, Minimus & Anterior fibers

Functional Exercise Progression: Squat

Targeted Population: Recovering PT Patient

By: Amber Vialpando, Sofia Alderete, Kylie Morana, Maya Dawson, Kaitlin Martinez, Gabrielle Sanchez

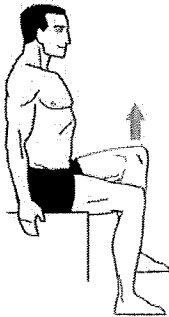
Introduction:

This squat progression is targeted towards recovering PT patients. It gives multiple progressions in order to allow the patient to work the targeted muscle regardless of their experience. As they become familiar with the movements and cues to be aware of while doing a squat, they can progress to the final squat with resistance that includes all the components taught in the beginning stages.

Primary Targeted Muscles: Quadriceps femoris (Rectus Femoris, Vastus Intermedius, Vastus Lateralis, Vastus Medius) and Gluteal muscles (Gluteus Maximus, Gluteus Medius, Gluteus Minimus)

Part 1: Isolation Exercise

Exercise 1: Seated hip flexion



Begin by having the patient sit in a chair with his or her feet flat on the floor and shoulder-width apart. The patient should sit up straight and tall and engage their core. The patient will lift one of their legs to a 45-degree angle and then put it back down. Repeat this motion on the same leg for multiple repetitions and then do the same amount on the other leg.

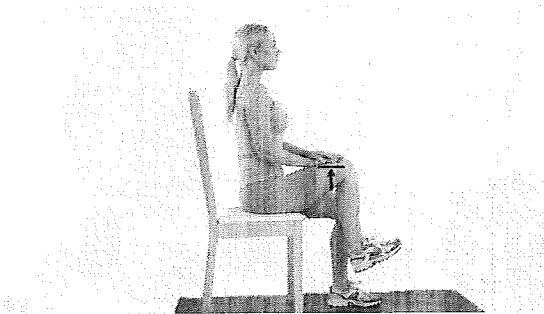
Exercise 2: leg kickback



Next, the patient will get onto the ground and stabilize himself or herself using their hands and knees. The patient will kick back and straighten one leg until it forms a 90-degree angle with the other leg and then bring the leg back down into the starting position. Repeat this for multiple repetitions and then do the same amount on the other leg.

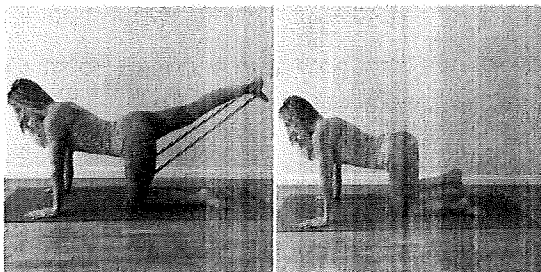
Part 2: Isolation Exercise with Resistance

Exercise 1: seated hip flexion with resistance band



Beginning in the seated position, the patient should put a resistance band around their thighs, close to the knees. Do repetitions of legs lifts, lifting to about a 45-degree angle, doing the same amount on each leg.

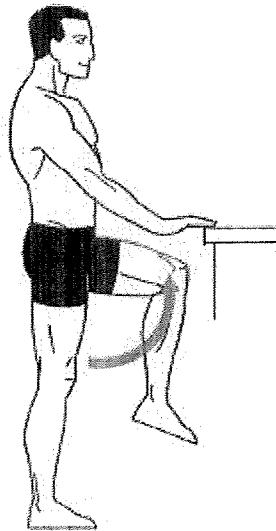
Exercise 2: leg kickback with resistance band



Next, have the patient get onto the ground, supporting themselves on their hands and knees. With the resistance band in the same location as before or one side tucked under the supporting knee, have them kick back one leg, creating a 90-degree angle between the legs. Do this with multiple repetitions on each leg.

Part 3: Isolation Exercise with Resistance and Balance

Exercise 1: Standing hip flexion with resistance band

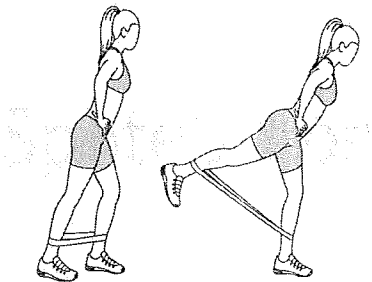


Patient begins in the standing position and has resistance band just above the knee. Then they lift their knee until it's about 45 degrees from their body. They should repeat this exercise on both legs and performs this movement without holding on to anything else, unless they are doing the regression exercise. This exercise is focused on engaging the quadriceps.

Regression options: Balancing on a wall, other person/therapist, or stable chair.

The patient may need to be further supported by adding balance support. Further modifications may also include only flexing hip to 90° angle or more. As well as a greater angle of knee flexion. It is important to direct the patients focus to engaging their core as well as correct knee and foot rotation of the standing leg.

