

## SPINAL REHAB EXERCISES FOR THE LOWER BACK

The following exercise form part of our 8 week lower back rehabilitation programme. The list of exercises has been designed with patients with damaged spinal discs and joints in mind and has been designed to complement IDD Therapy, (medical) acupuncture, physiotherapy and/or osteopathy treatment at our clinics. The exercises may also form the basis of post-operative rehab for patients who have received spinal surgery or injections.

The exercises and descriptions that follow are for reference purposes only and on their own do not constitute a complete treatment programme. We advise that you do NOT perform these exercises without first consulting one of our clinicians or a similar specialist so that they can check whether the exercises are right for you and so they can check you know how to perform the exercises correctly. Correct technique is VERY IMPORTANT, we therefore strongly recommend further one to one sessions with a member of our therapy team as you progress through the programme. Apart from a mild ache or burn from using certain muscles, none of the exercises should cause undue pain, if pain or increased symptoms are experienced during or as a result of these exercises patients are advised to refrain until consulting their therapist / specialist.

**Guide:** Week 1 – 2 : Perform exercises 1 – 3. Aim for 2 – 3 sets twice daily.

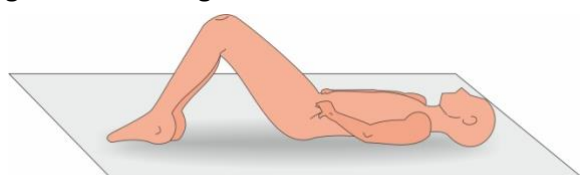
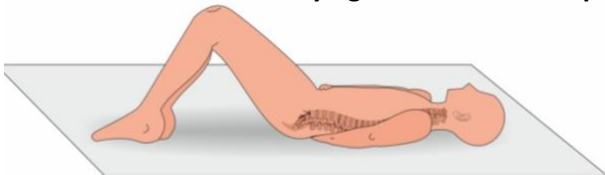
Weeks 3 – 4 : Perform exercises 1 – 9. Aim for 2 to 3 sets twice daily.

Weeks 5 – 6: Exercises 3 & 6 -17. Aim for 2 to 3 sets twice daily.

Weeks 5 – 6: Exercises 3, 7, 11, 12, & 16 for 2-3 sets twice daily AND 17-23, 2-3 sets every other day.

Weeks 6 – 8: Exercises 3, 7, 11, 12, & 16 for 2-3 sets twice daily AND 17, & 23 – 25 for 2 -3 every other day.

### Exercises 1a & 1b: Crook Lying lateral rib and diaphragmatic breathing

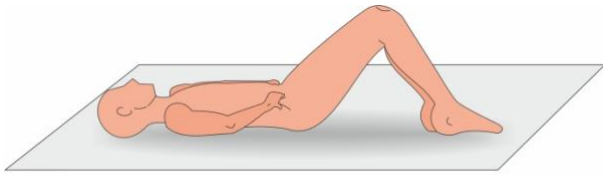


**Set up:** Lie on your back on a cushioned mat (e.g. yoga mat) or carpeted floor, with a small cushion or pillow under your head, knees bent to 90°, feet flat on the floor, slight gap between your feet and knees with knees in line with ankles. Keep the back of your neck long, chin tucked in slightly, shoulders away from the ears, collar bones wide and relaxing towards the floor. Try to allow the back of the lower rib cage to sink downwards, relaxing into the floor. Place your hands on your lower abdomen with thumbs in contact with the sides of the lower rib cage. From here perform a series of pelvic tilts, feeling the segments of lower back (starting with the lowest first) press into the floor as you tilt you pelvis backwards and lift away from the floor as you tip forwards. Make these tilts smaller and smaller until you achieve a “neutral lumbar spine” forming a very shallow arch in your lower back, allowing for a slight gap between your back and the floor around the size of a grape.

**1a) Diaphragm Breathing:** Perform 5 – 10 slow deep breaths using your diaphragm muscle only. You should feel your tummy rise up as you breath in. Try not to lift your chest. Slowly relax the breath out and repeat.

