The hip joint is a ball-and-socket joint, which allows a wider range of muscular movements than most other joints in the body. All but two of these muscles (psoas major and piriformis) run between the pelvic bones and the thigh bone (femur); the psoas major and piriformis run between the lower vertebral column and the femur. The muscles that move the hip joint are some of the most massive muscles (adductor magnus and gluteus maximus) in the body as well as some of the smallest (gemellus superior and inferior). The anterior muscles (psoas major, iliacus, rectus femoris, sartorius) flex the hip and are used during walking to swing the leg forward. The posterior muscles (gluteus maximus, biceps femoris, semimembranosus, semitendinosus) provide the backward swing of walking. A group of large muscles (adductor brevis, adductor magnus, adductor longus, gracilis, pectineus) is on the medial (inside) thigh. These muscles keep the legs centered under the body. A group of small muscles (gluteus medius, gluteus minimus, piriformis, gemellus superior, obturator internus, gemellus inferior, obturator externus, quadratus femoris, tensor fasciae latae) is on the lateral (outside) thigh and works to splay the legs to the side. Another group that makes up more than 75 percent of the hip muscles is the external hip rotators (gluteus maximus, gluteus medius, gluteus minimus, piriformis, gemellus superior, obturator internus, gemellus inferior, obturator externus, quadratus femoris, psoas major, iliacus, rectus femoris, sartorius, adductor brevis, adductor magnus, adductor longus, pectineus). Figures showing these muscles as well as a chart showing specific movements for each muscle are located at the end of the chapter (pages 88-90).

Flexibility has more to do with the overall body function than previously thought. For instance, diminished flexibility is one indicator of an aging body. Decreased physical activity also results in decreased flexibility. As people age and decrease their physical activity, they must keep stretching muscle groups in order to maintain mobility and range of motion in the joints. The hip region is located in the middle of the body, so problems in this area tend to radiate and affect many other parts of the body. You can reduce and even prevent many hip problems by paying more attention to strength and joint flexibility.

Often pain in the hip or buttocks area is associated with poor hip flexibility. This is especially true after running or hiking along steep inclines or declines. Hip pain that occurs one to two days after the activity is due to extensive use of the hip external rotator muscles and is caused by damage to both the muscle and the connective tissues in and around the muscle. Stretching these muscles before and after the activity may help decrease this soreness. In addition, the hip external rotator muscles are the least-stretched muscles of the lower body, probably because these muscle groups are also the most difficult to stretch.

Some of the instructions and illustrations in this chapter are given for one side of the body. Similar but opposite procedures would be used for the opposite side of the body.
Recumbent Hip External Rotator and Hip Extensor Stretch

- **Left**
  - Gluteus medius
  - Semimembranosus
  - Semitendinosus
  - Biceps femoris

- **Right**
  - Latissimus dorsi
  - Erector spinae
  - Gluteus medius
  - Gluteus minimus
  - Gluteus maximus
  - Piriformis
  - Obturator externus
  - Quadratus femoris
  - Obturator internus
  - Inferior gemellus
  - Superior gemellus
Recumbent Hip External Rotator and Hip Extensor Stretch (Crossed Leg)

![Image of a person performing the exercise]

Left:
- Gluteus medius
- Gluteus maximus

Right:
- Latissimus dorsi
- Erector spinae
- Gluteus medius
- Gluteus minimus
- Gluteus maximus
- Piriformis
- Obturator externus
- Quadratus femoris
- Obturator internus
- Inferior gemellus
- Superior gemellus
**Technique**

Lie on your back on a comfortable surface.

Bend the left leg so that the knee is raised up off the floor while keeping the left foot on the floor.

Bend the right knee and cross the right ankle over and just above the left knee.

Grasp the left leg just under the left knee with both hands.

Pull the left knee along with the bent right knee toward your chest as far as possible until you start feeling a slight stretch (light pain).

**Muscles Stretched**

*Most-stretched muscles on right side of body:* Gluteus maximus, gluteus medius, gluteus minimus, piriformis, gemellus superior, gemellus inferior, obturator externus, obturator internus, quadratus femoris, lower latissimus dorsi, erector spinae.

*Lesser-stretched muscles in left leg:* Gluteus maximus, gluteus medius.

**Commentary**

You can do this stretch while in a sitting position, but it is less effective and more difficult to maintain balance.
Standing Bent-Knee Hip Adductor Stretch

Technique

Stand upright with the legs more than shoulder-width apart and the left foot turned out.

Lower the body (hips) to a half-squatting position, bending the right knee and sliding the left foot outward to the left to keep the left knee straight.

While going down, place the hands on the top of the right knee for support and balance (or hold on to an object for balance).

Muscles Stretched

Most-stretched muscles: Left gracilis, left adductor magnus, left adductor longus, left adductor brevis, left pectineus, middle and lower part of left sartorius, left semitendinosus, left semimembranosus.

Lesser-stretched muscles: Medial side left gastrocnemius and left soleus, left flexor digitorum longus.
**Commentary**

Keep the trunk as straight as possible. It is more comfortable to rest the left foot on the inside of the foot. To increase the stretch, bend the trunk to the right and press the right thigh down with both hands at the same time.