

MODIFIED CORE MUSCLE EXERCISES

You should always seek professional advice before starting any new regime of exercise, however, the exercises shown on page 2 are suitable for most people. The harder exercises on page 3 should only be tried by those who have been advised to do so by their practitioner and are easily able to perform stage 1 and 2 exercises without discomfort.

None of these exercises should be painful - if it hurts - STOP !!

Why have you been given these particular exercises?

If you have been set them by an osteopath or massage therapist it is likely that you have recently suffered from a low back injury. In this case, training your core muscles will result in better coordination of the supporting muscles of your low back and may restore normal function more quickly, whilst reducing the risk of further injury.

What are “core muscles”?

They are not, as the name suggests, in the middle of the body but form a “corset” around the trunk and provide stabilisation to the spine and internal organs whilst we are moving other parts.

Most trainers agree that the actual strength of a muscle is not increased unless it is exerted to more than 70% of its full capacity whereas we are only asking for 30% contraction. So what are we trying to achieve?

Well, forget total available strength, what benefits us most is an improved resting tone, and more importantly the “re-learning” of the automatic pre-contraction of these muscles prior to the use of the spinal muscles e.g. in lifting.

Better tone at rest is achieved by repetitive light muscle activity which will also improve co-ordination of the muscles and improved their blood supply. Better tone at rest also reduces the tendency to incontinence, womb prolapse and hernias, so it has to be worthwhile. In fact an indication of the need for core exercises could be loss of bladder control, or loss of projectile power when urinating (check with your GP for other causes of this).

So why should this pre-contraction be automatic and why do we have to “re-learn” it?

Well, the first creatures to evolve were in the sea and moved by wriggling from side to side (eels & fish).

When the first fish scrambled up onto the land (to escape predators, find food, or stake their claim to real estate?) they found that moving from side to side on all four flippers/feet didn't get them very far.

So most of them (except snakes) developed a bilateral hunching and hollowing movement to move forward. Try it! - You have to bring your back limbs forward (using anterior muscles) before moving your front limbs forward (using your spinal muscles) to take the weight off them first. This mode of movement is called porpoising and those mammals that returned to the sea at a later date retain this mode whilst swimming.

It's not very relevant, but to finish the history lesson with the development of stronger limbs rather than flippers, animals developed the bi lateral cross crawling technique for better balance and stealth, with the development of contra lateral oblique chain linkage only being necessary for bi-pedal locomotion.

(If you don't believe in evolution - just accept that we were designed this way because it is elegant and effective).

If pre-contraction is inherent why do we lose it?

Weakness of the core muscles may be caused by abdominal surgery or following pregnancy. General disuse will also result in a loss of tone and it is likely that any other abdominal problems e.g. colitis etc will cause weakness of the deep and superficial abdominal muscles (most sufferers of such problems will present with a low “pot belly”).

However, we are concerned with the timing of contraction rather than the overall strength.

Recent research has shown that, following spinal injury, the pain and protective muscle spasm overrides the automatic core muscle pre-contraction and that the body doesn't reset the process without education, mother nature being more concerned with keeping you still than with getting you somewhere else.

Pilates exercises

We often recommend Pilates instruction or classes to patients and many have benefitted from this. However some patients have experienced aggravation of their problems, especially in the advanced classes. This is often because the student has not listened carefully to their tutor and is too ambitious, or sometimes because their basic spinal condition is aggravated by the spinal compressive forces that advanced Pilates exercises can induce.

We have found that aggravation is mainly caused to those who suffer from severe spinal joint degeneration or with certain disc injuries. So core muscle exercises are likely to be of most help following injury caused by muscle strain, ligament weakness, loss of pre-contraction after injury, weakness due to chronic disc injury and mild degeneration (where joint approximation is likely to relieve strain on the ligaments and the facets are not too inflamed).

These exercises will be a good preliminary training before attempting Pilates classes and you should ask your practitioner if there are any exercises that you should specifically avoid - or if you should attend classes at all.

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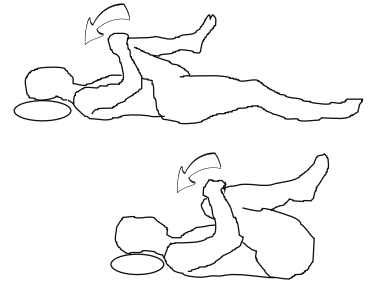
None of these exercises should be painful - if it hurts - STOP !!

☺ **Warm up exercise:** Lie on your back with a pillow under your head.

Clasp one knee with both hands and gently rock towards your chest 10 times. Repeat with the other leg. Now bring the knees up one at a time and rock them both together towards your chest 20 times.

