Tore the gracilis muscle of my hamstring

**Q:** I am a gymnast at the college level. While doing a lateral spagat (split) in the air, I tore the gracilis muscle of my hamstring. I've heard this is a pretty uncommon injury. What did I do wrong to get this injury? What can I do to keep from getting another injury like it?

**A:** Athletes of all kinds can develop pain along the back of the thigh from a hamstring injury. The hamstring muscle is divided into four parts: the semimembranosus, semitendinosis, biceps femoris, and gracilis. Posterior thigh strains affecting the biceps femoris are the most common. Gracilis tears are the least common.

The mechanism of injury (how it happens) is often from pulling the leg in toward the body (a movement called adduction) combined with full hip flexion and internal (inward) rotation. The knee of the injured leg is straight.

A gymnast or ballet dancer doing a split with one leg bent (like the spagat -- split out to the side) could cause such an injury. High speed moves like this apply enough tension to the muscle that it can no longer resist the force. The result is a tear at the muscle-tendon junction.

The key to this injury may be in the anatomy of the muscle -- something you were born with. Of the four hamstring muscles, the gracilis is the thinnest. It is sandwiched between two other muscles, which may help protect it in most people.

It is described as a striplike muscle. It's a long muscle that crosses two joints (the hip and the knee), which can put it at a mechanical disadvantage. The tendon portion is also long: reaching up from its attachment at the knee half the distance to the hip.

Perhaps there is a difference in the shape, length, or tension in this muscle that puts some athletes at increased risk for injury. Or there may be something about the way it is positioned between the hamstrings and the hip adductors (muscles that move the leg toward the body) that make it vulnerable to tears with this movement.

Further studies are needed to take a closer look at the cause of this injury. Why some people performing this move aren't injured while others are is a mystery. Likewise, why you could do the spagat 100s of times just fine and then tear the muscle on the 101st attempt is also unknown.

For now, it is clear that isolated gracilis hamstring muscle tears do occur. They can be very painful but recover within six weeks' time. Most athletes can continue to train during the recovery phase with some modifications in their training routine. Reinjury is not common.