

Rehabilitation for Hip and Pelvis Muscle Dysfunction

The muscles of the hip and thigh are often thought to consist of only a few very powerful primary movers of the lower extremities, including the gluteus maximus, quadriceps and hamstring muscles. However, there is also a network of smaller, intricate muscles that are responsible for some of the finer movements of the hip and pelvis. These smaller muscles are often predisposed to injury and dysfunction as a result of tightness, weakness, poor biomechanics and muscular imbalance. This can often lead to an undue amount of stress and strain being placed on these smaller muscles. As a result, it is no surprise that there are biomechanical implications when some or all of these muscles are dysfunctional, compromising the stability of the pelvis and lower limbs. Whether these muscles have become tight, weak, painful or any combination of symptoms, there are a number of activities that you can do to speed their healing and help prevent further injury. In conjunction, regular chiropractic treatment will help to decrease the resting muscle tension of these muscles and improve their function.

An important note: if you are using weights or rubber tubing in this program, be conservative. You want to begin with enough resistance that allows you to **perform 12-16 repetitions for 3 sets without pain or discomfort**, gradually increasing resistance as you progress. Do not overload the muscles! It is also important for you to realize that these muscles are quite small in size and can be easily compromised by using heavy resistance. Your legs act as long levers in these actions, increasing the forces put on these muscles. As well, keep in mind that this program is designed only for rehabilitation of the small muscles of the hip and pelvis and that the large, primary movers of the lower extremities should not be ignored as you progress in your rehabilitation program.

The Small Muscles of the Hip and Pelvis

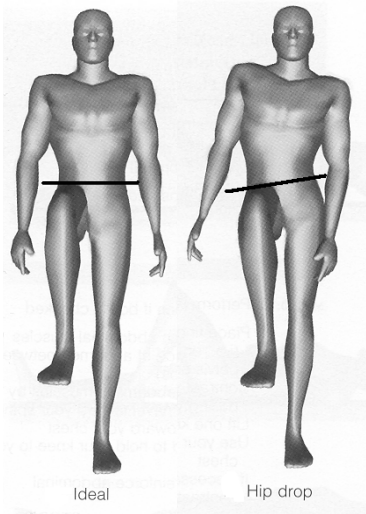
➤ Gluteus Medius and Minimus

The gluteus medius muscle is the most powerful thigh abductor (moves your leg out sideways from midline) and is responsible for stabilizing the pelvis during the weight-bearing portion of the gait cycle. This muscle prevents the pelvis from tilting excessively toward the unsupported side during ambulation. As well, the anterior fibers of the gluteus medius assist with internal rotation of the thigh. Similarly, the gluteus minimus muscle also acts to abduct the thigh and stabilize the pelvis; generally assisting the gluteus medius muscle in these actions. Following are a few corrective exercises and actions that will assist in stretching and strengthening these muscles.

1. **Unilateral Hip and Knee Flexion**

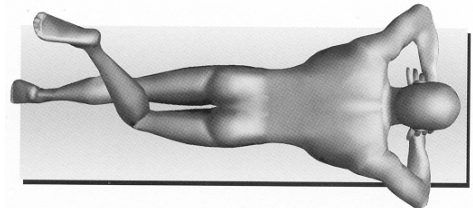
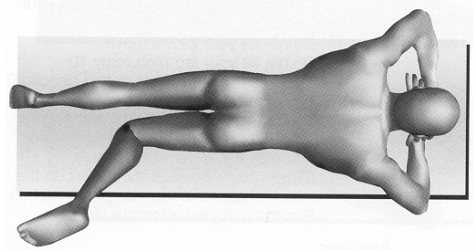
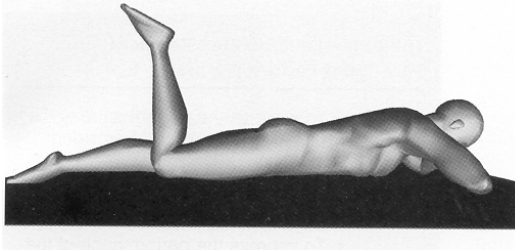
With feet relatively close together, shift your weight to one leg and tighten your buttock muscles on that side. Slowly lift

your other thigh up in front of you while bending the knee. Do not allow the hip to drop. Slowly lower your leg. Alternate sides and repeat 10 times for each side.