You should feel a slight stretch, NOT pain. If comfortable, hold the position for 10 secs.

Lower the legs back to the floor one at a time into the bent position and pause for a few seconds before sliding them flat separately.



Now for some core muscle contraction (stage 1)

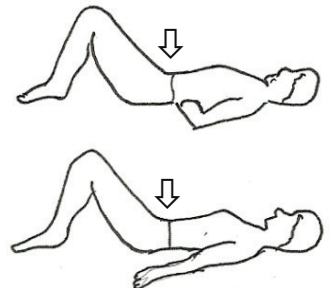
☺ **Lie on your back**, knees bent and relax for a few seconds. **Place** one hand under your back, **Check** that you are not flattening your spine as you try the next action.

Imagine that you are stopping yourself passing water and suck the lower part of your tummy in, (it helps some people to imagine that their hip bones are coming together slightly or that a belt is tightening).

Check that you are maintaining a neutral spine, i.e. not flattening or hollowing your back.

Check that you are doing this properly by gently pressing your fingertips into either side of your tummy whilst you "suck it in". (You should feel the muscles move away from your fingertips).

Release the tension to about 30% of your maximum effort. **Take a few breaths** whilst holding the contraction. **Relax.** Don't hold your shoulders or chest tense.



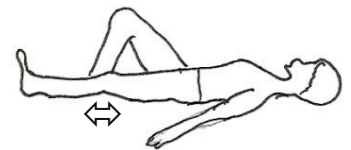
Now try to hold the contraction whilst you do the following leg movements - don't let your pelvis twist whilst you do them. Use 30% of effort. **Check** that you are not flattening your spine. **Rest** after each set of movements.

Re-contract before trying the next set.

✓ Lower one leg slowly by sliding your foot along the floor. Pause. Bring it back up again.

Repeat 5 times whilst maintaining the contraction.

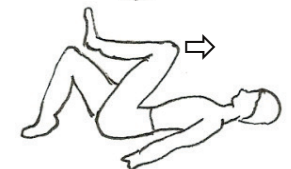
Repeat for the other leg - **Do not try both together.**



✓ **Rest & re-contrast.**

Bend one knee up towards your chest then lower it back into the bent resting position.

Repeat with the other leg. Do this 5 times for each leg. (Check with your hand under your back that you are not flattening your spine).



✓ **Rest & re-contrast.**

Now, try letting one knee roll outwards as far as possible - keep both feet touching the floor and bring back slowly (remember to keep the muscles contracted and your pelvis level).

Repeat with the other leg. Do 5 times each.



(You can make the exercises more difficult by doing them all with one or both hands, above your head.)

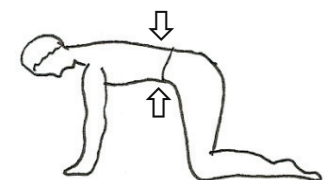
☹ **Now it gets a little more complicated (stage 2)**

Start by kneeling on all fours on the ground, ensure that your arms and thighs are vertical.

(If you are a little wobbly and might fall over, use a wall or a large piece of furniture for support).

Contract the muscles as before. **Practice** holding the contraction for 5 seconds. Breathe evenly.

Check that your spine is in a neutral position, not humped or dipping.



✓ **Rest & re-contrast.**

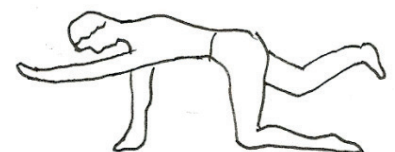
Now lift one leg up (without dipping the back or twisting your pelvis).

When you feel well balanced, raise the opposite arm as well.

Hold for 5 seconds and keep breathing.

Repeat 5 times with each opposing pair of limbs.

Don't worry if you start to shake or wobble a bit - this will get easier as you get stronger.



(When you begin to find these exercises easy, try holding the contractions for 10 seconds or repeating 10 times.)

☺ **Finish** your exercise session by repeating the **warm up exercise** you did before you started.

You can ask your practitioner for another sheet of more difficult exercises, but some of them may not be appropriate, Depending on your condition and past injuries.

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None of these exercises should be painful - if it hurts - STOP !!

Only try these exercises if you have been advised to do so. **Not** if you have been diagnosed as having a disc bulge with sciatica, (referred pain in the leg) or severe low back degeneration (when it may hurt to bend backwards whilst standing).

☺ **Warm up first:** Repeat the warm up exercises from page 2 or try this new one (if it doesn't hurt your knees).

kneel on the floor with your feet tucked under your buttocks, then slowly lean forward and put your hands flat on the floor. Bow your head forward and support yourself on your hands & elbows, then slowly lower your body as near to the floor as you can.

