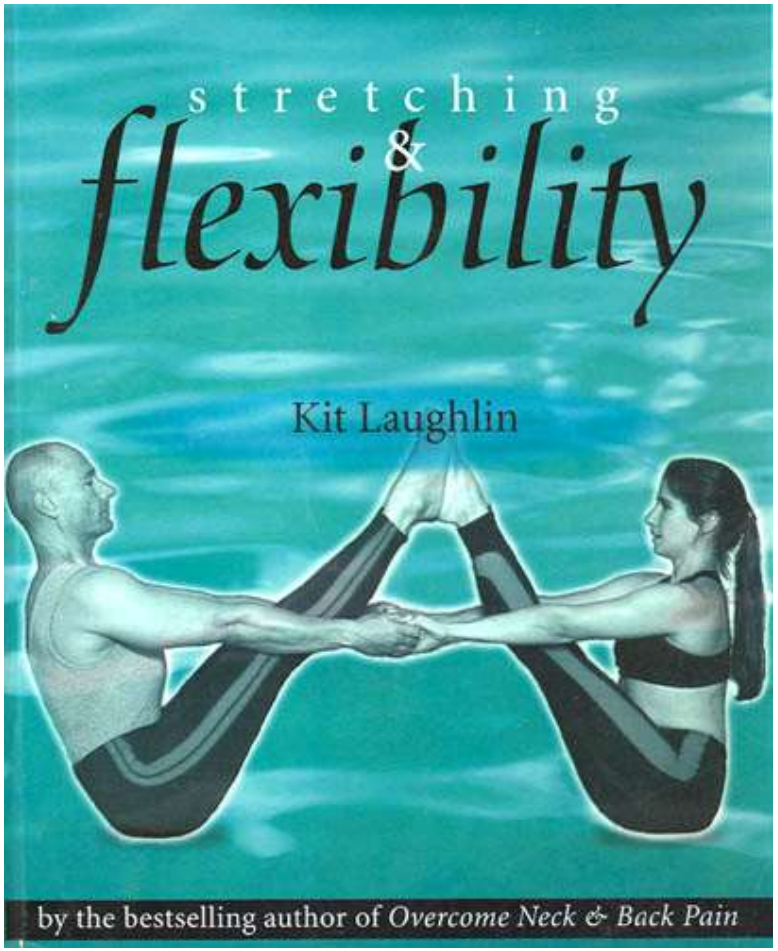
Pre-exhaustion

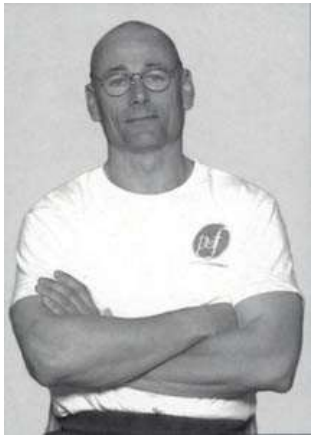
A method that gives rapid increases in muscle length, with no soreness afterwards.

Devised by the Posture and Flexibility group at the Australian National University, Canberra, Australia.

Method: muscles are worked with maximal weights at their fullest stretch.

The Posture and Flexibility Program





www.pandf.com.au

Devised by Kit Laughlin and others. A program for muscular and skeletal health (backgrounds: martial arts, Olympic weightlifting, and gymnastics).

Pre-exhaustion is an experimental technique that is still being developed (it is not part of the Posture and Flexibility program).

Basic principles of pre-exhaustion:

1. Pre-stretch the muscle as much as possible.
2. Load with a heavy weight at full extension (adjust weight as below).
3. Lift weight using muscles to be stretched. The weight should be adjusted so that it is possible to lift the weight only by about 2 cm and only 5-6 times before no further lifting is possible. The muscle has “failed”.
4. Immediately (within 10-15 seconds), before muscle has time to recover, go into a full stretch of the muscle, and hold the stretch for a long time (3 - 5 minutes).

Because muscle failure is so quick, no waste products build up - hence no soreness.

