

## Healing Hamstring Injuries

*Yoga students are vulnerable to overstretching the hamstring muscle and thereby tearing the connecting tendon. Injuries can be avoided—and even healed—by following a few simple guidelines.*

By DOUG KELLER

Ask any room of yoga students whether they suffer from pain at one or both of their sit bones, and you can count on a showing of hands. This kind of pain comes from injury to the hamstring attachment. Of course, hamstring injuries are not unique to yoga, though the cause and treatment of this particular problem often is. The more dramatic hamstring tears occur in sports and especially while running, when athletes are tightly wound and move in sudden bursts that wrench and tear at the hamstrings, usually in the “belly,” or middle part, of the muscle. In yoga, the injury occurs in a different way and at a different place.

For people who practice yoga, hamstring injuries develop over time, usually where the hamstring attaches to the sit bone. This is a tendon injury, and unlike a muscle tear, it doesn’t happen suddenly. Instead, it is “death by a thousand cuts”: each tiny rip in the tendon is relatively minor by itself, but because it does not fully heal, repeated injuries accumulate over time, until an ill-considered bit of overstretching or an overly aggressive adjustment from a teacher finally puts the injury over the edge.



**HAMSTRING INJURY** *The most common hamstring injury for yoga practitioners occurs just below the sit bone.*

Tendon injuries are in a class by themselves. They require a specific regime for healing that is very simple but requires time, patience, and persistence. The alternative, however, is even less attractive. Left alone, an injury to the hamstring attachment can take six months to a year to stop hurting—and even then it does not mean that it has fully healed. The attachment remains far more susceptible to re-injury than a tendon that has been properly treated.

Each little “cut” in the hamstring attachment occurs when the muscle is not engaged and thus cannot protect itself. Immediately after the injury—however tiny it is—adhesive scar tissue forms. While this scar tissue is meant to protect the tendon as it heals, quite often the scar tissue hampers the healing process, preventing a full recovery. Scar tissue limits circulation and stiffens the tendon, leaving it more vulnerable. We tend to dismiss each little injury after enduring some soreness, but the injury is really cumulative. Repeated re-injury and the formation of more scar tissue can extend over years, progressively weakening the tendon.

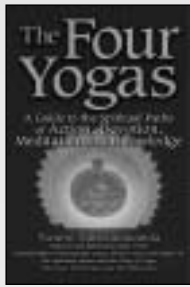
In yoga, there is ample opportunity for this to happen, usually in the process



of doing forward bends. As beginners, we are taught to fold forward at the hip joint (rather than at the waist) with a straight spine, maintaining a natural arch in the lower back through most of a forward >>

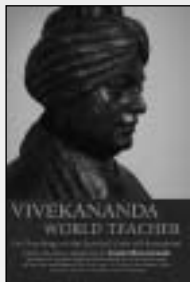
*Doug Keller's yoga journey includes 14 years of practicing yoga in Siddha Yoga asrams, intensive training in the Anusara method, and nearly a decade of teaching both in the United States and abroad. He has a master's degree in philosophy from Fordham University.*

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bend. Students with tight muscles are rightly encouraged to bend their knees to release their hamstrings somewhat and maintain a flat back as they bend forward. This helps protect the lower back and gives a better stretch to the otherwise hypercontracted hamstrings.

As we get more flexible, we continue the same habit and even overdo it. This is especially true for students who were naturally limber to begin with. The natural arch we sought becomes an exaggerated lumbar curve, and the forward bend becomes more of a swan dive in which the sit bones flip upward as the pelvis tilts forward. Because the hamstrings



**SWAN DIVE** *Overarching the back in forward bends exerts a dangerous pull on the hamstring attachment.*

have learned to release to allow this free fall, they start to act more like bungee cords—relatively slack on the way down through most of the dive, suddenly pulling taut at the far extreme of the bend. Each sharp tug causes a little rip that frays the hamstring where it attaches to the sit bone, because this is the place of the greatest leverage and thus the hardest pull.

We're taught to engage the quadriceps to protect our knees; indeed, "Lift your kneecaps!" is repeated like a mantra by yoga teachers. But no one tells us to engage the hamstrings to protect them from this injurious yank. Learning how—and how much—to engage the

hamstrings is the first step toward preventing this injury or healing the injury if it has already occurred.

### THE MECHANICS OF THE MUSCLE

We can start by looking at how the hamstrings function. One of their duties is to bend the knee and pull us through our stride as we walk or run, which is why runners typically have such tight hamstrings. The muscle is used in this way when the lower leg moves freely.

But the hamstrings also have a postural function—holding us upright—which works the other end of the muscle, at its origin at the sit bone. The hamstrings anchor the pelvis by drawing the sit bones toward the backs of the legs. If the hamstrings were to completely release their hold at the sit bones, we would flop forward at the hips like a rag doll. The hamstring performs this action when the lower leg is fixed (i.e., not free to move), and for this reason, the hamstrings can get tight simply from standing a lot or doing work that involves bending forward for long periods.

