IF I ONLY KNEW . . . How to Stretch Properly

△MARIE-CATHERINE BRUNO, B.SC.P.T., M.O.P.Q.

A few months ago we discussed stretching very briefly (*ONA* August 2001). I gave you then the basics, including the reasoning behind stretching, and a few training tips. But since then, I have had a lot of people ask me what type of stretches they should do before orienteering or simply before running. So, based on popular demand, here they are! But before getting into the different positions, let me just remind you of the basic principles.

The Effects of Stretching

One of stretching's main purposes is obviously to become flexible. But what does it serve you to be flexible if you do not intend to work for the Cirque du Soleil? Well, a flexible person is more agile, more efficient, more powerful, and her stride is longer with the same effort - a quick calculation shows you that if you increase your stride length by a mere centimetre, you can shave 20 seconds off your 10K time, totally effortlessly! Also a flexible person is much less prone to injuries because for a muscle to get stronger (from all the training you do), it has to get bigger. But unfortunately, as the muscle grows bigger, its envelope (called the sheath) remains the same size. Eventually, the bigger muscle uses all of the available girth of the sheath so the latter becomes shorter to compensate. It is when your muscle and its sheath have become shorter that you are more prone to injury. The tendon starts pulling on the bone where it is attached and this constant tension creates micro tears in the tendon itself or on the bone, later resulting in tendonitis and shin splints, and even worse, a muscle pull or a rupture.

The Hows

It is recommended that you stretch both before and after exercising. They serve two different purposes, but still share a common goal: to become more flexible.

Before: stretching before exercising will help your body to get ready for the upcoming demand. Because when you run you use a longer stride than when walking, you need to slowly allow your muscles to reach that specific length, as opposed to all of a sudden, like when you are jumping over a log in your race.

After: a muscle is a bit like plastic, that is to say, that when it is warm, it is much easier to stretch it. It is usually after exercise, when your muscle is still warm, that you will gain the most length, therefore becoming more flexible. Also, some research shows that stretching after exercising helps reduce DOMS (delayed onset muscle soreness), making you less stiff the following morning!

How long: your muscles contain little nerves that respond to what is called the stretch reflex. So the moment you stretch a muscle, its reaction is to contract (that is what happens with the knee jerks at the doctor's office). It takes about 10-15 seconds to overcome this reflex. Only after, will you gain some of the stretching effect. So, it is recommended that you hold every stretch for at least 30 seconds, ensuring that you have overcome the reflex and gained some length. Do not bounce. (Ballistic stretching, where the main idea is to bounce, is actually making a come back and is very effective in preparation to races. But it still has to be done in a controlled environment and the participant has to know exactly what he is doing. So before thinking about getting into ballistic stretching, why don't you all start by stretching normally, and then, maybe, we will get into ballistic stretching at another time.) Bouncing will reactivate the stretch reflex every time. You should do every muscle or muscle group 3-5 times.

Note: You may notice that some of your muscles seem to take a much longer time to gain flexibility than others. This can be due to some scar tissue (old injuries), or some other restrictions like fascia, nerves, ligaments, or muscle sheath. If this is the case, you may want to try the myofascial approach: do a regular stretch of 30 seconds, then follow with 2 longer stretches of 2 minutes each (it takes 90 to 120 seconds for the fascia to release). Do religiously every day for 2 weeks. If you are still not gaining anything, then you may want to consult your physical therapist or sports doctor.

How much: a stretch should never hurt. You should stretch to the point where you feel some tension, and then stop there. If you are thinking no pain no gain, you are wrong this time. Creating muscle pain when stretching will force your muscle to go into protective mode, resulting in a muscle contraction, or even worse, a spasm. No need to say that you are not gaining any flexibility by doing that.

The Target Groups

For orienteering (and running), we will mainly focus on lower limbs, although some upper body will be included for those "hang on to that tree to save your life" occasions. Look at the pictures to better understand the described position. The darker areas represent where you should be feeling the stretch.

Hamstrings

Hamstrings are one of the most common sites for muscle rupture, so make sure you include this one in your routine! Hamstrings run on the back of your thigh, from your pelvis to your upper leg. Pick a higher ground or object (fallen tree, earth bank, rock…) and rest your ankle on it - Figure 1. DO NOT lean over as in Figure 2 (this can get the sciatic nerve involved in the stretch, which is not a good idea), but instead, do what is called a posterior pelvic tilt, or in other words, stick your bum out as in Figure 3. You should feel it on the back of your thigh, close to your buttocks.

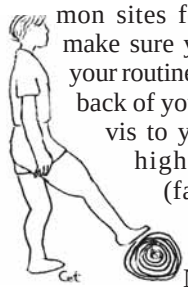

Figure 1

Figure 2

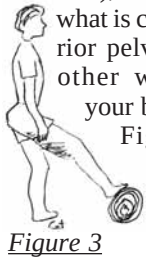

Figure 3

Figure 4

Quadriceps

One of the worst executed stretches out there! The quads run on the front of your thigh, from the pelvis to just below your knee cap. Grab the front of your ankle (not your foot, as this will include the femoral nerve in the stretch) and bring your heel as close to your buttocks as possible as seen in Figure 4. Keep the knees together, which will avoid stretching the inside of the thigh only (Figure 5). Keep your back nice and straight, do not lean forward (Figure 6) as this will decrease the effectiveness of the stretch by releasing the hip flexors. If you feel that you need more stretch and your heel is already fully dug into your buttocks, then try pushing into your hand with your ankle. Note if your balance is awful, hold on to a tree or to your neighbour. But remember that it can also make for a very good exercise for your balance!

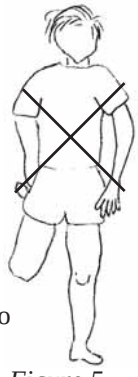

Figure 5

Figure 6

Calves

There are two muscles in your calf : the soleus and the gastrocnemious. The soleus starts just below the knee, and the gastrocnemious starts just above the knee. They both come down the back of your leg to attach together on your heel in a common tendon, the Achille's tendon. They both have to be stretched separately since they have different points of attachement. Pick a tree that you can lean against. Figure 7 shows the proper technique for stretching the soleus. Bend your knee and keep the heel on the ground. For the gastrocnemious, keep your knee straight and your heel on the ground (Figure 8). For both of them, go as far as you can, without lifting your heel off the ground. Also make sure your foot is straight (not turned in or out), as this would favour a part of the muscle and not stretch it evenly.

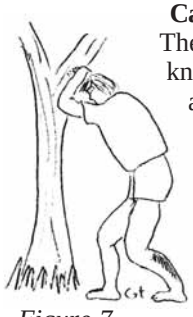

Figure 7

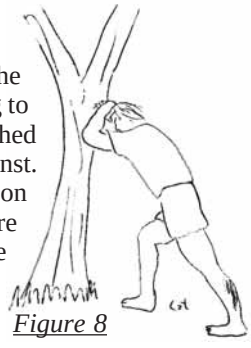

Figure 8

This concludes Part One of this stretching article. Additional muscles will be covered in the next issue of *ONA.*