Principles (continued)

5. The failure must occur in the extreme range of movement.
6. The muscle must ***fail***, not just fatigue.
7. The failure must be quick, without causing the muscle to “pump”.
8. The setup must be very stable: you are using large weights at maximal muscle extensions, and you must have enough stability and confidence to target those muscles specifically.
9. Do not sacrifice proper form to lift more.
10. The method needs good levels of body awareness, good communication skills, and an attention to detail.
11. Everything must work correctly, otherwise it is just like ordinary hard stretching.

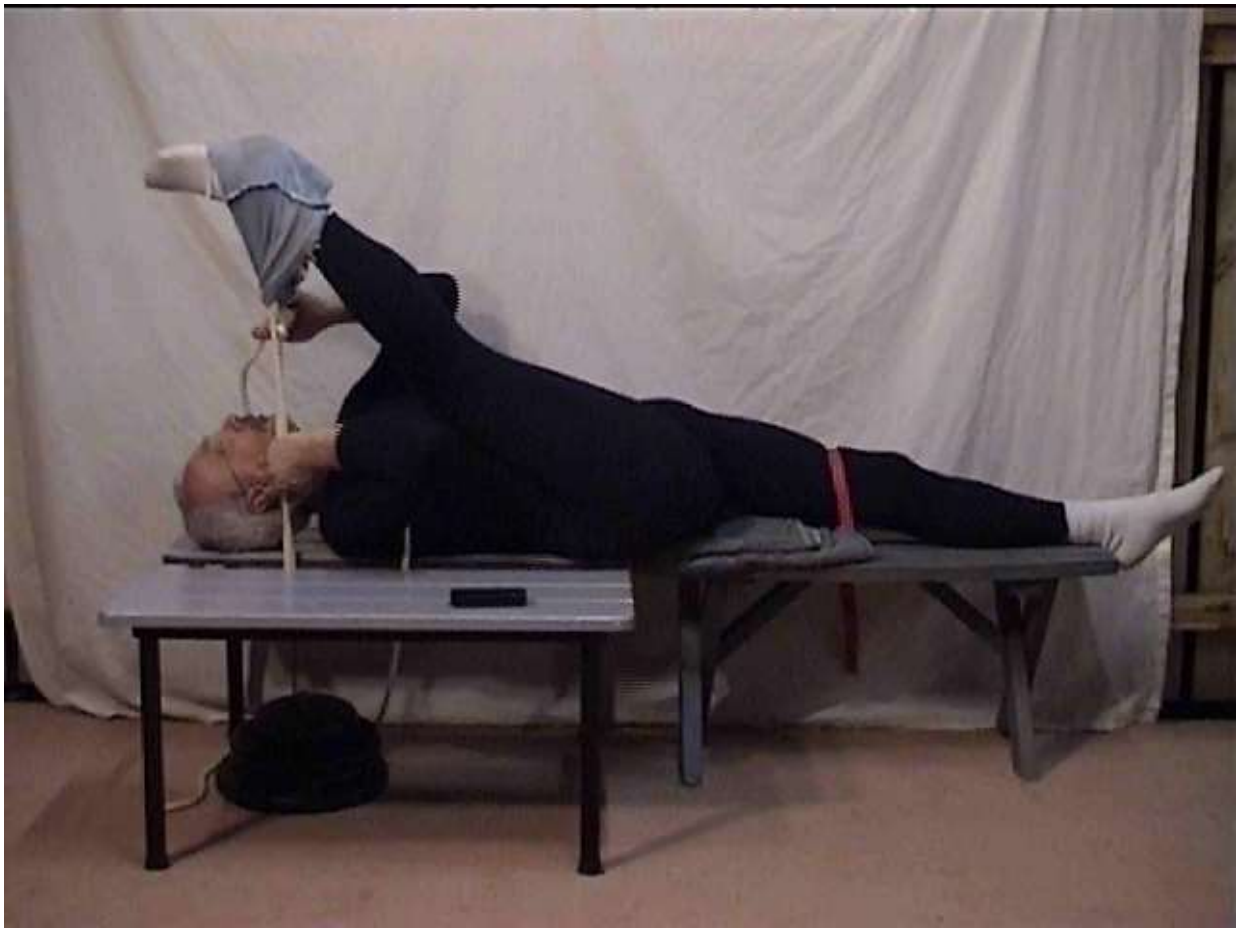
The process:

1. Set up the stretching apparatus before pre-exhausting.
2. Pre-stretch, then do pre-exhaustion with very muscle-specific lifts.
3. Stretch strongly between lifts.
4. Only move through a small range of movement near the full stretched position.
5. Use **high resistance** so that failure is extremely fast.
6. Make a speedy (10 – 15 seconds) transition to the stretch. Do not allow the muscles to recover.
7. Hold the stretch. We highly recommend using the clock.
8. Try to relax in the new position.