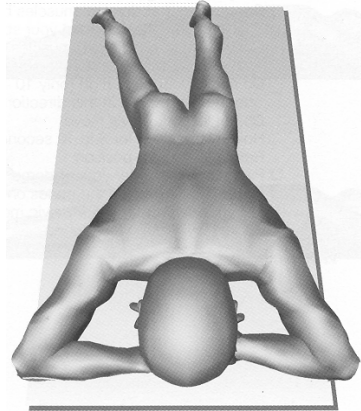
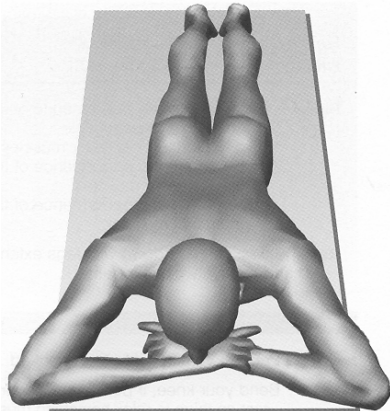
2. Lying Hip Rotation Stretch

On your stomach, bring one knee to 90° and slowly move your foot outwards. Hold for 30 seconds and move your foot as far inwards as you can. Hold for 30 seconds and repeat twice. Perform for both legs.



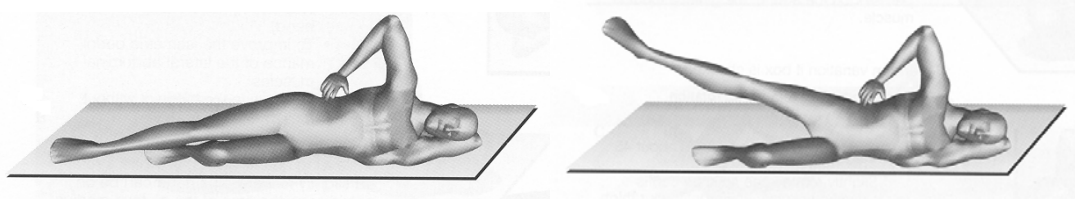
3. Lying Hip Abduction

On your stomach with legs straight and close together, contract one buttock muscle to slide that leg out to the side. Do not let the pelvis move. Slowly return your leg to the starting position. Alternate sides and repeat 10 times for each side.



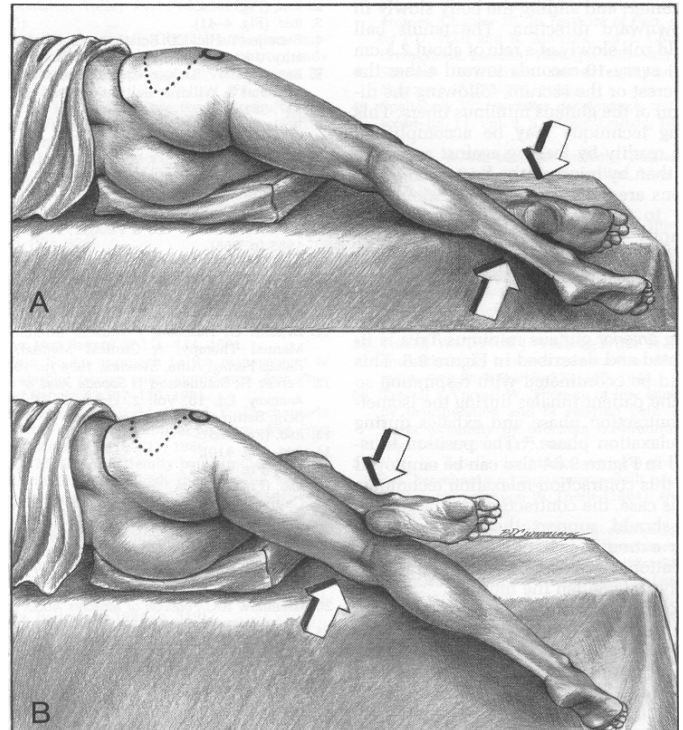
4. Side-Lying Hip Abduction

On your side with the bottom leg bent, top leg straight and your hand on your gluteus muscles, slowly lift your thigh up and down. Perform 10 times each side.