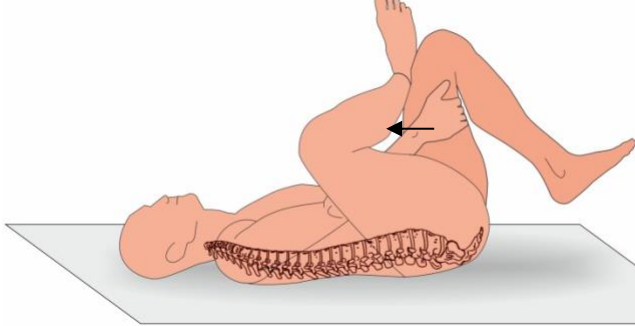
**b) Lateral Rib Breathing:** Perform 5 – 10 slow breaths focusing on allowing your lower rib cage to expand sideways as you breath in. Relax the breath out as repeat. Try to maintain this breathing pattern when performing the other exercises in this series.

## Exercise 2: Crook Lying Transversus Abdominis (Trans Abs) recruitment



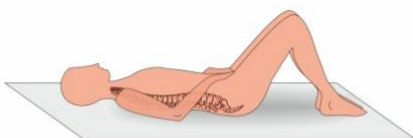
Transversus Abdominis (Trans Abs – for short) is the name of a deep intra-abdominal muscle whose fibres run circumferentially around the trunk and has attachments onto the spine (via the thoraco-lumbar fascia). In Studies Trans Abs has been shown to have a major stabilising role for the lower back, studies also show this muscle becomes weak during chronic back pain due to “reciprocal inhibition” whereby the neural signals to the muscle are switched off, it is therefore very important to switch these neural pathways back on again via specific exercises. Using the same set up as in exercise 1 place your finger tips just inside the two bony prominences at the front upper part of your pelvis (*Anterior Superior Iliac Spines, ASIS*). Breath in as described in exercise 1b, midway through the out-breath start to pull you lower tummy (below the belly button) inwards and uppers (without raising the chest or losing contact with the lower ribs imprinting into the floor). At the same time try to contract you pelvic floor muscles. If you are using the correct muscles groups you should feel a slight contraction under your finger tips. Initially make a strong contraction, hold this contraction for the count of one second then relax to half way (50%) then relax half way again so you contracting with approximately 25% effort, we describe this as **“SETTING THE CORE”**. Try to hold this 25% effort contraction for 10 seconds whilst you maintain the breathing pattern as described in 1(b), this constitutes one repetition. Build up to 10 repetitions.

## Exercise: 3: Glute Stretch



The Glute (buttock) muscles often become tight as a result of low back problems and this can further unbalance the position of the pelvis and lower back. Lie on your back as illustrated opposite with your right leg crossed over the left so that your right ankle rests just below your left knee. Keeping your ankle where it is, slowly push your right knee away so that your right leg rotates (externally). At the point of maximum (comfortable) stretch, hold the position for 20 – 30 seconds. Repeat for the other leg. For an alternative stretch slowly pull your knee towards the opposite shoulder.

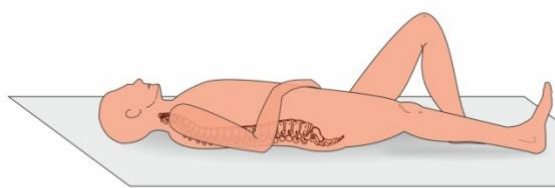
## Exercise 4: Hip Twist (Level 1)



Start by lying on your back with a slight gap between bent knees as in the set up for exercise 1. Set your core to 25% as described in exercise 2. On an out-breath slowly float your right knee out the side to a 45° angle, breath in and return your leg to the starting position. Try to make sure your other leg stays perfectly still as your move your right leg, imagine a glass of Champagne balancing on top of knee! Also, as you move your leg to the side try to make sure your pelvis stays perfectly still, imagine a tray of drinks balancing across your pelvis. Return you leg to the start position as you breath in.

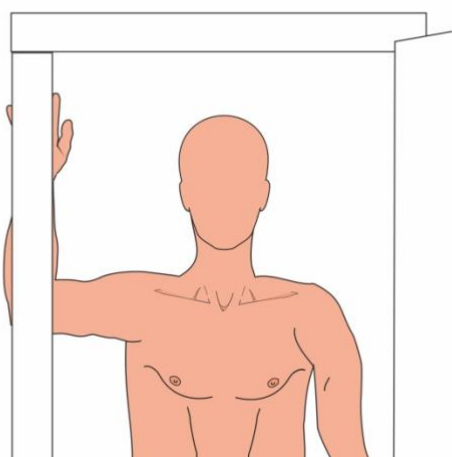
Perform 10 repetitions for the right leg then 10 for the left leg or alternate legs until reaching 10 reps per leg.

