

Take Control of muscle pain with muscle-release techniques



This is a straight-forward approach to proactively improving flexibility and reducing pain caused by occupational hazards, lifestyle stressors and the muscle imbalances and postural distortions we subsequently develop.

An Introduction to Prehabilitation

Prehabilitation has originated and existed predominantly in sport, until recently. Now it has evolved and can and is being applied successfully to achieve 'elite everyday living' among all individuals who are forward thinking, emotionally intelligent and proactive about looking after their health, fitness and well being. Prehabilitation specifically involves strength and conditioning exercise that considers a person's previous injury and medical history, lifestyle demands, current postural alignment and muscle imbalances. The integration of corrective exercise and muscle activation techniques allow for biomechanics and muscle balance to be optimised and 'functional fitness' to be achieved. The main underlying principles for achieving results comes from restoring alignment to the muscles that are the pulleys and levers of the skeletal system as well as undoing the damage caused by our unbalanced lifestyles through a two prong approach:

1 – Lengthen / reset the tissues that are tight - **RESET** – foam rolling sub section

2 – Train / activate the muscles that are weak - **RETRAIN**

****This handbook will look specifically (and only) at the RESET component of prehabilitation****

How to 'reset' muscle balance and restore tissue flexibility

To effectively restore flexibility and function to a muscle you need to break down any scar tissue, tissue adhesions (knots) and trigger points (which are simply stressed muscle fibres that are stuck together and irritating the surrounding nerves). This may sound complicated but actually it is REALLY easy to do for yourself, either through getting 1) **sports massage** or through 2) a **self massage technique** using a foam roll, these will both be explained in turn.

1) **Sports massage** is the management, manipulation and rehabilitation of soft tissues of the body including muscles, ligaments and tendons. Sports massage used to be a luxury of the professional athlete and celebrity. Now it has been proven to be powerful in relieving muscle tension, resetting muscle imbalances as well as reducing and preventing pain and this has repositioned sports massage as an integral solution within the lives of anybody and everybody who values pain-free, functional living and performance. Usually it takes someone to suffer an injury to then be recommended to try massage (usually be a friend or family member who has sports massage already). In an ideal scenario, an individual would proactively use the power of this deep tissue release method to PREVENT tensions and imbalances developing in the first place by having a regular 'MOT', like getting your haircut –

every 4-6 weeks, as opposed to it being a reactive solution to an injury/pain. This investment is unparalleled for protecting and minimising joint wear and tear caused by faulty movement patterns as a result of tight/restricted muscles. It allows every movement you perform (e.g. bending, twisting, walking, lifting, running, pulling, pushing) to be more efficient and less stressful on the joints (e.g. lumbar -lower spine, knee joint, shoulder joint and cervical spine in the neck), protecting you from accelerated joint degeneration and musculoskeletal injuries and can even defer the need for surgery in existing medical conditions (such as osteoarthritis of the knee).

2) **Foam Rolling** is essentially sports massage that you perform yourself by adopting different body positions on a device called a foam roll which applies deep pressure on a chosen muscle group. It primarily acts in exactly the same way as sports massage, breaking down tight muscle tissue and increasing blood flow to the area. This technique originated in America and has come over to the UK via the back door of health clubs, totally missing out the medical and health arena and has even bypassed treatment and rehabilitation professionals like GP's and physiotherapists. This has left foam rolling to evolve at an exponential rate but in the shadows, with exposure through only specialist health clubs and 'word of mouth' for its marketing power.

In elite sport and in private health clubs, foam rolling is now the solution for individuals with busy lifestyles to achieve the 'celebrity-equivalent' of daily massages by using foam rolling as part of their warm-up and cool-down routines around their exercise workouts. In this function, foam rolling serves as an excellent form of injury PREVENTION as well as optimising physical preparation for exercise.

For those with muscle tension problems, foam rolling allows the individual to counterbalance this tension with an effective volume of treatment (for free!), for fast, real and long-lasting pain relief. For example, a person with lower back pain and muscle spasm as a result of lifting something badly or driving/ sitting for prolonged periods of time may have a physiotherapy treatment once a week (if your lucky) on the NHS, so your back gets release once in 7 days. With the foam rolling, (once shown) you can keep providing release to the muscle spasm everyday (just like a physiotherapist or massage therapist would) so the injury gets seven treatments in 7 days – just like professional footballers – why shouldn't everyone get that level/speed of treatment too?! (Marshall, 2009, *unpublished thesis*)

Self-Muscle Release (SMR) using a foam roll

What is a foam roll? – this is essentially a device that acts like a sports masseur of your own, but is also transportable, available for free use everyday and can be stored in the cupboard or under the bed!

