

## Fully Stretched? -- Or is that Stretching it?

The aim of this leaflet is to offer some insight and advice on the confusing topic of stretching, and how to choose the right way to stretch for a specific need. Detailed stretches for each muscle group are widely available online and are not featuring here. This is a guide to **'How To, and Why?'**

### Why should we stretch?

Being active or inactive, over time our body responds to what we do by adapting to our needs or habits. This often leads to a shortening of some bodily structures, which then may restrict the ability to move freely. Stiffness, loss of range of motion, an increase of injuries like strains and sprains and pain may be the result. Resistance of tight tissue also requires more energy to move or to maintain a position, which can lead to chronic tiredness. When healing an injury, the scars which form as part of the repair usually keep shrinking for quite some time.

Proper stretching can help prevent or recover from those symptoms.

### What is proper stretching – there is so much confusing advice out there?

Most advice you read will focus on the correct stretching of muscle tissue to relax it after exercise. This is generally guided by scientific research on muscle cells. A muscle can only be on (it contracts) or off (it does not contract). Muscle cells relax when 'off', and get lengthened by opposing muscles that contract, or by the influence of gravity. This allows the contractile elements of a muscle cell to let go, and prepare for the next contraction or rest. They fully stretch after about 20 seconds of inactivity. A muscle can relax better just after it has worked.

Many positions you see on diagrams for stretching do not provide a position in which that muscle is fully inactive though, and this can increase the risk of injury.

Within the musculo-skeletal system there are many **different types of tissue**, and the majority are not muscle cells. Focusing just on the muscle cell will not provide a full stretch, as different tissues each require a very specific type of stretch to let go. Overstretching causes further issues, and should be avoided, unless it is a functional requirement for a certain sport or pre-operatively.

### Different stretches for different needs

Usually a healthy body will adapt exactly to what we ask it to do, given enough time or repetitions. This mechanism relies on very small 'sensors' found in all tissues to provide feedback to the brain via the nerves. This is to avoid injury and to improve function. **Different types of stretches will therefore have a different outcome**, there is no right or wrong.

•**Static stretch**: A stretch which is held at a certain length for a certain time. It helps a muscle to regain its original length after a contraction, and needs to be soft and long enough to achieve this result. Too hard, and the muscle will hold on in order to not get injured, too short, there will not be enough time for the release. Take 20-30 seconds as a general guideline. After 45 seconds there is no further benefit. The first stretch is the most effective, so hold that definitely for 30 seconds. It may not need to be repeated.

The structure which is stretched should not need to weight-bear or support, and is stretched either by gravity, by the opposing muscle group (antagonist), or by further assistance (passive). **Being passive is to let it happen.**

•**Dynamic and ballistic stretch**: Fast movements are done by the opposing muscle groups or by bouncing with gravity. This promotes feedback from the muscle spindles (sensors) to **increase the activity** in the muscle, so **is good for a warm-up**, but not for relaxation. Always do a general warm-up and gentle lengthening with 5-10 second stretches to the limit beforehand.

Repeated dynamic stretches at end range can also be done to loosen stiff joint capsules, scar adhesions or nerve adhesions, but a full and effective warm up of nearby muscles needs to be done beforehand in order to avoid muscle strains.

•**Slow-release (eccentric) stretch with gravity or loading:** **This is actually not a stretch**, as it involves the structure being stretched to control the movement. The contractile parts of the tissue remain in *on* mode, and let go slowly, but remain *on*. Over time this type of muscle work will lead to an increase of the length of the muscle through adaptive changes by demand. So it can be very beneficial, if the structures are too short, but may cause a risk to further injury, if they are already too long. If overdone, usually tendon inflammation or enthesitis (inflammation of the tendon attachment to the bone) can be a result, because tendons adapt at a slower rate than muscle tissue.

## What needs stretching?

•**Muscle:** Some people have bulky tense muscles (athletic type), some longer and thinner muscles (ectomorph). If muscles are already too long as in some hypermobile people, it may be better to release them by gentle foam rolling or stretching over more than one joint, and to avoid loaded stretching. Short stretches (3-5 secs) are for warm-ups, longer held ones (20-30 secs) at resistance level for release after activity. **Avoid stretching into pain.** For lengthening a muscle to recondition it, refer to eccentric stretching as above. But still stretch static or passively at the end.

Muscles which often need more length are the hamstrings, the leg adductors, the hip flexors, the pects, the medially rotating shoulder muscles, and arm and hand flexors. Many other muscle-groups usually need strength, not length.

•**Tendons** (the attachments of our muscles to the bones): tendons need to have tension, so avoid stretching them too much. Often, eccentric stretching to end range can irritate certain tendon problems like enthesitis.

•**Fascia** is the soft tissue connecting it all: All of our body is held within a web of fascia, even a muscle is mainly fascia. Fascia shortens easily after an injury or adaptive to posture. It releases best with a gentle and slow approach into a mild stretch. Tight fascia can feel like being in a strait-jacket, placing excessive pressure on other structures, especially nerves and blood vessels. To ease, hold a more overall body stretch involving many joints at once for 1-2 minutes and

slowly unwind with relaxed breathing. Never jerk. Yoga is a good way to learn fascia stretching.

•**Nerves:** A nerve which has been under pressure by impingement or been inactive over time usually shortens; it can also be caught in scar tissue from any injury, including surgery. We can do nerve gliders, which help a nerve to gently glide through the layers on tissue, as it should do (called flossing a nerve), or stretch it by doing a nerve tensor. This involves repeated nudging or even mild wrenching at end range. Please note that the dose makes the remedy here, overdoing it can lead to severe injuries. Always ask a physiotherapist for advice (see below).

•**Scars:** Healing an injury is one of the great mechanisms of our body, but the new tissue is usually second grade, and has a tendency to shrink for up to a few years after the healing seems complete. Massage and passive mobilisation can help best, eccentric muscle activity helps to regain length and keep the tissue strong and resilient. Some nudging at end range can be useful, too. Be persistent for one to two years.

•**Capsules** of joints (if they are restricted in range of motion): after a full warm up and stretching of all related muscles to relax, perform repetitive motions in a fast succession at end range: ‘Small amplitude, high velocity’. Repeat often until the desired range is achieved and maintained.

•Even **bones** respond to loading and stretching by improving their structure and strength, but they will not lengthen, use weights and jumps.

•**Ligaments?** No, they do not need stretches, and cannot be stretched, as they are taut bands around a joint of a certain length, and if they accidentally stretch they have micro-tears. Then they will usually heal to be longer rather than shorter. Their scars can tighten around a nerve or muscle though, which then needs to be freed off by a specific stretch. Placing a ligament gently at its end-range can stimulate the strength of its structures, and this would be a specific physio exercise, usually given after a ligament strain.

Some discomfort when mobilising nerves, scars and capsules can be necessary; talk to your physiotherapist for advice on dosage!

**“I Bend so I don’t Break”**