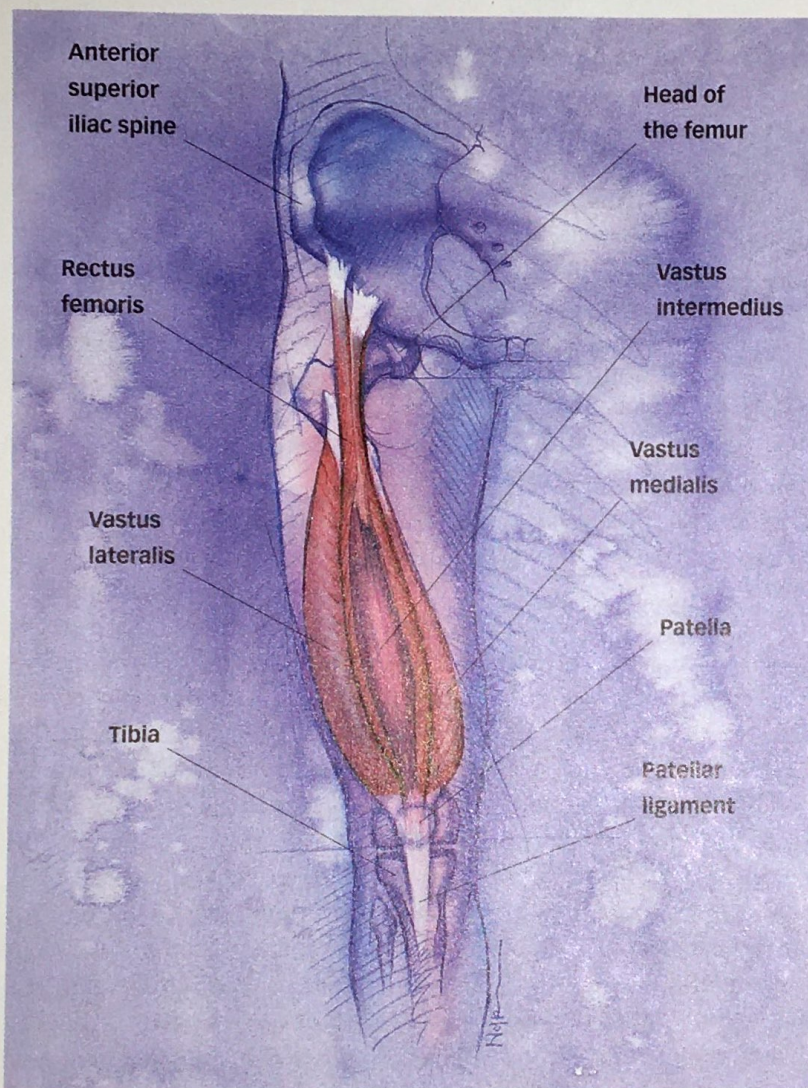


# Thighs Matter

Strong quads are key to many yoga poses, knee health, and a mobile, active life. So work 'em out—but don't forget to stretch them too.



WHETHER YOU ARE a veteran yoga practitioner or a beginner, you know that your quadriceps—the muscles on the front of your thighs—work hard in many postures. They are often tired and sore after bent-leg standing poses like Virabhadrasana I and II (Warrior Pose I and II; see pages 90–91), or repetitions of Setu Bandha Sarvangasana (Bridge Pose), or a long hold of Navasana (Boat Pose). If you regularly practice such poses, your quads will become stronger. But if you work these muscles without also stretching them, they will become shorter and tighter as well. So it's impor-

tant to balance poses that strengthen your quads with those that stretch them.

The word *quadriceps* means “four heads,” referring to the four distinct muscles that all join at a single tendon. Three of the four originate on the femur, or thighbone: the vastus medialis, on the inner front portion of the femur; the vastus lateralis, on the outer front; and the vastus intermedius, between the other two. The fourth, the rectus femoris, sits on top of the vastus intermedius and goes down the center of the thigh. It originates on the front of the pelvis just below the anterior superior iliac spine (often called the frontal hipbone or hip point in yoga classes). All four muscles join to insert, via the quadriceps tendon, on the patella, or kneecap. The strong patellar ligament then attaches the patella to the top of the tibia, or shinbone.

The four quadriceps muscles strongly extend (straighten) the knee. In poses in which the quadriceps straighten the knee entirely, like straight-legged standing poses and standing and seated forward bends, this knee-extending action is obvious. But the quadriceps also work hard in poses in which the leg remains bent, like Virabhadrasana I and II. In asanas like these, the pull of gravity on the torso tends to bend the knee ever more deeply, and the quads must engage strongly so that you don't simply sink down to the ground.

In addition to straightening the knee, the rectus femoris acts as a hip flexor, pulling the torso and the thigh toward each other. In Navasana, the rectus femoris performs both of these actions at the same time. It must work with other hip flexors, like the psoas, to create the V shape of the pose by holding up the weight of the legs and torso against the pull of gravity. Simultaneously, it works with the other three quad muscles to hold the knee straight.

## Long, Strong Quads

KEEPING THE QUADS strong is important for several reasons. First, strong quads bring stability to the knee joints, which are inherently unstable and dependent on ligaments and muscles to protect them from injury.



