essential skills

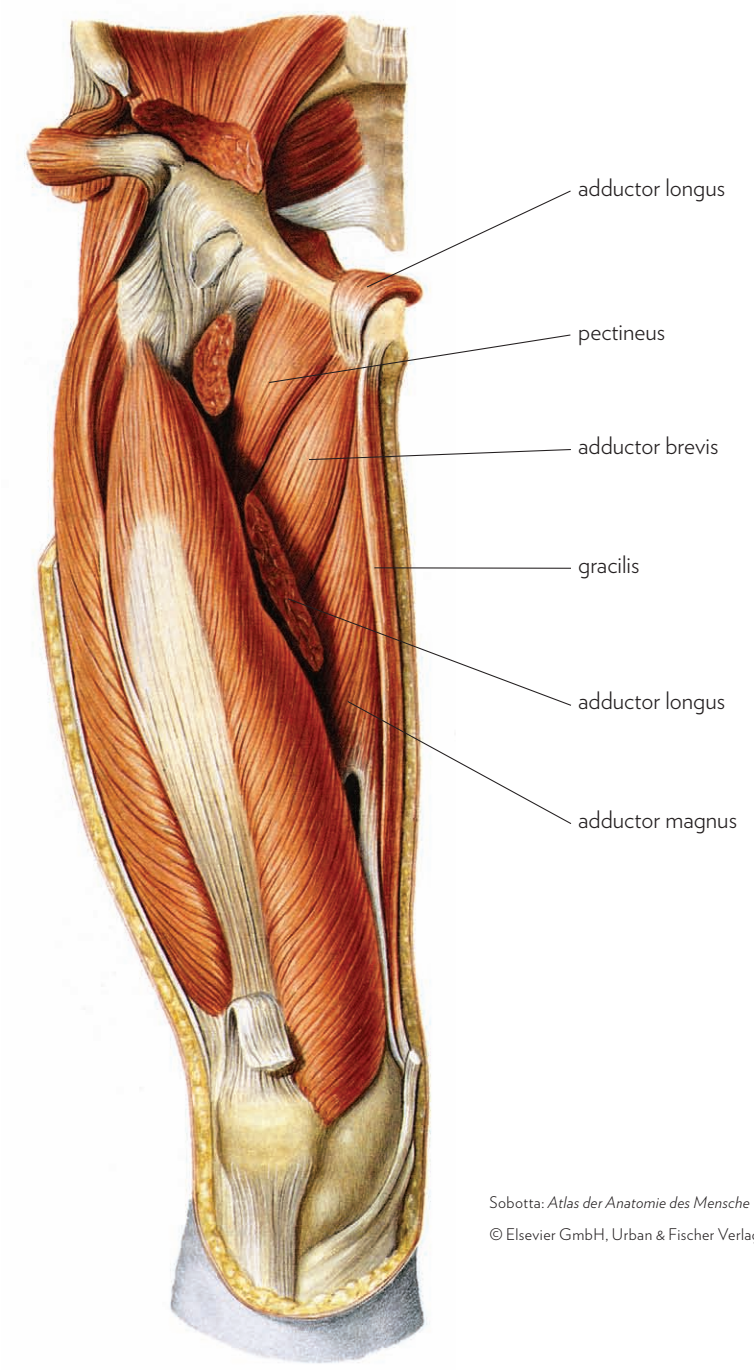
BY BEN E. BENJAMIN

ADDUCTOR MUSCLE-TENDON INJURIES

A strained adductor muscle or tendon can be a tenacious, enduring injury, causing persistent pain in the inner thigh. If a person feels pain high up near the groin, he or she has injured the tendon of one of the four primary adductor muscles: the gracilis, adductor longus, adductor brevis, or adductor magnus. If the pain is toward the mid-thigh, the muscle fibers are injured. Pain in both places indicates damage to both tendon and muscle fibers.

More localized pain felt high up on the pubic ramis suggests an injury to the pectineus—another muscle-tendon unit that assists in adduction, especially when the hip is flexed.

In severe cases, even walking hurts, but more commonly, the person feels pain only during vigorous activity or when stretching the inner-thigh



Sobotta: *Atlas der Anatomie des Mensche*

muscles. Proper treatment can eliminate this injury in a relatively short period of time, but without treatment, it can plague the person for many years.

