

The surprising key to soothing sciatica and lower back pain is a muscle you may never have heard of. It's time for a

primer on the piriformis

In a classroom of wavering Tree Poses, one tree stood tall in the corner. The student's Vrksasana had some undulation like the rest, but at the center was an unusual steadiness that was more than just concentration: She'd discovered the key that allowed stability and lightness to shine throughout the whole pose. The key—both surprising and underappreciated—is a small muscle that contributes mightily to sacral stability and provides lightness and openness in demanding yoga postures. That muscle is the piriformis.



BY DOUG KELLER

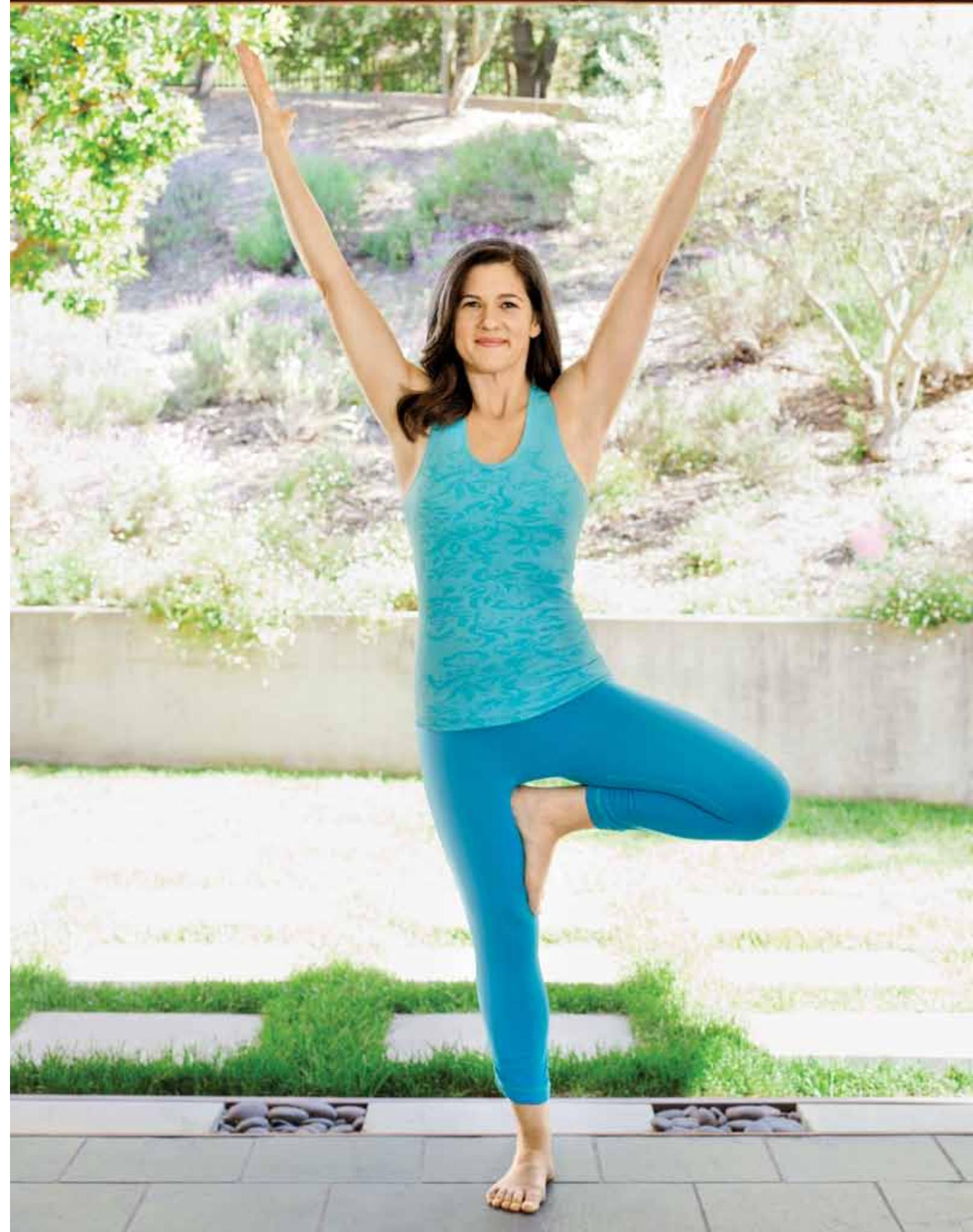
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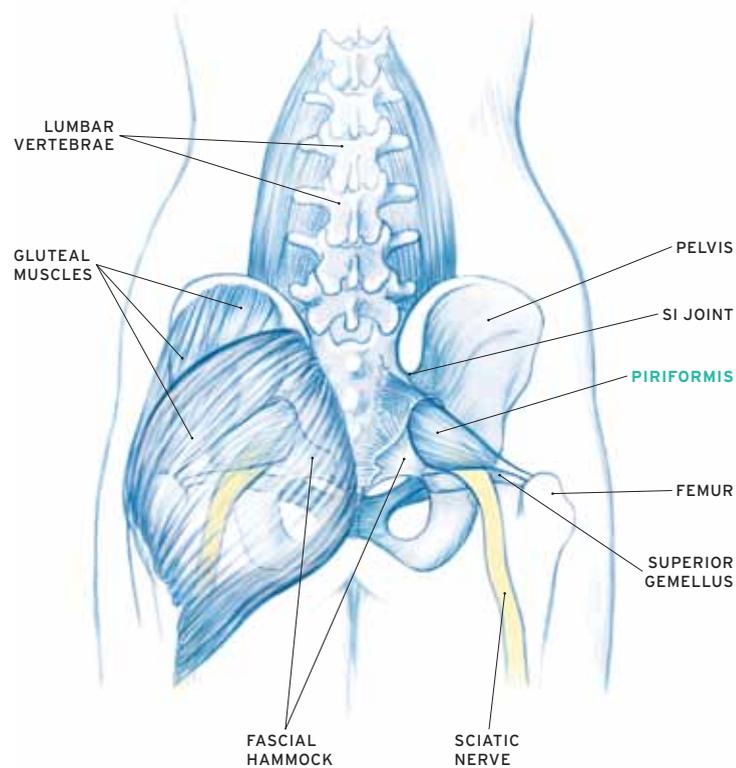
The piriformis is primarily an external rotator, one of a number of small, deep muscles that rotate the leg outward at the hip. It's notorious for causing sciatic pain. When the piriformis gets tight, it pinches the sciatic nerve and causes a burning pain at various points along the nerve's path, which runs from the buttock all the way down to the foot. Tightness in the piriformis also can bring hot pains in the buttock during hip stretches such as Pigeon Pose and can afflict forward bending with a feeling of tension in the buttocks around the hip joints and