What muscles can you use it on?

Foam rolling can be performed on the following muscle groups:

The Calves (back of lower leg)

The Peroneals (outer side of lower leg)

The Quadriceps (front of thigh)

The Hamstrings (back of thigh)

The *Ilio-tibial* band (ITB)

The Hip flexors (front top of hip)

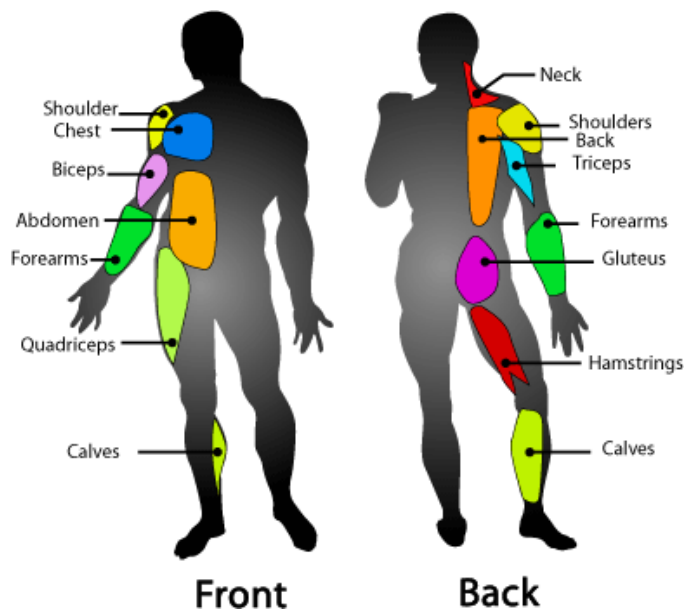
The Piriformis (deep in the buttock)

The Adductors (inner thigh)

The *Lattissimus dorsi* (Back)

The *erector Spinae* (Back)

The *pectoralis major* (chest)



A self-muscle technique can also be applied on the plantaris muscle and fascia of the underside of the foot using a golf ball.

You don't have to foam roll all of these areas, I am just highlighting them so you know all the available options you *could* target, but the key is to target the one or two areas that would be of most benefit to your requirements, (i.e. try them all and see which hurts the most and you'll know or target the muscles that are relevant to the area where you suffer pain). The following table (Table 1) shows the areas recommended to target with self-muscle release depending on the area where you experience stiffness or pain.



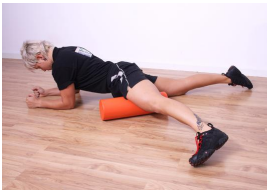








Area of Pain	Appropriate areas to foam roll to target and resolve pain		
Neck Pain	Back 	Chest 	
Knee Pain	Adductors 	Quadriceps 	ITB 
Lower Back Pain	ITB 	Back 	Piriformis 
Calf, foot or ankle Pain	Calves 	Piriformis** 	Back 

Table 1: Shows the relevant foam roll techniques applied to common musculoskeletal issues

Piriformis (this one relates to a bigger biomechanical issue at the pelvis that can cause problems at the foot level). If you experience sciatica then this technique will be beneficial, though the exact cause of your sciatica is worth being assessed in case any additional strategies are needed. Corrective Exercise Specialists and experienced sports massage therapists should be capable of biomechanical assessment to consider underlying muscle imbalances and postural distortions and their potential role in an injury or chronic pain

How does it work?

How it works in simple science, is that when sustained pressure (i.e. through sports massage or foam rolling) is put through a muscle, the tissue, (which has a receptor feedback system), signals to the brain and forces an inhibition of nerves that results in the relaxation of muscle fibres to protect it from injury. This means that pressure to muscle adhesions, scar tissue and the stubborn connective tissue called 'fascia' (which acts like the skin on a sausage, covering all the muscular system and acting as a stabilising structure throughout the body), causes a released tension and this allows an increased blood flow, increased pliability and restoration to normal tissue function.

How do I foam roll?

Firstly you adopt the body position specific to the muscle group you are looking to target. Then the movement requires a slow rolling motion of the muscle along the foam roll till you locate an area of discomfort (some may call this pain!). The principle is to hold a sustained pressure on the area of discomfort for at least 30seconds (as research shows this to be the duration required for the body's feedback system to effectively relax the tissue underneath). Then you simply move onto another area and repeat the same process. The foam roll is designed to be used on soft tissue only and not directly on joints like the knee or neck so avoid rolling too far where you would end up on these joints. It may seem strange to search and target pain in the muscle but the existence of pain is a sign that there is inflammation already in the tissues and this should be addressed. If someone has no inflammation or muscle spasm in a given muscle then it wouldn't actually hurt when foam rolling was performed and this lack of pain is what is achieved and maintained through consistent, regular and proper use of foam rolling.