HOW AND WHY THESE INJURIES OCCUR

The adductor muscles function to draw the legs together and help stabilize them in walking or running, working especially hard during side-to-side movements. The adductor muscles are anchored into the pubic bone and run to either the mid-thigh or the medial knee at the distal end.

These structures can be injured easily while running, especially in sports that require sudden, quick, side-to-side movements, such as tennis, squash, and basketball. The adductors are also vulnerable in a sport like soccer, where the medial aspect of the foot is used extensively in kicking the ball. During this type of a kick, the adductor muscles provide the primary force. When two players kick the ball simultaneously in that way, this creates a great strain on these structures. The adductors can also be injured by vigorous dancing.

Most frequently, however, these injuries result from forced stretching, overuse, or straining while using an adduction machine improperly at the gym. The average person's adductor muscles are not very flexible or strong. As you may recall from previous articles, limitations in the range of motion of muscles or joints makes these structures more vulnerable to injury. In addition, all of our muscles are naturally weaker near the end of their range of motion. As a result, when individuals start to use an adductor machine with the legs spread far apart at the end of their range of motion, they often injure themselves severely the moment they begin to draw their legs together.

INJURY VERIFICATION

There are a number of positions in which you can test the adductors. We will move from the easiest to the most stressful.

TEST 1

With the client lying supine on the table, place your fist between the client's knees, with the sides of your fist (the soft part) against the bony portions of the knees. Now, ask the client to squeeze your fist by drawing the knees together. If this causes pain anywhere in the medial thigh, an adductor strain is present.

TEST 2

If there is no pain in Test 1, ask the client to bend the knees and place the feet flat on the table, with the knees 10–12 inches apart. Now, apply pressure to the medial aspects of the knees and have the client draw the knees together as you resist with equal and opposite force (see image above). If that causes no pain, move the knees apart another foot and try again. If this causes no pain, allow the knees to drop out as far as they can toward the table and repeat the same test.

TEST 3

This final test is the most efficient way to assess the pectineus muscle-tendon unit. Ask the client to raise the knees toward the chest, with the legs splayed open as far as possible. Now, place your hands on the medial aspects of each knee and ask the client to draw the knees together, as you resist with equal and opposite force.

PALPATION TESTING

Because adductor strains do not cause any referred pain, the location of the pain tells you exactly where the injured tissue is located. Very medial pain indicates the gracilis, while slightly more anterior pain suggests the adductors magnus, longus, and brevis. If the pectineus is injured, the pain will be felt a bit higher up on the pubic ramus, lateral to the pubic symphysis. Following the client's lead, palpate the adductor muscle-tendon unit to determine where the pain is most acute. Start in the middle of the thigh, even if the injury is in the groin. (Sudden or unexpected contact high up on someone's thigh can feel uncomfortable

or invasive.) Now, begin tracing your way up the structure until you reach the portion that is tender to the touch. This may be just below the attachment to the pubis or right on the pubis itself. Be careful to drape the client appropriately.

SIGNS OF AN AVULSION FRACTURE

If the pain is fairly severe, especially in the groin area near the attachment to the pubis, it's possible that the person has an avulsion fracture—a condition in which the tendon, or a piece of the tendon, pulls away from the bone and takes a small piece of bone with it. Young people in their teens sometimes get avulsion fractures right at the attachment to the pubis. Although this is relatively uncommon, it can prove serious if not attended to properly; therefore, be sure to have the client see a doctor to get an X-ray or an MRI.

TREATMENT CHOICES

SELF-TREATMENT

If you catch an adductor injury early, self-treatment can be quite effective. In the early phase of this injury, it is essential to rest and do no stretching for a week to 10 days. As the pain subsides, the client should begin very gently stretching the adductors, as indicated in the exercises described below. As the condition improves, the person can participate in athletic activity, provided no pain is felt during it or immediately afterward. (Begin with some moderate activity, such as walking, swimming, Pilates, or yoga—not basketball or running.) If the client experiences any pain or discomfort, it's important to pull back and go slower. After two weeks have passed with no pain, the client can slowly resume his or her normal activities.

FRICTION THERAPY AND MASSAGE

A combination of friction therapy and massage is typically quite effective in treating this injury. The friction therapy breaks apart the adhesive scar

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tissue that has formed in the injured tissues, and the massage supports the healing process by enhancing circulation. If the injury is recent, it should heal within about eight sessions (two sessions per week over the course of a month). For an older injury, the treatment process will likely take eight or 10 weeks or longer. Adding the exercise program will help to reduce the recovery time. Teach your client the protocol described in the next section after the second or third treatment.