5. Side-Lying Stretch

Lying on your side with your back near the edge of the table or bed, assume the starting position as shown in diagram A. Gently press the legs together and hold for 5 seconds. Relax the legs and let the bottom leg hang off of the side of the table for 15 seconds. Repeat stretch several times to try and reach the final stretch position as shown in diagram B.



6. Resisted Hip Abduction

Using a cable machine or rubber tubing (available from the Chiropractic Performance Centre), begin by standing with your feet close together and the cable around the ankle farthest from the machine. Support your upper torso by holding on to the machine and slowly raise your straight leg to the side, no more than 45°. Slowly lower your leg to the starting position.

7. Quadrant Lunges – Side-to-Side

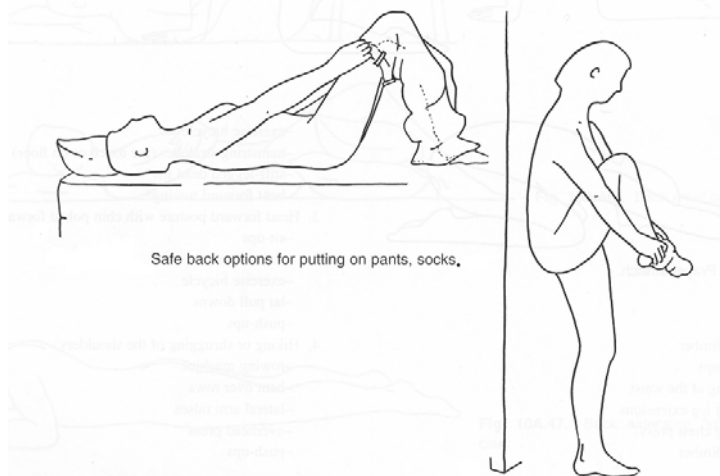
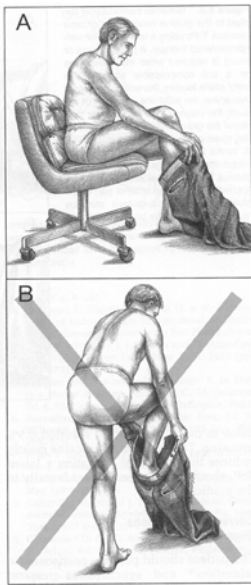
Beginning without resistance, stand with your feet shoulder width apart. Take a large step directly sideways. Slowly perform a squat with the leading knee bent to 90° and then return to the starting position. Alternate sides and repeat 10 times for each side.

8. Ischemic Compression

Lie on your back on top of a hard surface covered with a towel. Roll slightly to one side as you find a portion of the muscle that has a tight band of fibers and place a tennis ball between that spot and the hard surface. Roll flat on your back, compressing the tennis ball between yourself and the surface. You should feel some discomfort and possibly referral of that pain down your buttocks or into your low back. Hold for 30 seconds and repeat this procedure on other portions of the muscle. This exercise helps to remove metabolic waste products from the tissues and facilitate fresh blood and nutrient flow in to the tissues.



9. Safe and Unsafe Dressing Positions



10. Proper Sleeping Positions

Sleeping on the back with a pillow beneath the knees is generally the best; however this may not be possible due to pain and discomfort in the gluteal muscles. If this is the case, try lying on the unaffected side with a pillow between the knees, ensuring that the knees are directly on top of one another to minimize pelvic rotation.