We feel this postural action of the hamstring as a contraction of the tendon where it attaches to the sit bone, at the lower

### HAMSTRING

**ANATOMY** *The hamstring muscles, which connect the lower leg bones to the sit bones, serve to anchor upright posture and need to be properly engaged when we bend forward.*



crease of the buttock. At its extreme, this can cause a tucking of the pelvis when the hamstrings are hypercontracted. Good posture comes about through balanced tone between the quadriceps and the hamstrings. Bad posture throws off this balance, causing tightness and chronic hypercontraction either at the front or the back of the hip joint.

**PREVENTING HAMSTRING INJURIES**

In a forward bend, this postural action of the hamstring needs to be engaged just enough to protect the muscle from overstretching. If this idea of engaging your hamstrings at your sit bones seems hopelessly abstract, try the following exercise. Stand with your feet separated and slightly bend your knees. Isometrically pull back with one of your feet. You'll feel your hamstring engage, and your sit bone will want to tuck under somewhat from the contraction at the top of the hamstring.

**HAMSTRINGS AND POSTURE**

*Tight hamstrings pull down at the sit bones, causing the back to flatten.*



In this case, the hamstring draws or pulls from your sit bone down toward your knee. If you were bending your knee to lift your foot, the direction of energy would instead be from your lower leg toward your sit bone.

For the hamstring attachment to be protected, we want to draw the energy from the sit bone toward the knee, so that the hamstring will act as a brake in the forward bend. This action is of the

*Hamstring injuries develop over time. It is "death by a thousand cuts."*

essence in yoga; it is known as "eccentric" (pronounced "ee-centric") stretching, meaning that the muscle remains engaged as it is lengthened. For example, if you were to curl a barbell up using your biceps and then very slowly lower it down, extending your arm until it is nearly straight, the lengthening that >>



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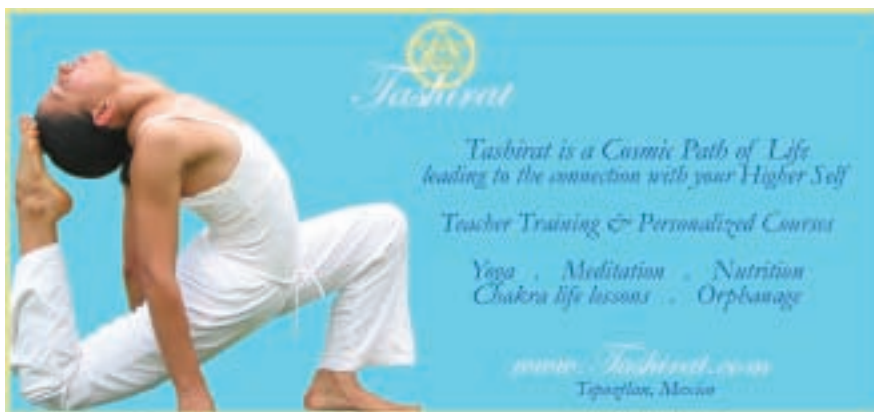


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takes place in the biceps is known as an eccentric stretch—one in which the muscle is both contracted and lengthened at the same time, in measured coordination. This brings greater strength to the muscle in the very process of stretching it. In a forward bend, the hamstring stretches eccentrically, acting as a brake as it lengthens, thus balancing strength and suppleness while sparing the hamstring attachment from injury.

### HEALTHY HAMSTRINGS IN YOGA

Let's apply this technique in a yoga pose. We can take as an example the wide-legged forward bend (*Prasarita Padotanasana*). Step your feet apart wide and keep them parallel to each other. While maintaining a straight back, bend forward at your hips to touch the floor. You can bend your knees to protect your back as you fold forward; once in the pose, your legs should be straight unless tightness in your hamstrings makes your back round.

Once in the pose with your legs straight, make sure your knees are not locked or hyperextended. Engage your quadriceps, drawing energy up from your kneecaps toward your hips. You can connect that engagement of the quadriceps to a complementary engagement of your hamstrings: imagine that energy is travel-

*Learning how—and how much—to engage the hamstrings is the first step toward preventing or healing injury.*

ing in a circle down through the backs of your legs. Engage the hamstrings by drawing your sit bones just slightly down toward the backs of your knees, so that the small spaces just beneath your sit bones firm. Your intention to draw your sit bones down will also engage your buttock muscles. You can isometrically drag your feet back to get the action going, though the action is actually initiated from the sit bones turning downward toward the knees. Once you learn the action, you can maintain the balanced engagement between the quadriceps and the hamstrings even as you bend forward in the pose, controlling how quickly and



**PROTECT THE HAMSTRINGS** *A proper balance between engaging the quadriceps and drawing the sit bones toward the backs of the knees tones and protects the hamstring attachments.*

how deeply you move. This same approach can be used in seated forward bends, too: draw your sit bones just slightly toward your knees as you

lengthen upward through your spine and fold forward. Applying these techniques will help protect your tendons as you move through the asanas.

### HEALING A TORN TENDON

But what if the damage is already done? How do we heal an injury that has been building up for months or even years? A simple and effective system for healing tendon injuries has been detailed by Dr. Ben Benjamin in a series of articles that appeared in *Massage & Bodywork* magazine in 2004. As a healing regimen, it addresses two aspects of the injury: the buildup of adhesive scar tissue and the healing of the tendon itself.