sacrum. Limitations in the piriformis can translate into pain and strain in the lower back, as well—even during everyday activities and bending in poses like Uttanasana (Standing Forward Bend).

For all these reasons, the piriformis can seem like little more than a troublemaker, causing pain far out of proportion to its function. But this muscle serves an important purpose. Its most fundamental job is to provide stability to your sacrum, the triangular bone that connects the back of your pelvis to your spine. To understand just how it accomplishes this feat, it helps to be able to visualize the piriformis. There are two piriformis muscles that sit behind the hip sockets, extending from the upper, outer corner of each femur (thighbone) to the sacrum. The piriformis muscles are joined by a band of connective tissue, or fascia, that stretches across the sacrum just above the



meet the piriformis



One way to assess if you're hypermobile in your sacral ligaments is by observing your posture. When the pelvis is habitually—and excessively—tilted forward, establishing a deep inward arch in the low back, the sacrum is tilted *away* from the support of the piriformis hammock that helps keep the SI joints tight and stable. It's very much like habitually leaning to one side of a hammock, teetering on the edge of falling out. It's very unstable, and this type of instability can cause stabbing pain in the lower back.

Just Right

To help the piriformis do its job properly, it's important to establish pelvic alignment that strikes a balance between chronic tightness and laxity. The key to sensing this lies in developing an awareness of your sitting bones. Try this: Sit upright on a firm chair and feel your sitting bones beneath you. From there, tilt your pelvis back in a slump. Feel your sitting bones slide forward as you lean back, curling your tailbone under. This drops you back into the hammock of the piriformis and the ligaments of the low back, and you may be able to feel a tightening or grabbing of the piriformis and the other deep muscles surrounding the sitting bones.

tailbone. To picture this, imagine that your leg bones are two trees. The piriformis muscles are two fans of ropes that blend into a fascial hammock that hangs between the two trees. The sacrum (*see illustration, page 70*) sits and rocks in the hammock, adjusting itself as the trees sway and move. This fascial hammock is the piriformis's secret to regulating movement and stability in the sacroiliac (SI) joints.