(For more on knee safety, see "Knee Deep in Yoga," page 88.) Second, research has shown that quad weakness is a predictor of arthritis in the knees. Third, weak quads can decrease your ability to live independently in your later years—as the decades go by, the quads gradually become weaker if they aren't worked regularly, until eventually it becomes difficult to go up and down stairs and get up out of a chair.

Unfortunately, many people of all ages in our sedentary society have weak quads. In fact, this can be true even for people who do a fair amount of walking or running. Although these forms of exercise have many benefits, adequately strengthening the quads isn't one of them. Other activities, including riding a bicycle, lifting weights, and doing yoga, do a much better job. If you do choose yoga as your primary quad-strengthening activity, be sure to practice poses that target these muscles about three times a week, and use long holds and/or multiple repetitions to build endurance as well as strength.

Along with strengthening the quads, it's important to keep them flexible. They will become short and tight unless you give them a good long stretch at the end of any exercise session in which you've worked them. Even if you don't work to strengthen your quads, they will become short if they're never taken through their full range of motion; the soft tissues of the body simply conform to the shapes in which we spend the most time. If you rarely straighten your elbow or stretch your arm fully over your head, for instance, your elbow and shoulder will gradually lose those portions of normal movement. In the case of shortened quads, the knee and hip will suffer. If you rarely stretch the quads, you will lose the ability to fully flex (bend) the knee. (Of course, other factors, including injuries and arthritis, can also inhibit knee flexion.)

This loss of full flexion is especially noticeable in Virasana (Hero Pose; see page 94). It can prevent you from being able to sit on your heels, let alone between your heels, as the complete pose demands. Loss of full knee flexion also limits your ability to pull your foot up into your groin in Vrksasana (Tree Pose; see page 91), and it creates diffi-

culties in seated poses and forward bends in which one or both knees must flex deeply, such as Janu Sirsasana (Head-to-Knee Pose) and Padmasana (Lotus Pose).

If the rectus femoris is short, it can limit not only knee flexion but also full extension at the hip. Combined with shortness in other hip flexors, like the psoas and the iliopsoas, shortness in the rectus femoris causes the pelvis to tip forward and the lower back to curve excessively when you are standing. Shortness in the hip flexors also contributes to lower back pain in backbends, such as Setu Bandha Sarvangasana, Ustrasana (Camel Pose) and Urdhva Dhanurasana (Upward-Facing Bow Pose). A sedentary lifestyle plays a part in the shortening of the hip flexors as well. If you spend long hours sitting, a position in which the hip flexors are shortened, your body will adapt to that shape unless you regularly stretch it in the other direction.

### Balance Strength with Flexibility

FORTUNATELY, it's simple (though often not easy) to stretch the quadriceps: Because their action is to extend the knee, to stretch them you just have to flex the knee. (A word of caution: If you have knee injuries or arthritis, check with your health care provider before working on deepening your knee flexion.) You can gently flex the knees by lying on your back and drawing your knees toward your chest. Wrap your hands around your shins and pull them down toward your thighs. To flex the knees more deeply, practice Virasana for two to three minutes on most days. If your knees are stiff and your quads tight, you will need to sit on a support, like a yoga block. As your quads' flexibility improves, gradually lower the height of the prop.

To fully stretch the rectus femoris, you must include hip extension (opening across the front of the hip) as well as knee flexion. The classic yoga pose that does this is Supta Virasana (Reclining Hero Pose). Unfortunately, many people with tight quads feel either knee pain or lower back pain—or both—in this pose. This can be due to poor alignment, so you might want to have an experienced teacher check your knee and back position and perhaps recommend props, like a bolster or folded

blankets, to raise your torso higher than your knees. It's also a good idea to stretch the rectus femoris of each leg separately, because stretching them together can cause a strong forward pull on the pelvis, causing excessive lower back arching and pain. You can do this by practicing Ardha Supta Virasana (Half Reclining Hero Pose); place one leg in Virasana position while bending the other leg at the knee and placing the sole of the foot on the floor.

You can also stretch each rectus femoris separately in a modified version of Bhekasana (Frog Pose). Lie on your stomach and pull one heel toward your outer hip, using the hand on the same side so you don't pull your heel in toward your tailbone. Make sure to keep both knees within a few

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inches of each other, and keep the front of the hip on the stretching side on the floor. If the front of the hip comes off the floor, that hip is starting to flex, the rectus femoris is avoiding the stretch, and your lower back ends up overarching. To avoid all of these unwanted actions, make your tailbone heavy, press your pubic bone into the floor, and ground the front of your hip. Then gently pull the heel toward the outer buttock; visualize the quadriceps lengthening as you hold the stretch for a minute or more.

This pose can also serve as a check of quad flexibility: If your heel is several inches from your buttock, you have a lot of practice ahead to restore your full range of motion. But then, isn't that one reason we do yoga? Because it provides us with a lifetime practice in which we can work every day toward greater ease of movement, health, and freedom. ■

*A licensed physical therapist and certified Iyengar Yoga teacher, Julie Gudmestad runs a private physical therapy practice and yoga studio in Portland, Oregon. She regrets that she cannot respond to inquiries requesting personal health advice.*