Foam Roll techniques (FR)

What muscle you are targeting:

Self-muscle release (SMR) Calves

Why this muscle is important:

Adequate flexibility in the calves prevents foot, ankle and calf imbalances and predisposition to related injuries

Description:

- Position FR just above the heel with hands under your shoulders
- Lift body up slightly and slowly roll the FR along the calf toward the knee
- Stop before you reach the back of the knee and roll back toward the ankle
- When you find a tender area hold pressure on this point for 30seconds before moving on

Figure 1: Basic Technique



Figure 2: Advanced Technique



Foam Roll techniques (FR)

What muscle you are targeting:

SMR Illiotibial Band (ITB)

Why this muscle is important:

Adequate flexibility in this tissue prevents knee pain and muscle imbalances that can contribute to lower back pain

Description:

- Lie on your side and position FR under the thigh at the hip end (just below hip bone)
- Slowly roll the FR along the thigh, between the top of the hip and the knee
- Do not foam roll directly on the knee, stop just before the joint
- When you find a tender area hold pressure on this point for 30seconds before moving on

Figure 1: Basic Technique



Figure 2: Advanced Technique



Foam Roll techniques (FR)

What muscle you are targeting:

SMR Hip Flexors (TFL)

Why this muscle is important:

Adequate flexibility in this tissue prevents excessive tension at the front of the hip that can cause pelvic tilt and contribute to lower back pain

Description:

- Lie on your side and position FR under the thigh at the hip end (just below hip bone)
- Then tilt the hips forwards to adopt a 45 degree angle, (so the FR sits half way between the front of the thigh and the side)
- Slowly roll the FR along the thigh, between the top of the hip and half way down the thigh. Focus particularly on the front hip area (where the pocket of your jeans would sit against your hip)
- When you find a tender area hold pressure on this point for 30seconds before moving on

Figure 1: Basic Technique



Figure 2: Advanced Technique



Foam Roll techniques (FR)

What muscle you are targeting:

SMR peroneals (outer section of lower leg)

Why this muscle is important:

Adequate flexibility prevents foot, ankle and calf imbalances and predisposition to related injuries. It also helps to prevent shin splints

Description:

- Position FR just above the heel and tilt your leg outwards slightly so the foam roll sits slightly on the outside of the lower leg.
- Keep your hands under your shoulders
- Lift body up slightly and slowly roll the FR along the lower leg toward the knee (maintaining outward slant). Stop before you reach the knee and roll back toward the ankle
- When you find a tender area hold pressure on this point for 30seconds before moving on

Figure 1: Basic Technique



Figure 2: Advanced Technique



Foam Roll techniques (FR)

What muscle you are targeting:

SMR Piriformis

Why this muscle is important:

This muscle can cause significant biomechanical issues at the pelvis, causing long-term lower back pain

It is the most common cause of sciatica (referred pain down the leg)

Description:

- Adopt a seated position on the FR and then lean over onto one butt cheek
- Then place the foot (from the side you are leaning towards) on your opposite knee, to form a crossed leg position
- Maintaining your balance, slowly roll around on the fleshy part of the butt cheek until you find what may feel like quite an isolated, sharp pain – that's the Piriformis
- When you find a tender area hold pressure on this point for 30seconds before moving on



Foam Roll techniques (FR)

What muscle you are targeting:

SMR Adductors

Why this muscle is important:

The adductors are important stabilisers to the knee but when lacking flexibility, can cause knee pain and predispose individuals to muscle imbalances and potential injury

Description:

- First lie on your front and take one leg out sideways as far as you can manage.
- Then position the foam roll under the extended leg, so it sits perpendicular to the thigh and starting at groin level.
- Slowly roll along the inside of the leg, travelling between the groin and just before inside of the knee joint.
- When you find a tender area hold pressure on this point for 30seconds before moving on



Foam Roll techniques (FR)

What muscle you are targeting:

SMR Lattissimus Dorsi

Why this muscle is important:

This muscle group can cause muscle imbalances in the neck and shoulder, leading to shoulder impingement and neck pain

Description:

- Position yourself on your side with bottom arm extended and the foam roll place just below the start of your armpit
- This movement is very small as you are only targeting a small section of the muscle as it comes in to attach at the shoulder
- Roll slowly along a 5-6inch area spanning from the armpit edge downwards.
- When you find a tender area hold pressure on this point for 30seconds before moving on



Foam Roll techniques (FR)

What muscle you are targeting:

SMR the *erector spinae* (back) muscles that run the length of the spine, acting as stabilisers to the vertebrae.