Exercise 2: Standing leg kickback with resistance band



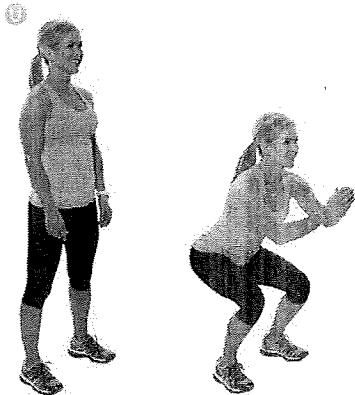
Patient begins in the standing position with a resistance band around their ankles. They slightly bend forward, keeping their chest upright and hips square, and pull one leg behind them as high as they can get it. They repeat this motion on each leg the same amount of repetitions. This is focused on initiating the glutes.

Regression options: Standing leg kickback without resistance band

Removing the resistance band will decrease intensity while continuing to engage the appropriate muscle groups. The patient will still focus on engaging core and maintaining balance while mimicking the kickback motions described above.

Part 4: Functional Exercise

Exercise: Squat



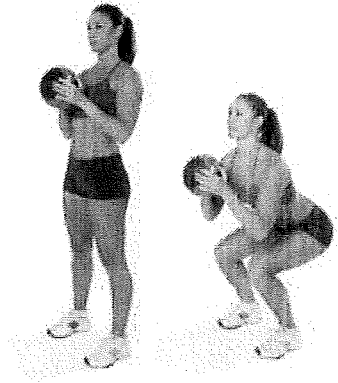
Beginning in a standing position, the patient should stand with their feet shoulder-width apart. Instruct the patient to bend at the knees, squatting down as if they were sitting back in a chair. Their weight should remain in their heels throughout the movement to maintain stability. The patient should aim to bend the knee at a 45° angle. It is important to communicate with the patient the importance of engaging the core to stabilize the body. Since this is a compound movement, it is important to explain specific technique with the patient. For example, you should instruct the patient to always point their knees outwards, resisting the impulse of the legs to bow. This movement should be repeated per the patient's ability.

Regression options: Half squat

Patient will continue to stand feet hip width or greater apart, chest up, toes in line with the toes and hips, core engaged. Patient will aim to bend knees no more than a 90° angle. Patients with injuries to the lower back should start with a regressed squat.

Part 5: Functional Exercise with Resistance

Exercise: weighted squat



This final stage of the squat will add resistance to the final movement. We will be using a medicine ball to add a light amount of resistance to the exercise. First start by reminding yourself of all the muscular cues: core tight, knees out, drive through your heels. It's important to customize this movement dependent on your patient's physical abilities. Once they feel comfortable with all the previous progressions taught, it should be safe to try out some resistance in order to build muscle more efficiently in the areas need.

Regression options: Half squat with or without the medicine ball.

The patient may preform sit to stands in a chair, pausing for a few seconds when seated in the chair. This will decrease the intensity of the exercise or allow for one more progressive movement.

Reverse Lunge



For who: Elderly individuals

Benefit: Improved balance and strength

Build up to it!

Remember to have fun!

Step 1 – Lay down and perform hip and knee flexion

Step 2 – Still laying down, perform hip and knee flexion with a resistance band

Step 3 – Stand back up! Step back with one leg (without bending either knee) to focus on balance

Step 4 – Step back into half of a reverse lunge

Step 5 – Step back into full reverse lunge

Step 6 – Perform reverse lunge with medicine ball



Don't push yourself too hard!

Alexandria Buck
Ben Lafler
Caleb Lafler
Damaris Mondragon
Julie Ngo
Scott Coon

Functional Exercise Progression: Squat – Rehab Patient to High School Athlete

- Primary Targeted Muscles
 - Quadriceps Complex
 - Rectus Femoris
 - Vastus Lateralis
 - Vastus Medialis
 - Vastus Intermedius
 - Hamstring Complex
 - Semimembranosus
 - Semitendinosus
 - Biceps Femoris
 - Gluteal Complex
- Isolation Exercises
 - Sitting Knee Extension
 - Need Bench four reps on right and left legs
 - Make sure to foot is always in dorsiflexion throughout the whole movement

- Pivot at hips to farthest functional point (working to 90 degrees)
 - Engage Hamstring complex and Gluteal complex to upright position
- ◆ Isolation Exercise with Resistance
 - Sitting Knee Extension
 - With bands around knees
 - Good Mornings
 - Weighted bar or Large band
- ◆ Isolation Exercise with Resistance and Stabilization
 - Sitting knee extension
 - Sitting on Physioball with band
 - Regression
 - On Physioball without band
 - Good Mornings
 - On one leg with weighted bar
 - Regression
 - One leg without weighted bar or resistance bands
- ◆ Functional Exercise
 - Air Squat
 - **Lever Rule: Largest lever always moves first**
 - Engage posterior chain
 - Load across hips and back instead of knees
 - Pressing back from the hips then the knees to find neutral point of contact with feet

- External rotation taught in good mornings for knees to track properly in this part of the progression phase.
- Over Head Air Squat
- Functional Exercise with Resistance
 - Barbell Squat (Not Likely)
 - Overhead Weighted squat
 - Dumbbell
 - Kettlebell
 - Weighted bar (Not 20kg Barbell)