POST EXERCISE RECOVERY STRATEGIES

Introduction

This is general information about recovery and should not be substituted for proper examination by a qualified person should you suspect you may have an injury as opposed to exercise related soreness.

When we talk about recovery, most people will say they have recovered from an activity when the feelings of pain and stiffness are gone. Usually the pain and stiffness experienced is called delayed onset muscle soreness (DOMS) and often occurs after taking part in a new activity, strenuous activity, or a harder training session or hike than normal. It can peak 2-3 days after exercise and can take up to 8-10 days after exercise to dissipate. The pain and stiffness is caused by inflammation of damaged muscle and/or connective tissue.

After strenuous activity a small amount of muscle injury will occur. During strenuous or new exercise micro tears occur in the muscle. As the body repairs this micro trauma it adapts to tolerate the exercise should it recur. This is the bodies' way to help muscles become accustomed to the new or increased intensity of the exercise. These micro tears cause:

- slight inflammation which presses on the nerves causing pain,
- decreases in strength and,
- decreases in flexibility.

During exercise blood is forcibly pumped around the body by the heart, and assisted in its return to the heart by contraction of the exercising muscles e.g. the calves. This pumping action brings oxygen, energy, healing factors and nutrients to the muscles and helps remove the waste. When an exercise stops, the pumping action also ceases, and as a result blood accumulates or pools in the muscles. All of the strategies outlined in this article focus on the principle of pumping blood flow from the peripheries to the centre, moving waste products back to the organs so that they can be eliminated from the body and bringing re-oxygenated blood containing healing factors to the sore, damaged areas.

The goal of recovery is to limit or reduce the amount of muscle damage, tenderness and stiffness, and to get you back to sport as soon as possible.

STRATEGIES

Water Based Strategies

Please note that if you have problems with circulation to your extremities or with feeling changes in temperature for example, Reynaud's Disease or Diabetes, these water based recovery strategies may not be suitable for you. Please check with your Doctor before undertaking these strategies.

Contrast Bathing

Contrast bathing is the alternate soaking of the body area in hot (40-42°C) and cold (8-10°C) water. It is thought to work by a pumping action created by pushing the blood to the area immersed in the water with the hot water (vasodilatation), and pulling the blood back towards the trunk with the

cold water (vasoconstriction). It has been found to be beneficial in reducing swelling, and post exercise soreness.

To do at home; use two buckets of hot and cold water and use these to immerse your affected leg or arm. Keep an eye on the temperature of the water. It will be hard to keep it constant as the hot water will cool, and the cool water will warm up due to body temperature from the limb. Alternatively consider using a sauna for 10 minutes and followed by a dip in a cold plunge pool or cold shower. Be careful if you have heart conditions or other conditions which may be affected by a sudden change in temperature, as the sudden shock of going from hot to cold has been known to trigger heart attacks.

Instructions: Start with the hot water. Soak for 4 minutes in the hot water (40-42^{o}C), then soak in the cold water (10^{o}C) for 1 minute. Alternate between hot and cold water for 15 minutes, and finish on cold water.

Cold water immersion therapy

Soaking in cold water has been shown to reduce the perception of general fatigue and leg soreness, and facilitate a more rapid return to performance but it does not affect rate of recovery from muscle damage. In some studies it was found to be more effective than contrast bathing. You can do this by having a cold bath at home for your legs, or using basins of cold water for your arms. Make sure if having a bath to keep the upper body warm by wearing warm clothes on your torso.

Instructions: *soak in water at 10°C for 5-10 minutes. Wear warm clothes on the upper body to keep the trunk warm if you are your soaking legs only*.

Hot water immersion

A soak in a hot bath is very pleasant and has been shown to be good for recovery of strength after exercise. However it has not been found to be as good as contrast bathing or cold water immersion for recovery from pain, restoring dynamic power, or swelling. It works by increasing the blood flow to the extremities which can be visibly noticed by the redness of your skin after a hot bath.