Why this muscle is important:

They endure all manner of stress through repetitive postural fatigue, muscle imbalances and bad mechanics/posture and as a result can contribute to compressive forces on our vertebral discs.

Keeping these muscles supple and free reduces wear and tear on our discs and allows us to fight against poor sitting postures

Description:

**** Safety Note**** this is the only muscle group where you must NOT hold tender spots for 30 seconds. This movement involves a slow rolling motion only with NO static pauses. This is simply because we want to avoid any sustained pressure on the spine.

- Start in a seated position and place the foam roll in your lower back, as you lean back onto it you should feel it start to move up out of your lower back – let it! When you are lying on it fully it should be just off the arch of the lower back.
- Wrap your arms around your body – don't cross/fold arms though, its not the same thing, you need to bear hug yourself!
- Slowly walk yourself down the FR and along the centre of the spine until you get to just before the top of your shoulder blades. **Do NOT roll onto your neck!** Then roll back down towards your lower back and finish.
- It is possible to feel/hear some 'clicks' as you do this – if you do don't worry, it's the spine being released and the joints in the spine being freed (which means some were stuck in the first place). This will actually bring a relieving feeling and can become addictive! 😊

Foam Roll techniques (FR)

What muscle you are targeting:

SMR Chest

Why this muscle is important:

This muscle group can cause muscle imbalances in the neck and shoulder, leading to shoulder impingement and neck pain and these issues are compounded by occupational hazards and sedentary lifestyles

Description:

- Position yourself on your front with one arm extended out at a 45 degree angle from the body and place the FR under the arm (where the arm meets the body)
- Similar to the Latissimus Dorsi FR, this movement is over a small area (a range of approx 5-6 inches) as you are targeting the chest muscles as it attaches in at the shoulder
- You are looking to roll from the edge of the chest (easier for men but still fully possible for women regardless of breast size) towards the arm but you should not get as far as being just on the upper arm.
- When you find a tender area hold pressure on this point for 30seconds before moving on



Foam Roll techniques (FR)

What muscle you are targeting:

SMR Hamstrings

Why this muscle is important:

The hamstrings (back of upper thigh) are notoriously susceptible to feeling tight and suffering due to muscle imbalances around the pelvis (relating to the occupational hazards of prolonged seated positions)

Cardiovascular machines can overwork these muscles and when excessively tight they can contribute to hip, knee and ankle problems.

Description:

Adopt a seated position and place the FR under the upper legs (just above the knees).

Keep your hands under your shoulders and slowly roll down the FR so it moves between the knee joint and the bottom of your buttocks.

** This technique has been shown in published research to be less effective than other muscle groups and this appears to be due to the nature of the hamstrings and how the muscle functions. (ADD research paper!!!) The best way to optimise the use of the FR on this muscle is to keep your legs straight (ideally by contracting your quadriceps muscles). Obviously this method requires more energy than the other methods but is still beneficial.

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Why can't I just stretch?

Static stretching (where a stretch is held still for 10-30seconds), has faced much debate in the last few years over its application and effectiveness within a warm-up or cool-down routines. The reality is that static stretching is not strong enough when you are dealing with scar tissue still present from previous injuries or stubborn muscle tension when it is repetitively added to on a daily basis through the repetitive movements that make up your lifestyle - i.e. running or sitting at a desk. Stretching when you have already got chronic tensions, previous injuries and aches and pains, is a false economy and you just won't achieve 100% reset without a deeper tissue release, which leaves you remaining vulnerable to prolonged/further pain!

This is not to say that static stretching doesn't have a place within a successful exercise and flexibility plan, but when and how it is utilised makes the difference between it being a valuable asset or a waste of time. Static stretching should be utilised to target 1-2 of the tightest muscle groups after they have been targeted with foam rolling – so you prepare any muscle spasm or tight, restricted tissue first, then you lengthen and reset this tissue with a static stretch. This is the same principle as sports massage! (Marshall, 2009, *unpublished thesis*).

I hope this helps you to have a greater understanding and insight into the options available to you, without cost, or professional expertise that can dramatically improve your quality of life! Be proactive and prehabilitate!