And the SI joints are tricky to regulate. The joints have to be loose enough to allow your pelvic bones to move with your legs when you walk or run, yet stable enough to support the spine as it rests on the sacrum. The piriformis helps hold the sacrum together—but it also has to know when to let go.

Walk this Way

When you take a step, a shock wave of force travels up your leg to your hip, and the SI joints have to hold the pelvis together against that pounding. The piriformis assists the ligaments of the SI joint by contracting and hugging the sacroiliac joint even tighter during this phase of putting weight on the leg. But as soon as your weight comes off the heel, the piriformis has to release and allow the pelvic bone to swing with the leg. It's a finely tuned dance of hug-and-release, and a well-coordinated pair of piriformis muscles makes for a feeling of stability and lightness in your pelvis, which puts a youthful bounce in your step.

But if the delicate balance is thrown off and they become too tight or too loose, you run into problems, including SI joint pain. A tight piriformis can pinch the sciatic nerve, a large and lengthy nerve sandwiched between the piriformis and another external rotator known as the gemellus, causing radiating pain in the buttocks, hamstrings, calf, heel, and even down to the toes. Since these kinds of pain are caused by chronic tightness, asanas that *stretch* the piriformis to relieve such tightness are the usual cure. And asana can be a way of learning how to reposition the pelvis so that we don't habitually hang back in the piriformis hammock, tightening and straining the ropes.

The piriformis muscles also can fall short in their task if they are not tight enough to do their job for the sacrum. Sometimes the sacral ligaments are hypermobile, either from heredity or from years of extreme stretching, and this makes it harder for the piriformis to stabilize the SI joints.

Next, tilt your pelvis in the other direction, arching your back inward and drawing your sitting bones back and apart so that you're resting on their front edges. Notice how your lower back and groins start to harden. At the deepest level, the hip flexor muscles shorten as part of the action of tipping your pelvis forward. And notice how the muscles at the outer edges of the sitting bones and behind the hip joints, including the piriformis, are inactive. The low back will feel tight because of the forward tilt of the pelvis, but the sacral joints will feel unstable and unsupported.

After moving your pelvis between these two extremes, try to find some middle ground. Allow your tailbone to get heavy and descend so that your weight comes to the center of your sitting bones. When you do this, you invite the tailbone and sacrum to descend into the fascial hammock of the piriformis, which provides greater support and stability to the SI joints. It should also feel like you are standing tall on your sitting bones, which creates tone and lift in your lower belly and also tones and supports the muscles across the sacrum, just below your waistline. This type of

practicing abduction

Learn the key actions that lead to a healthy piriformis and a pain-free back with the following three poses.

UTTANASANA (STANDING FORWARD BEND)

When you practice abduction in Uttanasana, you use the gluteals to center and stabilize the thighbones in the hip joints. This helps you to overcome the habit of hanging back into the hammock of the piriformis for support, and it brings greater ease to your forward bend while reducing strain on your low back.

Begin standing with your feet hip-distance apart. Microbend your knees and draw your thighs and feet apart, as if you were trying to stretch the sticky mat between your feet. Keep the knees facing straight forward to make sure you're not rotating your thigh out. Don't pull the feet apart so strongly that you feel your buttocks tighten inward, but rather feel how the muscles above the hip joints are drawing the tops of the thighs laterally outward, away from the hip joints. That expansion at the hips is abduction. You'll also feel a subtle broadening or release across your sacrum, at or below your waistline and in your low back. It's up to you to calibrate just how much abduction is enough to create this feeling of release. If you tend to be tight in your low back and hamstrings, give extra attention to isometrically pulling your heels apart without turning your knees inward.

From this engaged standing position, move into the forward bend. First tip your pelvis slightly forward, increasing the inward arch in your low back, and shift your hips back until you feel your weight come into the centers of your heels. With your knees slightly bent and your thighs abducting, fold forward at your hips to touch the floor, yoga blocks, or a chair. You can straighten your legs to complete the hamstring stretch, but continue to isometrically draw your inner heels apart to increase the stretch to the outer edges of your legs and hips. This action releases the piriformis, along with the other rotators. If you are very flexible, ground through your outer heels while maintaining the abduction. This action engages the hammock of the piriformis, steadying the sacrum while reducing the extreme forward tilt of the pelvis that tugs at the hamstring attachments. To come up without straining your lower back, microbend your knees and isometrically draw your thighs apart laterally.