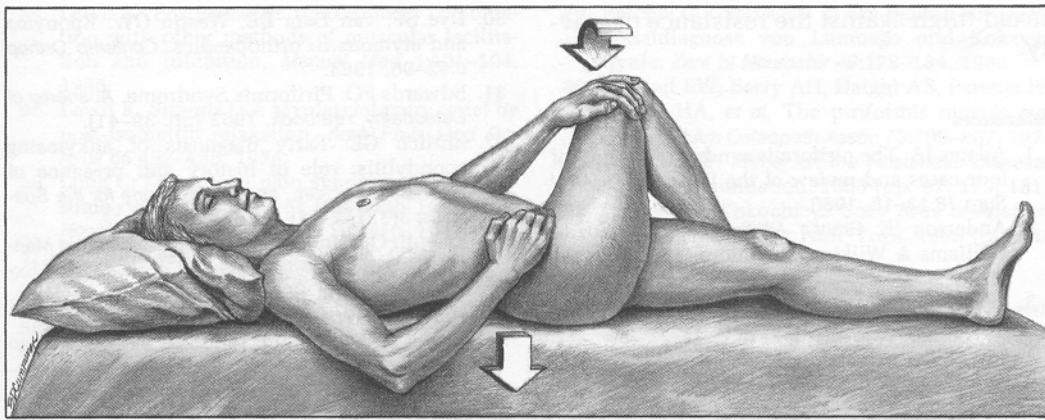


➤ Piriformis and Lateral (External) Rotators

The piriformis muscle primarily functions to externally rotate the thigh in the non-weight-bearing position when the hip is extended. Once the hip is flexed to 90° this muscle also acts to abduct the thigh. However, at full hip flexion, the piriformis appears to internally rotate the thigh. The piriformis muscle comes under the greatest strain during weight-bearing activities as it resists internal rotation of the thigh. This occurs primarily during the early stance phase of walking and running as the foot begins to pronate (roll) under the body's weight, causing a resultant internal rotation of the lower leg and thigh. The remaining five lateral rotators of the thigh almost exclusively function to laterally rotate the thigh in either hip flexion or extension. The following exercises and actions will assist with regaining proper functioning of these muscles.

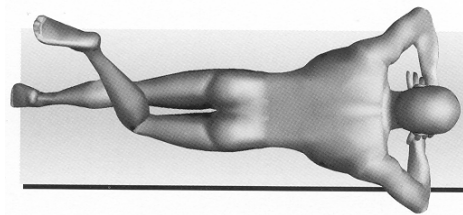
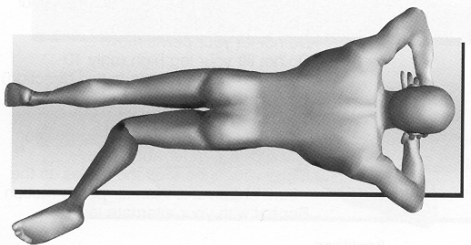
1. Piriformis Stretch

Keep the low back and pelvis flat on the table. Hold for 30 seconds and alternate sides. Repeat twice.



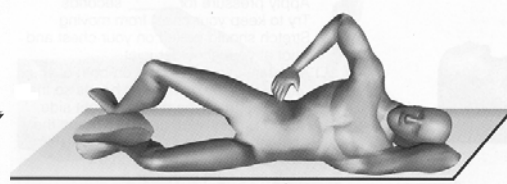
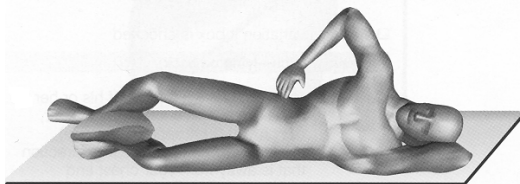
2. Lying Hip Rotation Stretch

As outlined for Gluteus Medius and Minimus above.