Stable supports are required

I use an old steel-framed coffee table with a board removed.

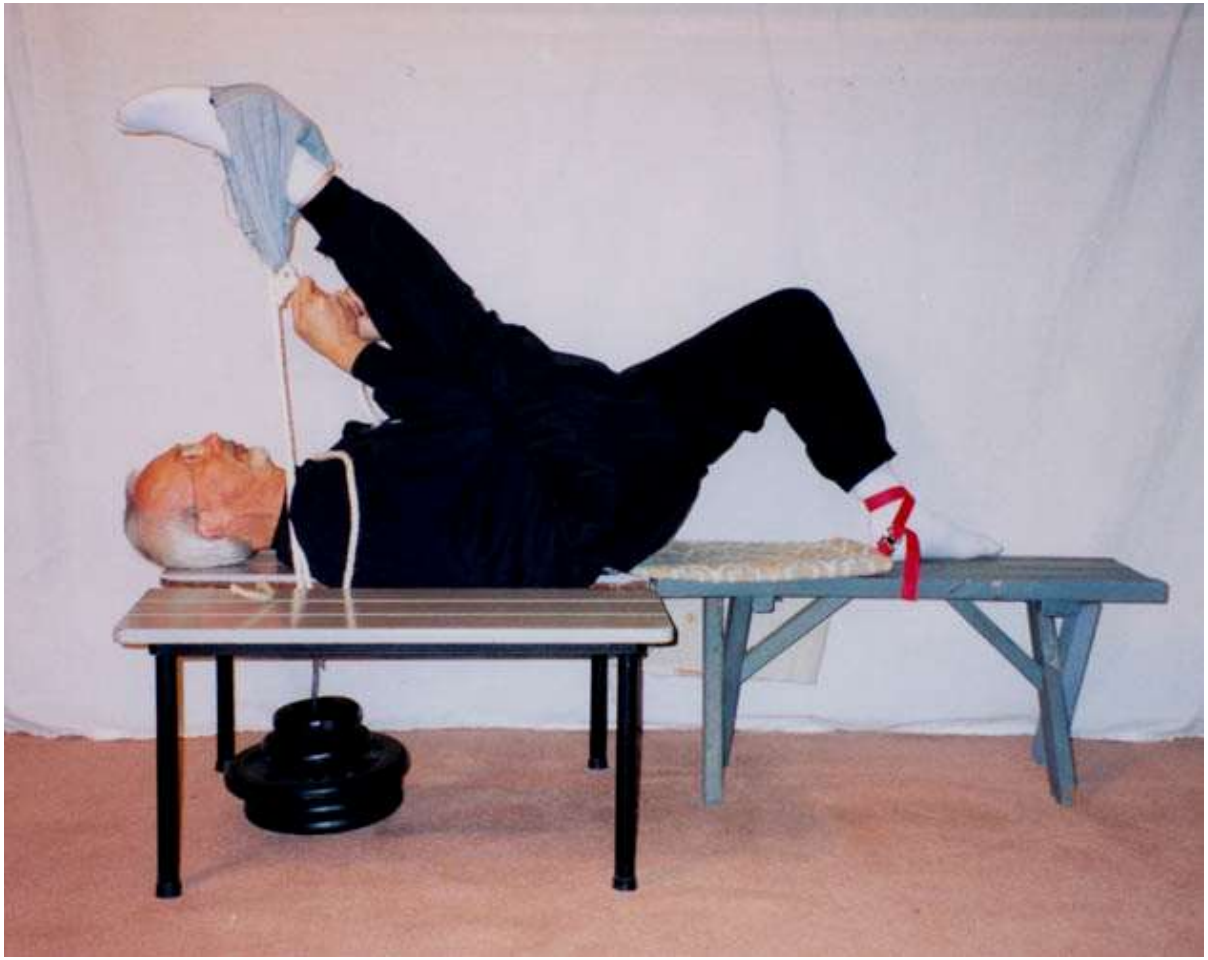
The stretches (1) Hamstring pre-exhaustion