MODEL: DEBORAH BURKMAN; STYLIST: LYN HEINEKEN; HAIR/MAKEUP: BRYNN DOERING/AUBRI BALK INC.; TOP: CLIMAWEAR; LEGGINGS: ELISABETTA ROGANI; MAT: KULAE

*creating
stability*

awareness exercise will help train you to hold the pelvis in a healthy alignment, and it will balance the tone of all the muscles involved, especially the piriformis. Yet, notice how the instruction is to let the tailbone get heavy, not “scoop.” At some point in your yoga career, you may have heard the instruction to “scoop” the tailbone down and forward to prevent pinching in the low back and sacrum, especially during backbending actions. But if you focus on this action alone, it actually destabilizes the sacrum by tipping it backward. It also tightens the piriformis at the hip joint—just where you don’t want it to tighten. Simply shifting your focus away from the “scooping” action and toward properly grounding through the legs will allow the piriformis to do what it does best: provide stability to the SI joints by supporting the sacrum in its hammock. This is especially helpful in deeper movements of forward bending and backbending, as well as for releasing the torsion in the SI joints during twists.

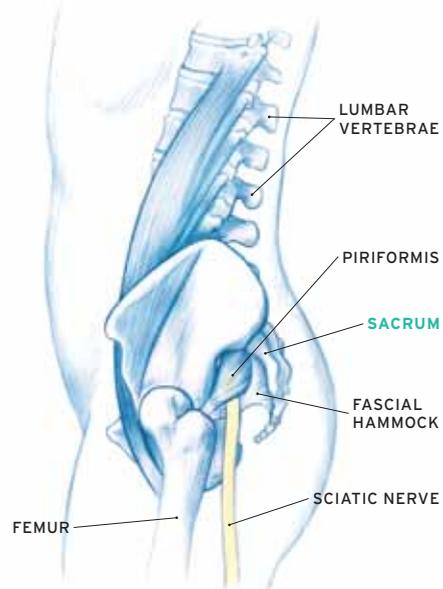
You can cultivate this awareness of pelvic alignment when you’re standing, too. You may notice that, instead of having a well-balanced pelvis, you find yourself standing with your “tailbone scooped, your groins pushed forward, and your feet turned out. Standing like this turns the tops of the thighs out and shortens the piriformis. The sacrum sits too heavily in its hammock, tightening the piriformis at the outer hip just behind the head of the thighbone. This tightness shows itself as a deep

dimpling in the outer flanks of the buttocks. In this case, the tightness of the piriformis particularly affects the outer hips and compresses the SI joints and lumbar spine.

Just as you found optimal pelvic alignment while seated, you can find it when standing. This sweet spot in your posture, where the piriformis muscles are best situated to stabilize the sacrum without over-tightening in the buttocks or hip joints, brings a feeling of lightness and energy. When you find it, you feel truly grounded through the legs without a feeling of hardness or excessive effort.

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see your sacrum



VRKSASANA (TREE POSE)

Balancing poses challenge the piriformis [in the standing leg to work strongly in order to stabilize the SI joint while at the same time enlisting the aid of the gluteals to hold the pelvis level. Tree Pose challenges you to use the gluteals to abduct and open the hip of the lifted leg while teaching you not to overuse the piriformis by tucking or scooping the tailbone.

Stand in Tadasana (Mountain Pose) next to a wall on your left side. With your feet hip-distance apart, turn your right foot out slightly so you can more easily ground your outer heel to activate the piriformis. Shift your weight onto your right foot, bringing weight to your outer heel. Balance your weight evenly between your big toe mound and outer heel, and spread your toes.

As you extend down into the earth through the bones of your right leg, you will feel the gluteals at your outer hip activate in order to keep the pelvis steady and level. Lift your left foot, turning your thigh out to the side, and place the heel at your inner right thigh, just behind the thighbone. Your left knee will be in contact with the wall to help you balance. Keep your hip points and torso facing directly forward.

Firm and press your right thigh in against your left heel while continuing to ground down through the right leg. At the same time, press your left heel into your right thigh, which will keep the right leg from excessively rotating out. It’s the slight inward rotation of the thigh that keeps the piriformis from tightening.