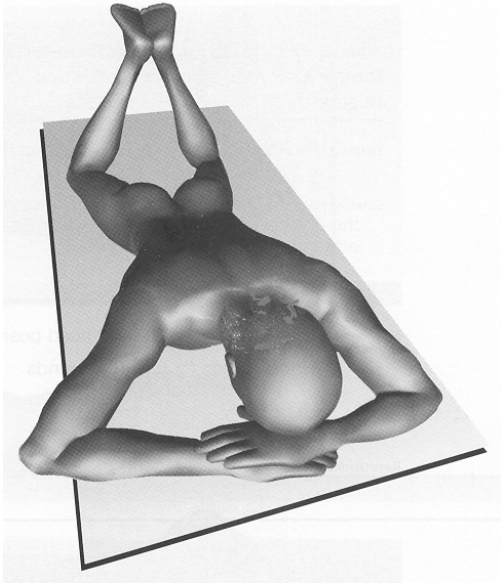
3. Side-Lying Hip Lateral Rotation

Keep the pelvis still while concentrating on contracting these small muscles as you rotate your top leg so that your knee turns upwards.



4. Isometric Hip Lateral Rotation

From this starting position, push your feet together by tightening your buttocks. Hold this position for 10 seconds. Relax and then repeat.



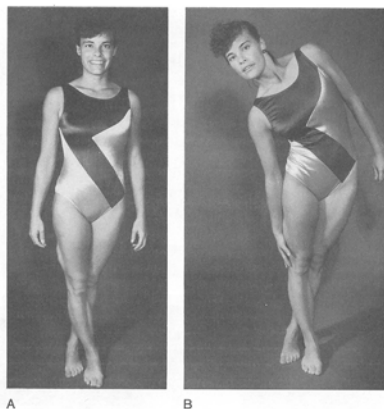
5. Proper Sleeping Positions

As outlined for Gluteus Medius and Minimus above.

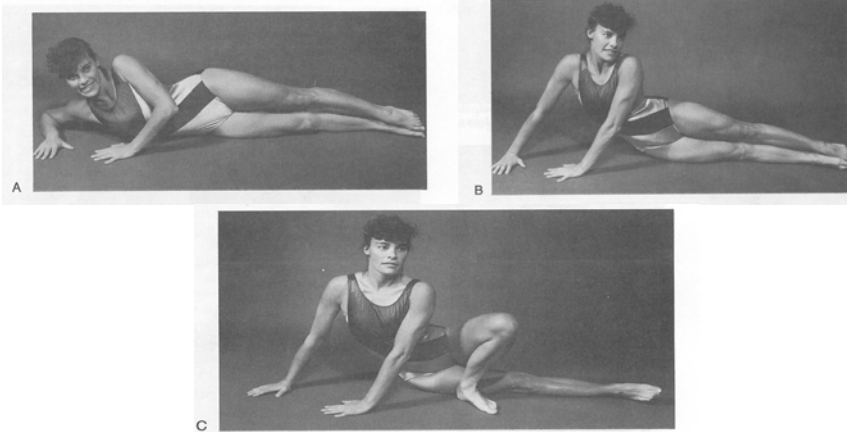
➤ Tensor Fascia Lata (TFL) and Iliotibial Band (ITB)

The function of the TFL during normal gait is to assist with hip flexion during the swing phase, as well as to provide stability to the hip and pelvis during the stance phase. It provides assistance to flexion, abduction and internal rotation of the thigh, thereby assisting the gluteus medius and gluteus minimus muscles with stabilization of the pelvis. As well, the inferior tendon of the TFL joins with the ITB, inserting on the tibia below the level of the knee and providing stabilization to the knee. The following exercises and corrective actions will help to stretch, strengthen and minimize strain on these tissues.