You should feel a slight stretch, NOT pain. If comfortable, hold the position for 10 seconds whilst breathing, then use your hands to push yourself back up into the kneeling position.



Now for some core muscle contraction (stage 3)

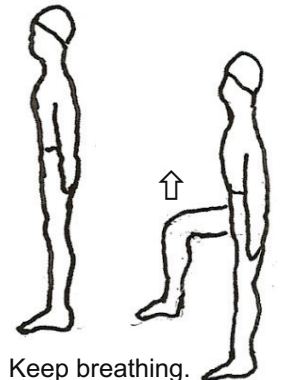
☺ Practice contracting your lower abdominal muscles and pelvic floor whilst standing upright. **Imagine** that you are stopping yourself passing water and suck the lower part of your tummy in, (it helps some people to imagine that their hip bones are coming together slightly or that a belt is tightening). (Pretend that you are doing up a zip on trousers that are too tight).

Check that you are maintaining a neutral spine, i.e. not flattening or hollowing your back.

Check that you are doing this properly by gently pressing your fingertips into either side of your tummy whilst you "suck it in". (You should feel the muscles move away from your fingertips).

Release the tension to about 30% of your maximum effort. Relax your shoulders and chest.

Take a few breaths whilst holding the contraction.



✓ Now try the same thing whilst standing on one leg with the other knee raised. Hold for 5-10 seconds. Keep breathing.

Check muscle contraction and position as above. **Repeat** 5 times with each leg.

✓ Then repeat the previous exercise with the opposite hand touching the raised knee.

☺ **The Lunge:** Stand with your feet slightly apart and step forward with one leg.

Contract the core muscles and bend both knees. Keep the front foot flat and don't let the front knee go past your foot.

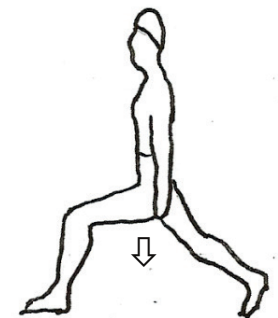
Concentrate on lowering your bottom towards the floor and not letting your pelvis move forward.

Check that you are maintaining a neutral spine, i.e. not flattening or hollowing your back.

Hold for 5-10 seconds and return to an upright position by pushing off with the front foot.

Repeat 5 times with each leg forward

✓ When this is easy - Hold your arms out in front of you with your hands together and practice the lunge with the upper body turned to either side.



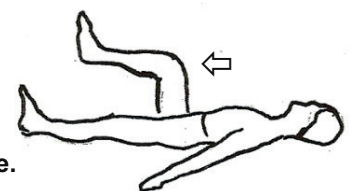
☺ **The Table Top:** Lie on the floor face up with your legs straight and contract the core muscles.

Raise one leg up so that your thigh is vertical and your lower leg is horizontal.

Check your position and breathe in.

✓ Now exhale as you straighten your leg and lower to the floor (Don't let your back hollow).

Return to the resting position and **repeat** 5 times with each leg. **Do not try with both legs at once.**



☺ **The Half Plank:** Start by lying face down on the floor, then raise yourself up until you are resting on your forearms and knees, with your feet off the ground.

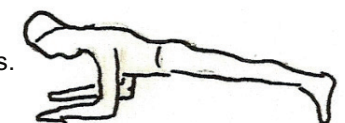
Check that your spine is in a neutral position, not humped or dipping and contract the core muscles. Hold for 10 seconds whilst breathing, then rest, re-contrast and repeat 5 times.

✓ When this is easy, try the full plank position.



☺ **The Plank:** Start by lying face down on the floor, then raise yourself up until you are resting on your forearms and toes.

Check that your spine is in a neutral position, not humped or dipping and contract the core muscles. Hold for 10 seconds whilst breathing, then rest, re-contrast and repeat 5 times.



☺ **The Bridge:** Lie on your back with a pillow between your bent knees.

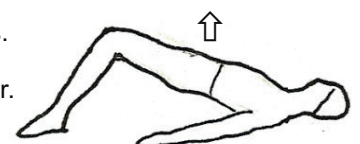
Contract the core muscles and breathe in.

As you breathe out, slowly lift your bottom off the floor until you are resting on just your shoulders.

Your back and thighs should form a straight line, (don't arch your back).

Take a breath (holding the contraction) then breathe out whilst you lower yourself back to the floor.

✓ When this is easy - try straightening one leg whilst in the bridge position. **Repeat** all 5 times.



☺ **Finish** your exercise session by repeating the **warm up exercise** you did before you started.