

Stretching Technique

Last month we talked about changing attitudes to stretching prior to exercise. It was suggested that we reserve our usual static stretches for after the race, during the cool down stage, and instead focus on dynamic warm ups immediately before exercising. A strong emphasis was placed on regular daily stretching rather than just on exercise days.

Carried out correctly stretching is used as a means of reducing injury and increasing performance. It has a number of potential benefits including;

- Increased flexibility
- Improved circulation
- Prevention of scar tissue formation
- Muscle relaxation
- Hypertrophy of muscle if performed regularly
- Reduced muscle resistance
- Reduced muscle soreness
- Achieving sport specific goals
- Increased performance (one particular study showed that a 10 week static stretching programme resulted in improved performance in tests involving speed, strength, power and muscle endurance)

Basic advice on stretching includes;

1. If done correctly you will derive the most benefit from a slow sustained stretch of minimum 15 seconds. It takes anywhere between 12-15 seconds to initiate the stretch reflex. This allows relaxation and elongation of the muscle. Ideally the stretch should be held for 30 seconds. Some authors advise increasing this at a later stage for up to 1-2 minutes. Others however see no benefit in more than 30 seconds. Some muscle groups require longer or shorter times. It is important to feel for muscle relaxation so that you can judge the length of hold that is most effective.
2. The stretch should be felt in the appropriate area. Know which muscle you are trying to stretch and only continue if this is the area where you are feeling the stretch.
3. Breathing is extremely important both as a means of staying alive and to allow the muscle to relax. Believe it or not clenched teeth, holding your breath for thirty seconds and red faces do not make for ideal stretching.
4. If time or situation allow, stretching is best when the muscles are not fighting gravity. For example, the optimal stretch for the hamstrings (the back of the upper leg) is lying on your back and wrapping a rolled up towel around the foot and pulling a straight (or slightly bent) leg up and towards you. This is preferable to standing and touching your toes.
5. A warm up prior to stretching which is enough to raise the bodies temperature but not sufficient to cause fatigue will help to make the muscle more flexible. It is thought however that the benefits in terms of injury prevention prior to exercise come from warming up and not from stretching (we will discuss this in the next issue).
6. Stretching should be gentle so that you do not feel real discomfort in the muscle. Overstretching causes localised muscle damage and therefore should be avoided. If at any stage you are feeling increased tension or pain during the stretch then ease back or stop the stretch.

7. One stretch per muscle group may be sufficient but this needs to be of 30 seconds duration. Usually 2-3 repetitions are recommended.
8. Heat or cold may be applied to the area prior to stretching. Heat is the usual method of choice though you may find that in rehabilitation of the injured tissue cold is used to reduce or overcome pain and spasm.
9. The journal, *Medicine and Science in Sport and Exercise* advises; dynamic stretching as most appropriate pre-training, static stretches at the end of the workout to prevent muscles from tightening too quickly.

Ballistic stretching is still open to debate. This is the type of stretching that involves a rapid bouncing, stretching the muscle to near its limit, and then quickly applying continued greater stretches. It is not universally recommended, though there is the argument that since most sports require fast forceful stretching then ballistic stretching may help the athlete adapt to these activities. On the opposing side there are those who believe that the quick bouncing causes a strong reflex contraction of the muscle being stretched. Stretching against this increased tension heightens the risk of injury.

Care must be taken not to be too forceful or jerky with these movements, as overstretching leading to soreness and local injury are potential risks. The general advice would be that if you are to use ballistic stretching, warm up and static stretch first and then continue to do ballistic with controlled movements.

Some of you may have heard of Proprioceptive Neuromuscular Facilitation (PNF). This is thought to be the best type of static stretch as it appears to produce the greatest flexibility. It is based on the principle that muscle relaxation is increased following contraction of, that muscle or its antagonist muscle. An antagonist muscle is the opposing muscle so that for example the antagonist of the biceps would be the triceps and of the quadriceps would be the hamstrings.

An example of one of these stretches would be for hamstring flexibility. A similar position is used as previously mentioned for the optimal hamstring stretch but this time rather than using a towel to pull the leg up, you rest your foot on your partners shoulder. He/she then stretches the hamstrings by raising the straight leg towards your upper body until you feel tension in the muscle. At this point he ceases stretching and resists as you bend your knee slightly and push down into his shoulder with your lower leg. After holding this muscle contraction for 5-10 seconds you now relax the muscle and he again stretches the leg up towards the upper body.

This is the type of stretching technique we use in clinic all the time as part of a rehabilitation program but although these type of stretches are great they do require a partner and are therefore not overly used by the training athlete.

My advice would be to include stretching as an important regular component within your training schedule. It is both a means of injury prevention and rehabilitation from both minor and more serious injuries. Try to avoid thinking of stretching as a nuisance, or obligation only prior to exercise and more in terms of its benefits as part of the training package.

Finally, don't worry if you can't stretch as far as someone else. In the same way as we have different body types, we have different flexibility.

Adrian Toft