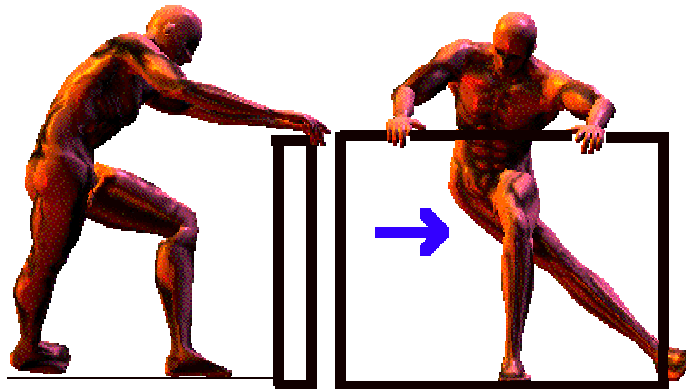
1. TFL/ITB Stretch #1



2. TFL/ITB Stretch #2



3. ITB/TFL Stretch #3

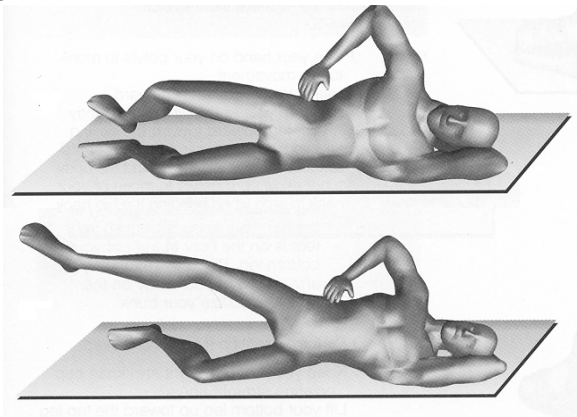


4. Foam Rolling

Assume the same position as picture C in ITB/TFL Stretch #2 but place a 6" diameter high-density foam roll under the affected TFL/ITB. Using the hands and unaffected foot for support, slowly roll the affected thigh back-and-forth along the foam roll.

5. Side-Lying Hip Abduction with Lateral Rotation

Lying on your side with the bottom leg bent; place your hand on the area of your TFL. Bend your top leg to 45°, point kneecap upwards and slowly raise the thigh. Slowly lower the thigh. Repeat 10 times for each side.



6. 30° Resisted Hip Abduction

Using a cable machine or rubber tubing (available from the Chiropractic Performance Centre), begin by standing with your feet close together and the cable around the ankle farthest from the machine. Support your upper torso by holding on to the machine and slowly raise your straight leg to the side and forward at a 30° angle from where you stand. Slowly lower your leg to the starting position.

7. Quadrant Lunges - 45° Side-to-Side

Beginning without resistance, stand with your feet shoulder width apart. Take a large forward step 45° from straight ahead. Slowly perform a squat with the leading knee bent to 90° and then return to the starting position. Alternate sides and repeat 10 times for each side.

8. Sleeping:

- On your side, avoid the fetal position with the knees and hips strongly flexed. Place a pillow between your knees and keep your hips at more than 90° of flexion
- On your back, make sure that a pillow beneath your knees is not too large to cause excessive hip flexion.

9. Sitting:

- Avoid sitting in the cross-legged lotus position.
- Ensure that chairs have an open angle at the hips to minimize prolonged hip flexion. If not, tilt the backrest backwards and lean against it or slope the front of the seat downwards.
- When driving for long periods, change the position of the lower limbs as often as possible.

10. Avoid walking or running up and down hills to reduce strenuous hip flexion and further aggravation of the ITB.

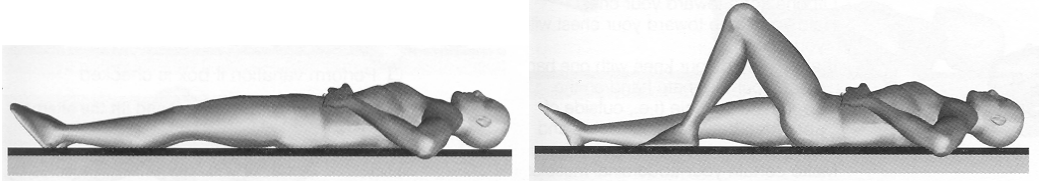
A final key to hip and pelvis stabilization involves improving the performance of the abdominal muscles to control pelvic rotation during lower limb movements. The following exercises complement the training of the small muscles of the hips and pelvis but emphasize abdominal strengthening. This program begins quite simply but you need to progress to a more focused **Spinal Exercise/Core Strengthening Program**. Please ask one of the doctors for a copy of this.