1. Strap other leg down.
2. Raise leg to beyond 45^{o}.
3. Lift weight (38 kg in my case) using hamstrings.

4. When muscle has failed, go into a full hamstring stretch, and hold.

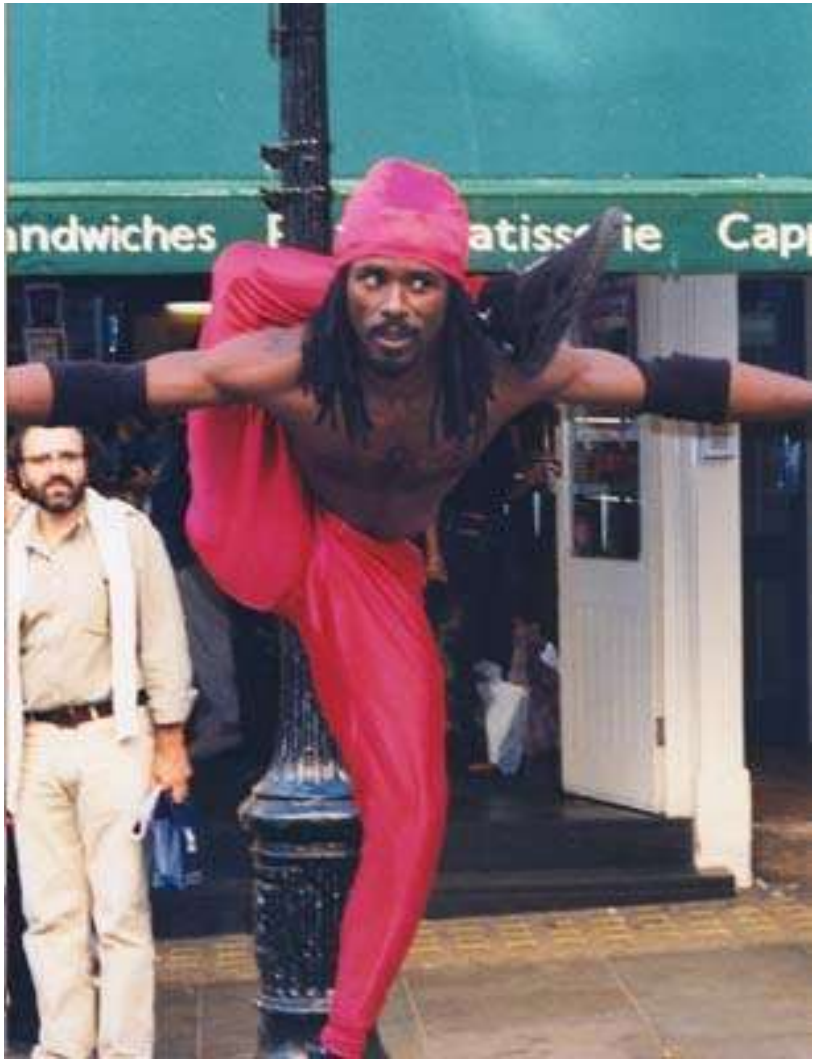
If you have less hamstring flexibility than this, bend other leg up. If you have more, tuck other leg under.