### Exercise 5: One Leg Stretch (Level 1)



Start by lying on your back, knees bent up with a slight gap between them as in the set up for exercise 1. Set your core to 25% as described in exercise 2. On an out-breath slowly straighten one leg, keeping your heel in contact with the floor. Be careful that the slight arch in your lower back (the size of a grape) does not increase as you straighten the leg. Breathe in as you return your leg to the bent position. Perform 10 repetitions on each leg.

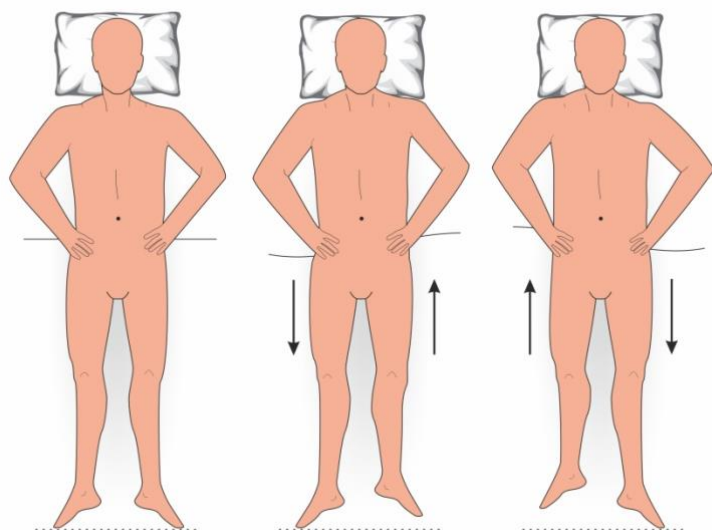
### Exercise 6: Pec Stretch



Tight chest (Pec) muscles causing rounded shoulders can have a significant adverse effect on neck and back posture.

Stand in a doorway with your forearm resting on the vertical part of the door frame as shown in the drawing above. Keep your chin tucked in slightly and back of the neck long, slowly lunge forward so that a stretch is felt in the chest area, hold for 20 seconds, slowly relax and repeat on the other side.

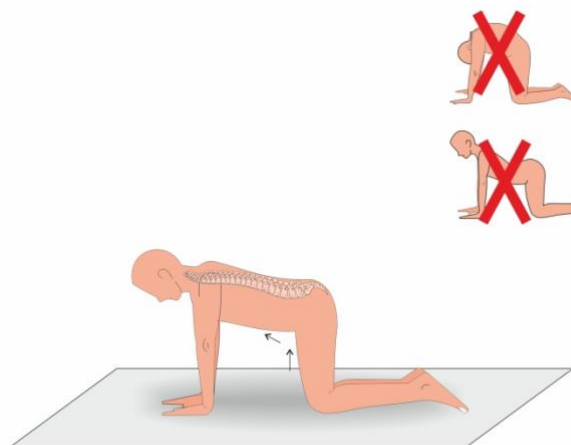
### Exercise 7: Hip Hike (QL Stretch)



Quadratus Lumborum (QL) is the name of a muscle running from the lower rib cage to top of the hip bone (ilium). Tension in either QL muscle can affect posture and range of movement in the lower back. Also “trigger points” (or knots) in either QL can refer pain to the lower back and buttocks.

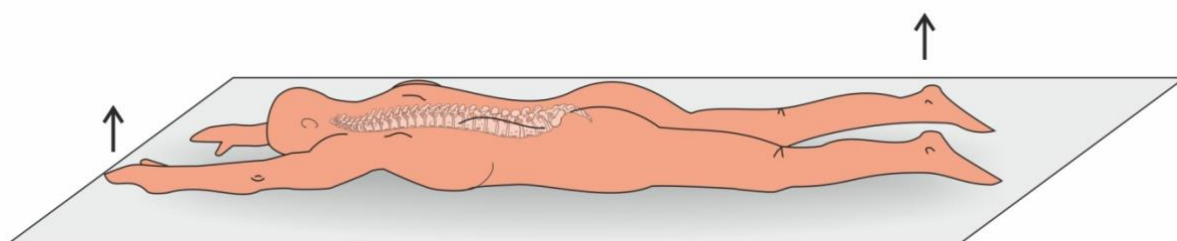
To stretch your QL muscle and help correctly align your pelvis lie on your back, legs flat with feet pulled up at 90° to your shins, hands on hip bones as shown. Whilst trying to keep a neutral lower back (slight arch), hitch your hip up on one side whilst stretching the other side away so that your ankle slides past the other ankle, repeat on the other side. Perform 10 slow hip hikes for each side (20 in total). For a variation perform the exercise with arms stretched overhead.

