

Pilates and the Hamstrings:

BY KEN ENDELMAN

You've seen it a hundred times, and from an athletic trainer's standpoint it's never easy to watch. A batter flies up the base path, crosses first and pulls up lame. A point guard races down the court, makes a crossover dribble and suddenly collapses on the floor. The culprit? Hamstrings.

It is no secret that hamstrings (the semimembranosus, semitendinosus and biceps femoris muscles in the back of the upper leg) are a common source of injury and pain in athletes, and a headache to athletic trainers and conditioning coaches.

Hamstring injuries occur most often in sports when they are stretched eccentrically at a high speed. Track and field and running contact sports like football and basketball are prime examples. In addition, sports such where the knee is fully extended during injury (like waterskiing), can also lead to hamstring injuries.

These injuries primarily occur proximally and laterally and the severity of injury can be classified by the following grades:

Grade 1 is a mild strain with few muscle fibers being torn.

Grade 2 is a moderate strain with a definite loss in strength.

Grade 3 is a complete tear of the hamstrings.

They also take a long time to heal. A recent study cited on eMedicine.com's Web site involving 47 football players with hamstring injuries reported an average of 14 days of convalescence before return to play. That's a lot of time off the field.

The most common cause of hamstring injuries, by far, is a muscular imbalance, in this case an imbalance between the quadriceps muscles and the hamstring muscles. Because the quadriceps are used to perform an everyday activity like leg extension they can become very strong, particularly in athletes. This puts a tremendous amount of tension on the hamstrings. If the hamstring is weak, tired or inflexible, an injury is almost a sure bet.

The best preventative measures involve a consistent program of both stretching and strengthening exercises. Pilates is an absolutely ideal adjunct to any athlete's conditioning program for this purpose, since it creates an even symmetry throughout the body and eliminates muscular imbalances.

Robyn Naymick-White is a personal trainer and Pilates instructor who has worked and trained with athletes for over 20 years. She has seen many hamstring injuries and feels that Pilates is not only great for rehabilitating hamstring injuries but avoiding them altogether.

"I've seen a lot of injuries created by a lack of strength or flexibility in the hamstring. Pilates helps strengthen our eccentric phase in movements. On a flexibility note, it's dynamic – meaning that it's developing flexibility while we are moving. This is ideal since athletes are constantly

in motion. So, with Pilates you can actually re-train your athlete's body to move in safer, more efficient patterns of motion. They can learn to move with strength and control in larger range of motion, thus helping to avoid injuries to the hamstrings and other areas. And the by-product of all of that will be increased performance."

Pilates develops a strong core (the deep abdominal muscles along with the muscles closest to the spine) with exercises and stretches that integrate the trunk, pelvis and shoulder girdle. It also emphasizes proper breathing, correct spinal and pelvic alignment and smooth flowing movement. This allows athletes to access each part of the body individually, and become familiar with the functional mechanics.

"A strong core helps with everything – and that definitely includes the hamstring. With a strong core you'll have strong glutes and that's important because it is the primary mover for hip extension, says Naymick-White. "From there you can start to get your athlete's hamstrings and glutes to work together. The more that happens the more you can see it helping the quads, or at least being able to withstand the pressure that the quads exert. It really is an ideal tool for any athletic trainer or strength and conditioning coach to have in their arsenal."

Two Pilates Mat Exercises and One Mat Stretch for the Hamstrings and Surrounding Areas

Exercises

1. Pelvic Tilts/Bridge Marching

Exercise sequence: Begin with both feet on the floor with the heels hip width apart and the knees bent. Press the hips up, articulating the spine until the hips are a handwidth or more off the floor. Lift one foot off the floor at a time maintaining the level of the hips.

Imagery and Cueing: Imagine the hips are suspended in a hammock as each leg floats up. If one hip drops as the leg lifts, engage the gluteals to keep the hip level with the opposite hip. To increase the challenge, place a foam roller, ball, or other unstable object under the standing leg.

Used for: Strengthening the hamstrings and gluteals and increasing lumbopelvic stability.

2. Swan

Exercise sequence: Lie prone with the palms of the hands on the mat, the palms level with the shoulders and the elbows bent. Legs are as close together as is comfortable for the lower back. Inhale and engage the abdominals, slide the shoulder blades down the back and lift the upper body into extension as you press the hands into the mat. Press the hips into the mat at the beginning of the exercise to take pressure off the low back if needed. Keep the shoulders away from the ears and rise up only as far as the low back

is comfortable. Keep the head in line with the spine. Exhale and lower the torso back down to the mat with control.

Imagery and cueing: Lift up into the back extension from the torso, not the arms. Keep the abdominals engaged throughout (no sagging stomachs). Keep the spine as elongated as possible and the shoulders down and wide. (Press into the mat with the whole hand to widen the space between the shoulder blades). Lengthen the leg along the mat and activate the posterior side of the leg.

Used for: Improving back extension and scapular stability, strengthening back extensors, hamstrings and gluteals.

Stretch

1. Single Straight Leg Stretch

Exercise sequence: Lie on the back with the head and upper body rounded off the mat with one leg reaching toward the ceiling and the other leg reaching toward the wall. Lower the leg only as far as you can without disturbing the stability of the low back and pelvis. Place the hands as far



Single Straight Leg Stretch - Hands on

up the leg as they can easily reach but not directly behind the knee. Inhale and engage the abdominals and draw the leg closer to you. Exhale and switch the legs, keeping the torso still, the low back in place and the shoulders down with the elbows wide.

Imagery and cueing: Keep your torso still - imagine you are holding a glass of your favorite drink on your abdomen and don't spill it. Keep



Single Straight Leg Stretch - Hands off

the head and upper body in the same position throughout the exercise. Imagine you are holding an orange between your chin and your chest.

Challenges: Hands off the Leg - reach the arms along the torso as the legs move.

Used for: Developing pelvic stability and core control, strengthening the abdominals and increasing the flexibility of the hamstrings.

Ken Endleman is the Founder and CEO of Balanced Body, Inc. www.pilates.com