

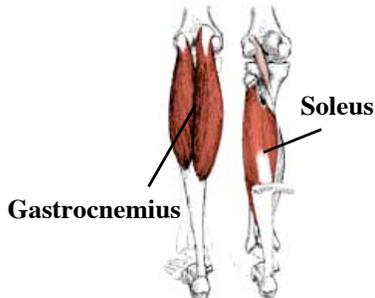
Chapter 14

Preventing Foot and Calf Cramps

Foot and calf cramps happen in even the fittest of divers after finning around for a dive. Most commonly a painful nuisance, these cramps can become a serious problem if currents change and you are working to get back to a mooring line or surface swimming to the boat.

Foot Anatomy

You can think of the foot as a “bag of bones.” It is designed to flex throughout and must be allowed to do so for optimal strength and blood flow. The three-dimensional model to the right (courtesy William Ledoux, Ph.D., Dept. of Veterans Affairs) shows how the 28 bones of the foot form an arch supported by muscle and connective tissue underneath. Between every bone are flexible joints, giving the foot its many ranges of motion.



Calf Anatomy

The lower leg is devoted to flexing and extending the ankle via the most efficient skeletal muscles in your body. Typically, the muscles doing the most work while finning are the gastrocnemius (upper calf) and the soleus (lower calf), which runs behind and below it. They are responsible for pointing your toes, or the power stroke in most finning techniques, and are thus most likely to experience cramping during a dive.

Equipment

Before you blame your body for causing you pain, you need to eliminate your equipment as a trigger of cramps.

1. The foot pockets of your fins must be wide enough for the bones of your feet to be able to “splay,” or spread apart, as you fin. Squish them together and the muscles in your feet can neither work nor circulate blood efficiently.
2. Your booties must be snug without restricting the bones of the foot for the same reason as above.
3. Your fin straps must not pull too deeply into your Achilles tendons, or this will cause extra tension on the muscles of the calves.
4. The legs of your wetsuit or drysuit should not be restrictive. As with your feet, if you can’t move your legs through their natural ranges of motion, then they can’t produce the power you need or get the blood supply they need.

Stretches

Muscle tightness is a well-known trigger of cramps. These stretches are easy to do and will make a real difference in calf flexibility.

Stretching should not hurt. Do not do any stretch to the point of pain. Move slowly through all movements described below, and hold each stretch for 20-30 seconds. Perform these stretches 4-5 times per week.

Toe Pull (Muscles of Feet)

1. Sit on the floor barefoot with one leg straight.
2. Loop a towel under your toes.
3. Pull until stretch is achieved.

Tip: As taught in most OW courses, this stretch can be done to relieve an active foot or calf cramp while diving. Just grab the blade of your fin, straighten your leg, and pull the blade back towards your knee.



Straight Leg Calf Stretch (Gastrocnemius)

1. Stand in a lunge position with hands on wall, keeping rear knee *straight* and both feet flat on the ground.
2. Lean your hips towards the wall until stretch is achieved. You should feel this in the *upper* calf area.

Bent Leg Calf Stretch (Soleus)

1. Stand in a lunge position with hands on wall, keeping rear knee *slightly bent* and both feet flat on the ground.
2. Lean your hips towards the wall until stretch is achieved. You should feel this in the *lower* calf area.



Exercises

Though this unit focuses on stretching, it is only natural to include the following exercises when you discuss cramping. The stronger your calves are, the easier finning will be and the less likely you will experience cramping. Also, fitter muscles have better circulation, further reducing their tendencies to cramp.

These exercises can be done immediately after performing the stretches above and should only take you a few minutes. Perform these exercises 2-3 times per week.



Sock Pickup (Muscles of Feet)

1. Remove your shoes and socks.
2. Grab a sock with the toes of one foot and lift it off the floor, holding for one second.
3. Release and repeat until fatigue achieved.

Standing Calf Raise (Gastrocnemius)

1. Stand with the balls of your feet firmly on the edge of a step and your heels suspended.
2. Stand as tall as you can, emphasizing a squeeze in your calves.
3. Slowly lower yourself until your heels are just below the edge of the step.
4. Repeat until fatigue achieved.

Tip: To increase difficulty, do one leg at a time.



Seated Calf Raise (Soleus)

1. Lean against the wall as if sitting in an invisible chair.
2. Rise slowly onto the balls of your feet.
3. Slowly lower yourself until your heels are just touching the floor, but not resting. Keep a contraction on the calf muscles from the first through the last repetition.
4. Repeat until fatigue is achieved.

Tip: To increase difficulty, do one leg at a time.



Author's Note

This article on preventing foot and calf cramps is an excerpt from **Fitness for Divers**, a book written by diver and fitness professional Cameron L. Martz. Please visit <http://www.divefitness.com> to find more information on this book and download other fitness articles written specifically for divers, including free workouts, fitness news, and training tips updated weekly.