### Exercise 8: Four Point Kneeling Trans Abs



Kneel on all fours as shown, with a rolled up towel near your ankles if needed for comfort. Set your spine into a neutral position, keep your neck long and eyes looking to the floor. Breath in as described in exercise 1b, midway through the out-breath start to pull you lower tummy (below the belly button) inwards and uppers, at the same time try to contract you pelvic floor muscles. Hold for 10 seconds on a 25% effort contraction whilst continuing to breath. Repeat 5-10 times.

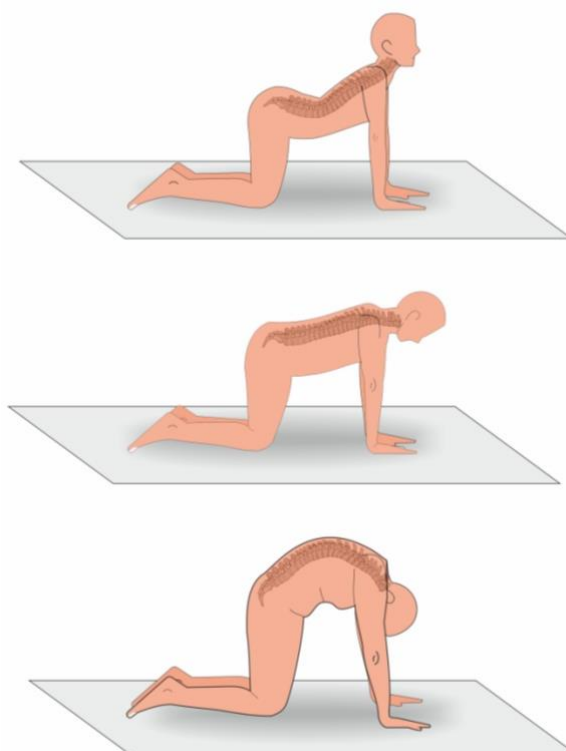
### Exercise 9: Swimming



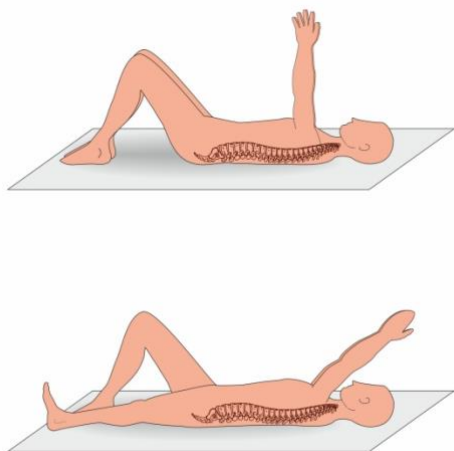
To start strengthening the spinal muscles lie on your front, arms out stretched, keep looking down, neck long, lift the breast bone off the floor very slightly. If necessary tilt your pelvis backwards slightly in order to maintain a neutral lumbar spine (without over arching). Set your core by engaging your Trans Abs muscles to 25% effort. As you breath out slowly raise one arm and the OPPOSITE leg off the floor by a few inches, hold for 1 or 2 seconds, lower and repeat for the other leg / arm. Perform 10 – 20 repetitions for each arm / leg.

### Exercise 10: Cat and Camel

Kneeling on all fours, slowly arch the spine upwards making a C shape as you simultaneous tuck your tail bone in (posteriorly rotating your pelvis) and drop your head forwards. Try to feel each segment of your spine moving. Hold this position for 5 - 10 seconds. Then slowly arch the spine and pelvis the other way as you lift your head up, stop when your lower back is just past the neutral position i.e. a slightly accentuated arch in the lower back, without over arching.