To open the left thigh, inhale and firm your lower belly, drawing the pit of your abdomen in toward the spine and up. Press the left knee into the wall as you extend down through your standing leg and up through your head. From the combination of all of these forces, your left thigh will open naturally without a feeling of pinching or gripping in your left piriformis (which you would feel deep in your left buttock, just behind the hip joint).

Press your palms together in front of your heart. Then release the pose and repeat on the other side.



PIGEON POSE

Pigeon Pose stretches the part of the piriformis that causes the most problems. The gluteals provide some abduction to moderate the intensity of the stretch.

From Adho Mukha Svanasana (Downward-Facing Dog Pose), bring your right leg forward, your knee toward the outer edge of your mat, and your heel in line with your left hip, with your shin at about a 45-degree angle to the front of the mat. Lean forward and extend your left leg back. To go more deeply into the right piriformis stretch, turn your left toes under, lift your left knee, and walk your hips back. Your right thigh should rotate out, and your right hip should descend toward the floor. If your hip doesn’t fully reach the floor, support it with a block or folded blanket. From there, lean forward to further deepen the stretch to the piriformis.

Next, point through the left big toe and spiral your thigh inward so that the center of your thigh muscle faces the floor. Your left hip point will turn more toward the floor, increasing the stretch to the right piriformis muscle. If the stretch is too intense or causes a twisting in your right knee, sit up higher on a prop. To incorporate gluteal abduction, bring your torso upright and lift your hips slightly up and away from the floor. Firm the pit of your abdomen back toward the spine and isometrically draw your thighs apart, engaging the outer hips much like you did in Uttanasana. Then descend your pelvis into the space between, allowing your pelvis to tip forward slightly as needed. The piriformis will get an intense stretch, but notice how the abduction of the thighs spreads the stretch throughout the hip, opening up a space of ease in the area of the sacrum.

*stretching
a tight
piriformis*



primer on the piriformis

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To find optimal alignment for the piriformis in your normal standing position, bend your knees slightly to unlock them, tilt your pelvis forward a little—just enough to deepen the inward arch in your lower back and soften your groins—and then shift your hips backward until you feel your weight become more grounded through the center of your heels. At the same time, spread your toes and bring equal weight and contact to all four corners of your feet. Then, as you straighten your legs, let your tailbone descend while gently toning and lifting through the pit of your abdomen. Imagine the tailbone sitting lightly in the hammock of the piriformis; any extra effort to scoop the tailbone takes you out of this sweet spot, hardening the groins and hip flexors. When you feel grounded through the bones of your legs and experience a lightness and lift in the arches of your feet and your pelvic floor, you've found the sweet spot where your hips are aligned and your piriformis is supporting your sacrum.

Powerful Ally

The path to making the piriformis your friend lies in this subtle practice of realignment, using the feeling of weight and alignment in your sitting bones and feet as a guide. But taken by itself, this can seem too subtle. There is a third player that helps steady and center you while exerting a calming influence upon the piriformis: the gluteal muscles.

The gluteals provide powerful support to the piriformis's secondary actions of external rotation and abduction, which allows the piriformis to better perform its primary function of stabilizing the SI joints. The main focus in working with the gluteals to relieve the piriformis is the action known as abduction. In the case of the legs and hips, abduction refers to taking one leg out to the side, away from the centerline of the body. Abduction can be an actual movement or an isometric action. When it's an isometric action, abducting the gluteals stabilizes the hip joint. For instance, when you balance on

one leg, the gluteals contract the same way as when you lift your leg out to the side. But since the standing leg cannot move, the effect is to lift and level the pelvis on the hip. The more efficiently the gluteals do this, the more the piriformis is free to stabilize the SI joints. But if the gluteals fail, the pelvis wobbles and tips sideways at the hip, causing the piriformis to contract in the absence of its helper.

When you work on optimal pelvic alignment in your everyday sitting and standing postures, you can imprint the sensations of proper alignment and apply them to your yoga poses, too. There, the benefits of enlisting the gluteals to take on the work of abduction and relieve the piriformis to do what it does best will be all the more evident. You'll feel ease and spaciousness in your low back during forward bends and backbends and find greater lightness and stability at your very center during standing and balancing poses. ❖

Doug Keller teaches yoga worldwide. For more information, visit doyoga.com.

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