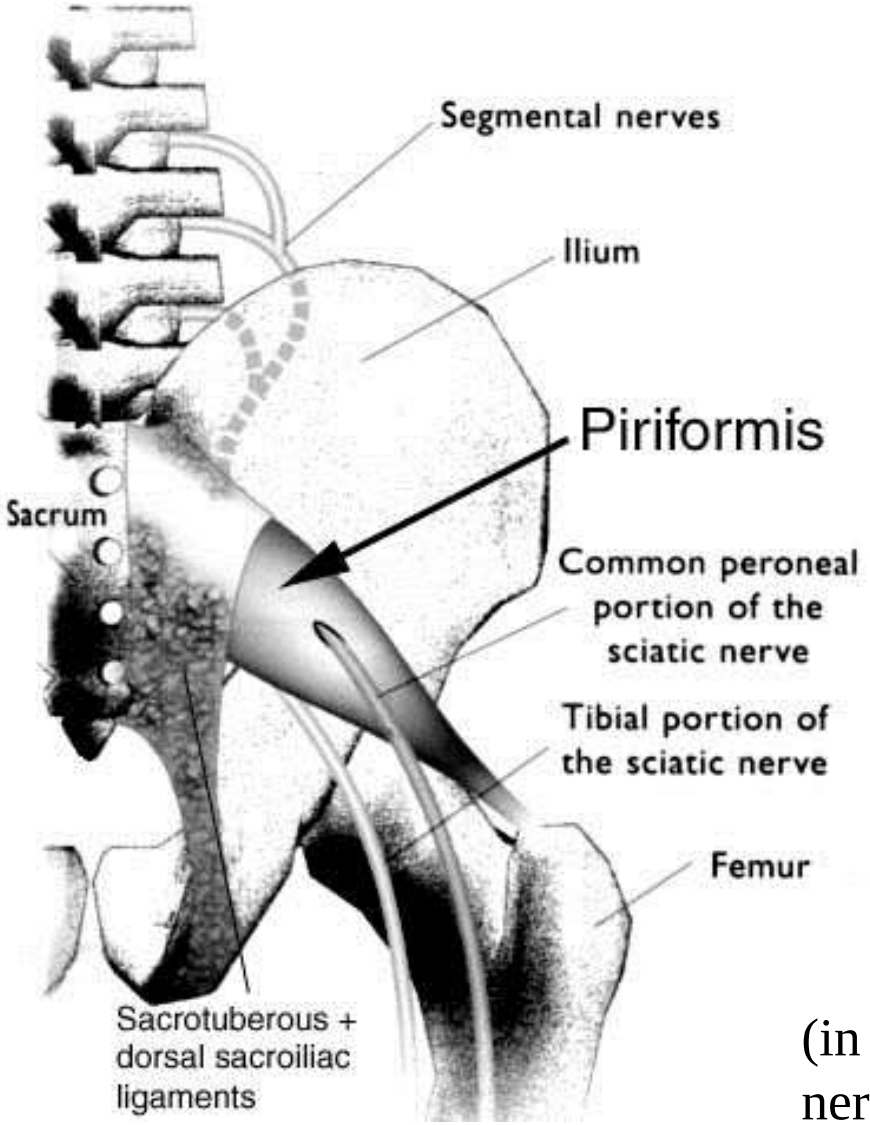
The same method can be used for side hamstring stretches

1. Strap other leg down.
2. Raise leg to beyond 45^{o}
3. Lift weight (35 kg in my case) using side hamstrings.

Piriformis muscle



A long piriformis muscle is necessary to achieve this position.



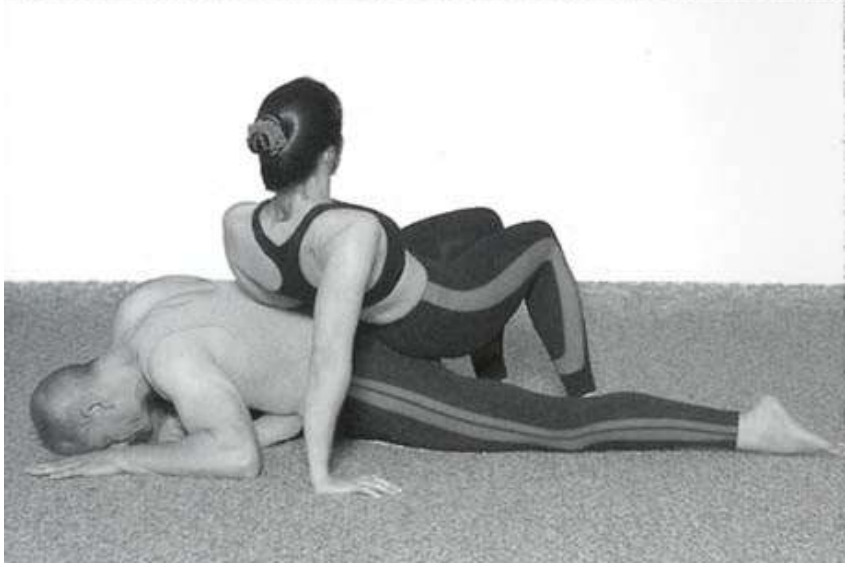
The piriformis muscle runs between the pelvis and the thigh-bone

(in 25% of people a branch of the sciatic nerve runs through the piriformis muscle, so spasm or tightness of the muscle can give sciatica.)