Each of these exercises begins by contracting the abdominals, feeling as though you are pulling your navel in toward your spine. Be sure to maintain this contraction throughout each exercise.

➤ Abdominals

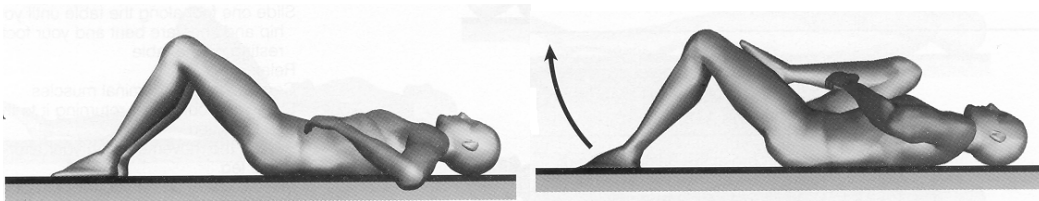
1. Heel Slides with Hip Flexion

Begin lying flat on your back. Contract your abdominals and slowly slide one foot towards your buttocks, keeping it in contact with the ground. Be sure to not rotate the pelvis at all. Slowly slide your foot back to the starting position. Alternate sides and repeat 10 times for each side.



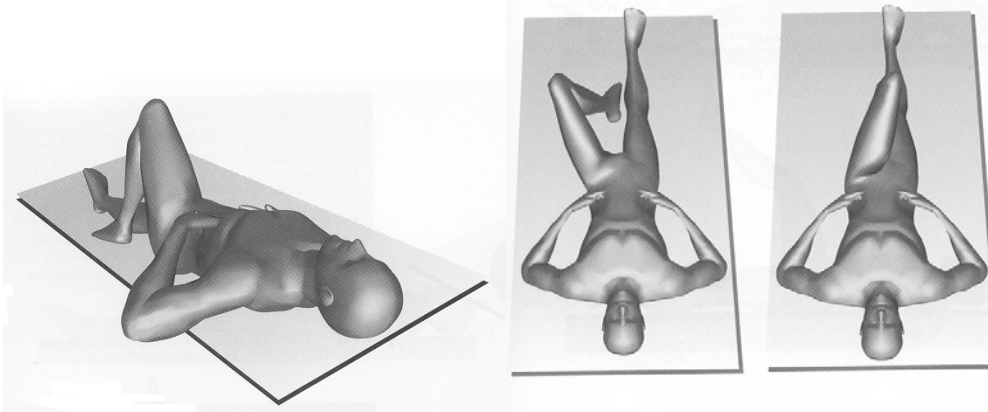
2. Heel Lifts with Hip Flexion

With the knees and hips bent to 90°, contract the abdominals and slowly raise one thigh toward your chest. Hold this thigh in place and slowly lift the opposite foot off of the ground 6-12". Be sure to not let the pelvis rotate at all. Keeping the abdominals contracted, slowly lower your legs to the starting position. Alternate sides and repeat 10 times for each side.



3. Bent Knee Fallouts

With one knee bent, contract the abdominals and slowly let the thigh fall to the outside. Keeping the abdominals contracted, raise the thigh back up and slowly let it fall to the inside. Be sure to not let the pelvis rotate at all. Slowly raise the thigh back up to the starting position and repeat before 10 times before switching legs.



4. Bent-to-Straight Knee Fallouts

Follow the same procedure as above but only let the thigh fall to the outside and then from that point, slowly straighten the leg. With the abdominals contracted and the pelvis stable, bend the knee and bring the thigh back to the starting position. Alternate sides and repeat 10 times for each side.