Instructions: *Have a warm bath or visit a sauna or steam room. Drink water with this therapy as you may dehydrate due to sweating from the heat.*

Whole Body Cryotherapy

Whole Body Cryotherapy was in the news when Brian O'Driscoll and Gordon D'Arcy were sent to Poland for cyrotherapy after injury in 2005. The therapy consists of exposure to very cold air that is maintained at -110°C to -140°C in special temperature-controlled cryochambers, generally for 2 minutes. Skin temperature can drop to 5-12°C. It has been found good for a variety of conditions such as arthritis and has been reported to be beneficial for sports injuries and recovery. There is currently a lot of scientific research being done to see how it works but the full mechanism is not yet known. There are a few cryochambers around Ireland if you'd like to investigate this therapy for yourself.

Compression Garments

Compression garments are not new having previously used in medicine to enhance blood flow from the peripheries back to the heart e.g. flight socks. In recent years they have made an entry to the world of sport and there is a huge amount of interest and marketing around them. They have been worn by the HTC Columbia cycle team, and Rory Mcllroy in the US PGA Championships. They come in a variety of forms such as leggings, tops, calf covers, arm covers and are stocked in some sport, cycling, and outdoor shops. A lot of research is being carried out to determine whether they assist recovery and performance. From the studies reviewed, it looks like they are beneficial for reducing soreness after sport but may not affect the rate of muscle recovery. In addition to recovery, there have been 1-2 studies that showed wearing compression garments during exercise can help increase performance over long distances e.g. cycling, but they have not been found to help performance over short distances like sprinting or jumping. Maybe they'd be something to experiment with prior to doing a long event?

Active Recovery

Active recovery consists of doing light exercise immediately after sporting exertion to cool down. The continuing activity may help improve blood flow which flushes the system of enzymes involved in muscle damage. It has been found to be beneficial in assisting the rate of recovery and reducing soreness after exercise.

Regarding the role of stretching as a recovery method….stretching is a valuable part of your exercise routine, but it is generally a static activity i.e. you stand still and stretch a muscle. For this reason it does not fall into the category of recovery methods as when we are describing recovery methods, we are talking about methods that assist your recovery through actively pumping blood to and from the muscles.

Instructions: *do 10-20 mins of light exercise at the end of an exercise session e.g. stationary cycling or light spinning on way home from a cycle, walking after a run, moving fingers, wrists and shoulders after climbing or finishing the last part of a hike at a slower pace.*

Massage

Studies into massage have found that massage is beneficial for reducing the soreness from DOMS if it is had shortly after exercise. The mechanism of how it works is not fully understood, but it is thought to work by increasing blood flow around the muscles which may help in the removal of elements from the body that cause inflammation, and assist in the reduction of swelling.

Self massage can be performed using tools called foam rollers. These are cylinders of firm foam approximately 6 inches in diameter from 2 to 4 feet long. To explain how they work we will use the concept of massaging the front of your thigh. For this you place the foam roller on the floor and lie face down placing the front of your thigh on the foam roller. Then you would use your arms to roll your body back and forth on the foam roller. A quick Google search for foam roller exercises will bring back lots of pictures and videos on how to use them. They are widely available to buy on the internet, e.g. Amazon, and some sports shops from about €18. If you suffer from back pain or have

an existing injury please consult your Doctor or Physiotherapist before using a foam roller as they may aggravate the problem that you have. Don't over do it, a minute 2-3 times a week on a muscle is more than enough.

Tennis balls can also be used to perform self massage. If you have been climbing and your forearms are pumped, trying using a tennis balls to massage them out. They can be used to work out the forearm by placing the tennis ball on a firm surface and placing your forearm on top of it. Apply some pressure onto the tennis ball and move the arm back and forth on it.

If you have any questions on the methods in this articles please feel free to contact us at info@mapleclinic.ie