Piriformis pre-exhaustion

1. Lie on side.
2. Raise leg beyond 90^{o}
3. Rotate leg inwards at hip - point knee and foot down.
4. Lift ankle against weight (5 kg).

Piriformis stretch



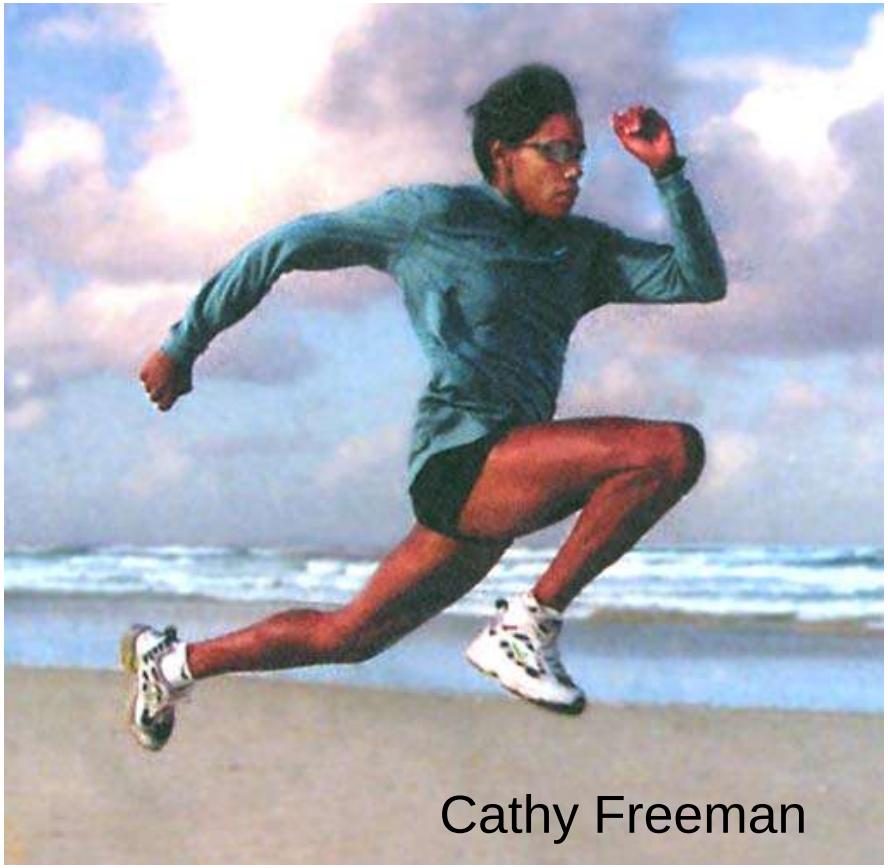
1. Sit on floor with knee bent at right angles.

2. Bend forward at hips, keeping foot in same position.

3. Partner can press you to the floor. Partner should hold your hips even.

4. Foot should end up in front of breast-bone.

Long hip flexors are required in athletics - e.g. in runners



Hip flexor pre-exhaustion

1. Lie on back, hold one knee towards chest.
2. Raise other leg using hip flexors (28 kg in my case).

Hip flexor stretch

1. Raise one foot on support.

2. Partner sits on back of other thigh and **PUSHES**.

Further advantages (as well as providing rapid increases in flexibility):

It helps develop proprioceptive awareness, and strengthens the muscle at its extreme stretch.

Limitations:

Pre-exhaustion acts on flexibility where it is determined by muscle length. It does not cause remodelling of joints.

Only some muscles are suitable: i.e. those where it is possible to load the muscles with maximum weights at maximum muscle stretch, with safety and stability.

It may not be suitable for children.

How often to use pre-exhaustion?