The scar tissue can be progressively cleared by a simple massage technique he calls “frictioning.” Its purpose is to break up the irregularly formed scar tissue in order to restore circulation and facilitate the healing process. To friction a tendon, rub or pluck your finger crosswise on the tendon—in one direction only, not back and forth—with a degree of pressure that is enough to be uncomfortable, but not so great as to be painful. Do >>

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this for 5 to 15 minutes, taking breaks when your finger gets tired.

How might you reach the injury to friction it? You can recline on the floor with your knee bent and foot on the floor (or with the calf supported on a chair, so that the leg is at 90 degrees), and thus reach the exposed tendon to friction it with your fingers. It is possible to use substitutes such as a tennis ball or massage ball, reclining with the leg nearly straight and the ball on the tendon. In that case, bend the opposite knee and place your foot on the floor to help you rock your hips from side to side to get the massaging action from the ball. The ball will be less accurate and thus less effective than the finger; the plucking action is preferred.

The second part of the process involves small strengthening exercises, often combined with gentle stretching. The most effective strengtheners are sim-

ple backbends such as the locust and bridge poses, in which the hamstrings are used to extend the hips.

For the locust pose (*shalabhasana*), lie on your stomach (with a folded blanket for padding under your hips) and extend your legs behind you, with toes pointed. Work one leg at a time. Rather than simply attempting to lift your leg, which can strain your lower back, work in the fol-

lowing way to concentrate the action in your hamstrings. On the injured side, point your toes and reach back through your big toe as if you were trying to push a button with it. Keep lengthening through your leg and big toe as the way to begin to lift your leg. You'll feel your hamstring working, particularly beneath your sit bone. You can actively engage the tops of your buttock muscles, length-



**STRENGTHEN AND STRETCH**

*Reach back through the big toe and lengthen as you lift to tone and strengthen the injured leg.*

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ening from your waistline toward your tailbone to protect your lower back—but you’ll probably find this happens automatically in this exercise. Your foot needs to only lift four or five inches from the ground; work up to three sets of five or six lifts. You can increase the strengthen-

*Tendon injuries require a specific regime for healing that is very simple but requires time, patience, and persistence.*

ing action by putting a small weight, such as a small bag of rice, across your ankle. Work both legs to maintain a balance of strength.

For the bridge pose (*setu bandhasana*), lie on your back with both knees bent, thighs parallel to each other and your feet on the floor. Bring your feet close to your hips so that your shins are perpendicular to the floor. Maintain a natural arch in your lower back, leaving enough room to slip the tips of your fingers into the space just above your waistline. To feel the action of the hamstrings, isometrically pull your feet toward your hips (your feet don’t move) and feel how your hamstrings engage, especially at your sit bones. This exercise alone can be enough if your lower back is tender.

Keeping your weight centered in your heels, lift your hips off the floor. Press your shoulders and upper arms into the floor as well to lift and open your chest, but be careful not to push your head into the floor or tighten your neck in any way. Isometrically pull your feet toward your shoulders just enough to engage your hamstrings; at the same time, engage the tops of your buttocks to draw your tailbone toward your knees. Hold for a few breaths and then release, maintaining a natural arch in your lower back on the

way down. Work up to three sets of four or five lifts. Keep your thighs parallel throughout and avoid pushing excessively through your feet to lift up.

A simple and safe way to stretch the hamstrings in between exercises is to bend one knee slowly toward your

chest while reclining on your back, then switch legs.

The program is always completed by applying ice to the injured area for 5 to 10 minutes and then resting it.

- In summary, the basic program is:
1. A gentle warm-up of the hamstring muscle, which can be accomplished by standing (with support) and swinging the leg forward and back like a pendulum;
  2. Frictioning of the injured muscle attachment;
  3. Strengthening exercises, combined with gentle stretches;
  4. Ice and rest.

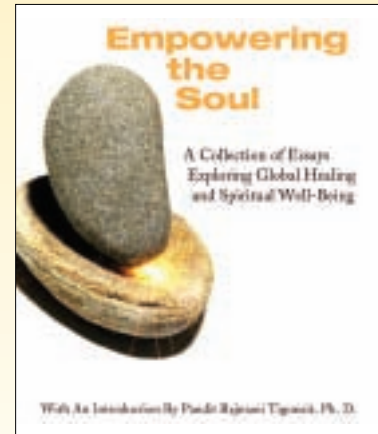
The key to healing the hamstring attachment is consistency in following this program over several weeks. Work fairly gently and consciously. Sharp or severe pain indicates a more serious tear, requiring rest and medical attention.

Injury is a great teacher, most often arising not from a single miscalculation or moment of abandon, but from patterns and habits of movement developed over long periods of time. Injuries awaken us to these patterns—and to new ways of moving and being within our body. For yoga practitioners, a hamstring injury is a wake-up call that hits us right where we live! +



**STRENGTHEN TO HEAL** *In the bridge pose, ground through the heels and draw them back isometrically to engage and strengthen the hamstrings.*

  
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