

ACHILLES TENDON STRAIN IN THE DANCER

The achilles tendon (heel cord) and its muscle group (gastrocnemius-soleus) are frequently overworked in ballet and other forms of dance. Dancing in demi-pointe and pointe will naturally tighten the calf muscles. The gastrocnemius-soleus muscle group generates a great deal of force during jumps and rolling through jumps. Early diagnosis and proper treatment of a muscle strain is the cornerstone to successful management of this sometimes chronic problem. Pain can occur in the back of the lower leg at the muscle- tendon junction and along the achilles tendon. Pain is felt when first getting out of bed in the mornings, after sitting for an extended period of time and when walking down stairs. After several steps of walking, the pain improves but the lower leg may continue to feel stiff. During dance, pain can be felt when performing releve, plie and rolling through jumps. The physiological cause of achilles tendon strain at the muscle-tendon junction is an overuse injury. The muscle and tendon are strained as it functions to control excessive motion. Repetitive overloading of the tendon, beyond its physiological capabilities, will cause microtears at the muscle-tendon junction and within the tendon. Pain and tightness will occur within the calf muscles. Swelling may be present along the achilles tendon. In the younger dancer (ages 10 to 14) the achilles tendon is often strained during and shortly after their growth spurt. During this phase, the bones grow longer and the tendon and muscle remain relatively shorter. In these dancers, pain may be felt along the tendon or at the back of the heel where the tendon inserts into the heel bone. Inflammation may also be present in the back of the heel. The female dancer may find that wearing high heeled shoes may reduce the pain. However, this will also keep the muscles shorter and thus tighter.

Treatment of Calf Muscle/ Achilles Tendon Strain

Ice application:

If swelling is seen, apply ice for 10 minutes at least 3 times daily

Moist heat:

If there is no swelling, apply moist heat and manually massage the calf muscles.

Massage:

A deeper massage with a tennis ball is usually helpful. Sit on the floor and place a tennis ball under the calf muscle. Prop your hips up with your hands. Use your heel as a pivot. Roll the tennis ball along the calf muscle for at least 1 minute at least 3 times daily.

Stretching exercises:

1. **Stretch and Contraction Exercise:** Sit on the floor with your back straight. Perform 5 repetitions of the following exercise with your knee straight (works the gastrocnemius muscle) and 5 repetitions with

your knee bent (works the soleus muscle). Place a towel or belt around your foot. While relaxing the tendon at the front of your ankle, pull your foot towards you with the towel or belt. Hold this position for 10 seconds. Contract your foot downward against the towel or belt for 10 seconds. Repeat this exercise for 5 repetitions. Perform 5 repetitions of the same exercise but with the knee bent. Perform 3 sets daily.

Functional Strengthening Exercises:

1. Heel lifts/ releve: Perform a slow heel lift/releve (3 seconds up) on both feet and roll down slowly (also 3 seconds) on one foot. Perform 10-20 repetitions x 3 sets. The calf muscle should continue to feel contracted while rolling down slowly.
2. Single leg squats: Stand on only one foot and position the foot in a parallel position. Place the opposite foot behind the ankle of the standing leg. Initially, hold onto a barre but gradually learn to perform the following exercise without any support. Slowly lower yourself into a seated position maintaining your back straight and facing forward. You should feel a contraction of the hamstrings. Your toes should feel relaxed and your weight should be distributed evenly on the heel and ball of your foot. Raise yourself to the standing position utilizing force from the quadriceps. Repeat for 5-10 repetitions. Perform this exercise on the opposite leg. Repeat for 2- 3 sets.
3. Arch strengthening: Stand on one foot with the other foot off the floor and to the side. Balance with only a finger against a wall if necessary. You should feel the muscle in the back of the hip of the standing leg. Hold this position for 30 seconds for 5- 10 repetitions.
4. Swiss ball eccentric strengthening for achilles tendon and hamstrings: Using an appropriate sized Swiss ball, place your heels on the ball and lie on your upper back and shoulders with your hips elevated. Relax your neck so as to prevent strain. Roll the ball towards you keeping your hips elevated. Slowly roll the ball to the starting position. Keep your feet pointing towards the ceiling during this exercise. Perform 10 repetitions.