Location and friction of the adductors at the pubis. The most common location of injury is right at the attachment to the pubis. This is a very personal and vulnerable area of the body, so be very careful when performing your treatment. Be sure to obtain explicit consent from the client before you begin. To get access to the adductor tendon, ask the person to bend the knee of the injured leg and let it drop out to the side. Place a pillow under the lateral thigh and knee, making sure this position feels comfortable, and then palpate the adductor tendon, beginning at least a few inches distal to the pubis. Work

your way up slowly until you are on the injured portion of the tendon. Now, place your index and middle finger on the injured structure, move across the tendon at a 90-degree angle with moderate pressure, and then move back to your original position with no force. After you have frictioned in this manner for five minutes, take a break, followed by another five minutes of friction.

This treatment should cause mild discomfort, but no pain. It is normal for the client to be sore for 24–48 hours following the treatment, but if the discomfort lasts longer than that, you have used too much pressure. Go lighter the next time.

Location and friction of the adductor tendon body and muscle belly. Perform the palpation testing described earlier to locate the painful area(s). There will often be one primary area of pain and one or two secondary areas. Using the pads of your fingers, move through the muscle belly structure at a 90-degree angle, using moderate pressure. Apply pressure repeatedly in one direction for five or six minutes, take a short rest, and then repeat.

Location and friction of the pectineus at the pubis. After obtaining permission from the client to work in this sensitive area, use the tips of your middle three fingers to apply friction along the broader bony attachment to the lateral edge of the pubic bone. Apply pressure in one direction for only five or six minutes, then rest and repeat.

MASSAGE THERAPY

Massage the entire thigh, anterior and posterior, accenting the adductors on the medial aspect. Be sure to include some transverse massage on the adductors as well. Also, work the entire kinetic chain, including the lower leg and the buttock.

EXERCISE PROGRAM

The exercise program for the adductors has five steps and should be done daily for six to eight weeks, or until the client is pain-free for two weeks. Give your client the following instructions:

1. Warm up the leg for two to three minutes, either walking or swinging the leg from side to side.
2. Lie on your back, bend your knee, and place your hand on the inner surface of the knee. Allow the leg to open out to the side and stretch gently for 20–30 seconds. You should feel only a slight pull; use no extra force beyond the weight of the leg. Rest the leg for a moment and repeat four more times.
3. Lie on your side with the injured leg on the bottom and bend the top leg, placing that foot on the floor in front of the other knee. Lift your bottom leg off the floor about 8–10 inches, and then lower it so that it is an inch above the ground. Repeat this 10 times. Now lower the leg to the ground for a brief rest. Repeat this action for three sets of 10 repetitions. The goal is to feel fatigue at some point in the last set of 10 repetitions. If you do not feel any fatigue, add a 1-pound ankle weight. Continue with the same amount of weight for a week or so. When the exercise no longer creates fatigue, increase the weight by half a pound or a pound and proceed for another week. Continue increasing the weight until you can do the exercise with the same amount of weight on your injured leg as on your uninjured leg (a minimum of 8 pounds). If you feel fatigue in the first or second set of 10 before you add any weight, modify the exercise by bending your knee to a 90-degree angle. It is much easier to raise the thigh without the weight of the lower leg. As you get stronger, straighten the leg a little bit more each week.
4. Repeat the stretch from Step 2.
5. Place an ice pack or heating pad on the injured area for five minutes.

Be sure to educate the client about the importance of regular exercise, including a warm-up procedure, stretching, and strengthening of not only the adductor muscles (which have likely atrophied), but also the hamstrings, abductors, and quadriceps muscles. All three types of exercise are important for maintaining the health of the thigh, and should be done at least three times a week.

SAFETY IN STRENGTH

For athletes who perform any sport or other activity that involves running, having very strong adductors is an absolute necessity. The average person should be strong enough to do whatever he or she wants to do in life, plus a bit of extra strength. Flexibility is also extremely beneficial. Regular stretching that achieves maximum flexibility in the thigh gives protection against future injuries to the thigh and to the low back as well, making it an excellent investment in the continuing health of the lower body. **m&b**

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Editor's note: *Massage & Bodywork* is dedicated to educating readers within the scope of practice for massage therapy. Essential Skills is based on author Ben E. Benjamin's years of experience and education. The column is meant to add to readers' knowledge, not to dictate their treatment protocols.