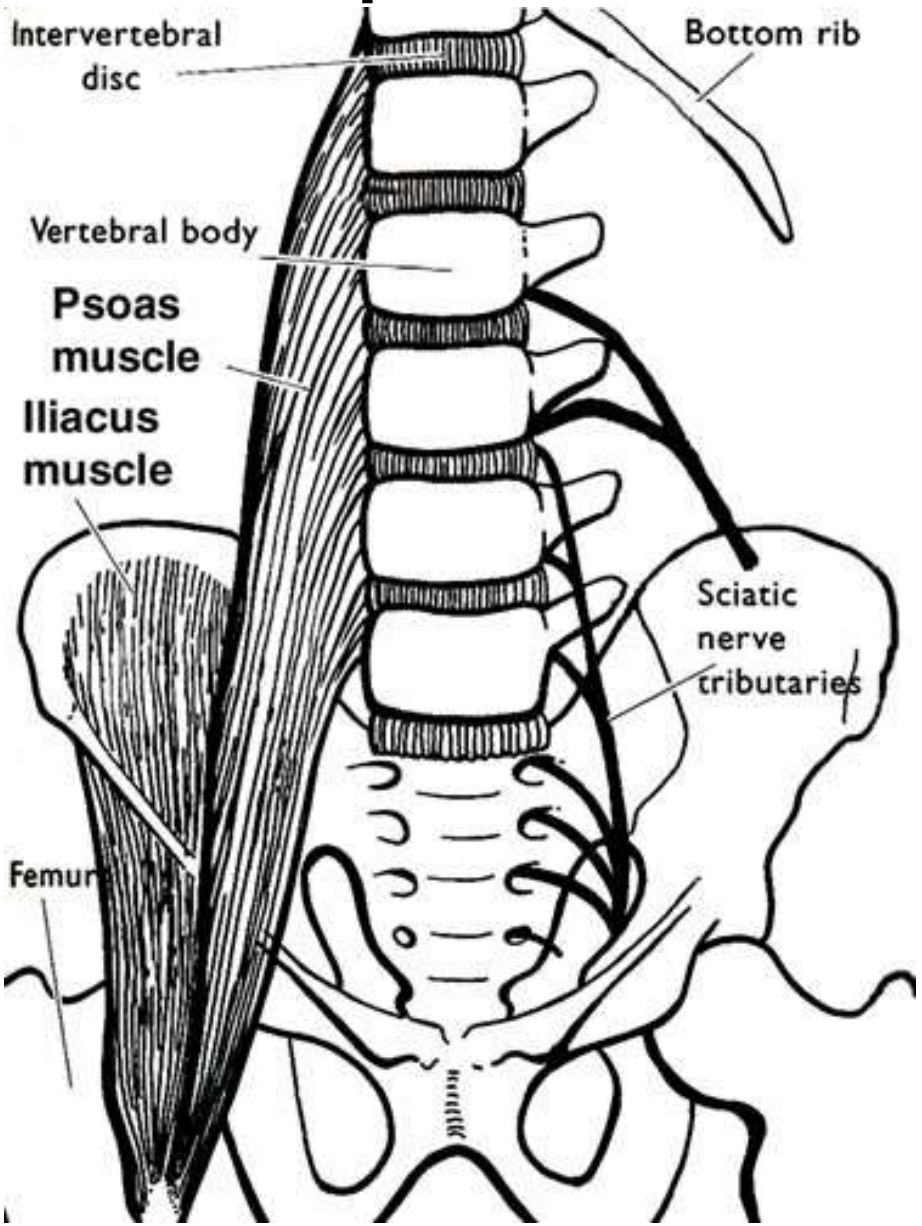
Use once a week for a few months. View as a ”breakthrough” technique rather than as a routine one.

Although each session is fast per person, the care required and the need for equipment means that it is slow to use with large groups of people. This also limits how often you use it.

How does it feel?

It feels wonderful. You feel as though you are walking on air afterwards.

The psoas muscle:



The psoas muscle attaches the front of the thigh-bone to the spine. It needs to be stretched where a backbend of the spine is combined with a backbend at the hip. I am working on a pre-exhaustion stretch for this one.

The end -

and happy stretching!