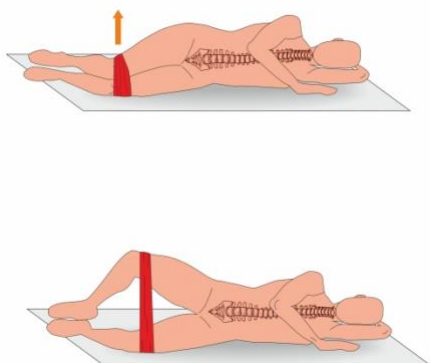


### Exercise 11: Double Leg Stretch (Level 1)



Start by lying on your back, knees bent with a slight gap, arms pointing straight up. Set your core to 25% as previously described in exercise 2. On an out-breath slowly straighten one leg, keeping your heel in contact with the floor, at the same time raise both arms over your head. Be careful that the slight arch in your lower back (just enough space for a grape) does not increase as you straighten the leg and that your chest does not lift as you raise the arms (try to keep the low ribs imprinted into the floor). Breathe in as you return your leg and arms to the start position. Perform 10 repetitions then another 10 for the other leg.

### Exercise 12: The Clam

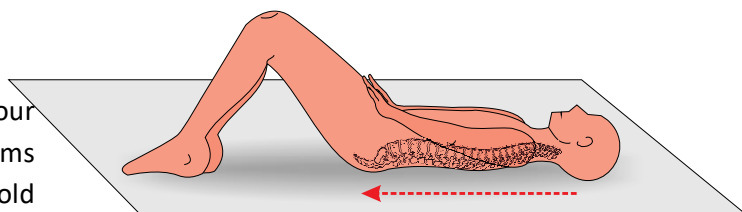


The Clam is a classic exercise to tone the buttock muscles but performed correctly the core trunk muscles work hard to provide sideways, rotatory and anterior-posterior stability. To start, lie on your side, either on one arm or on a couple of pillows. Create a slight arch in your lower back and tilt your pelvis sideways away from your head in order to create a small gap between your waist and the floor, make sure your top hip is directly over your bottom hip, maintain this neutral spine position throughout. Your top hand may contact the floor but only using a light finger tip touch for stability.

Set the core (Trans Abs), then with knees bent slowly raise the top knee upwards whilst keeping ankles together. Hold for half a second at the top, slowly lower the leg and repeat. Perform 10 repetitions on each leg. To make the exercise more challenging, perform the exercise with a (partially) straightened lower leg.

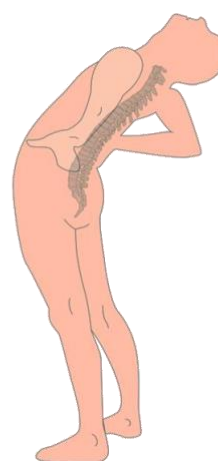
### Exercise 13: Self Traction

Lie on your back, place your hands on the top of your thighs or top of your hip bones, push down with arms as if pushing your hips away from your shoulders. Hold for 30 secs, rest then repeat up to 6 times.



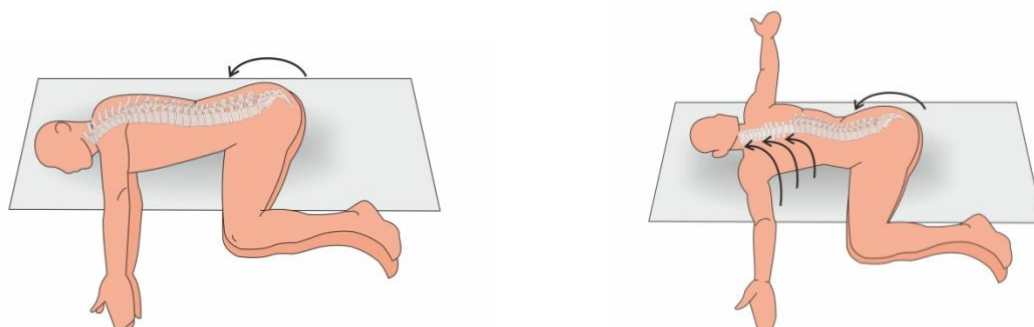
### Exercise 14: "McKenzie" Extensions

Whilst standing place your hands on the top of pelvis as shown, slowly arch your spine backwards, hold for the count of 5 before returning to a neutral stance. Repeat 5 times. This exercise is not appropriate for certain types of back pain / sciatica. BE CAUTIOUS OF THIS EXERCISE, ESPECIALLY IF YOU HAVE SPONDYLOLISTHESIS, FACET JOINT ARTHRITIS. IF IN DOUBT DISCUSS WITH YOUR THERAPIST.



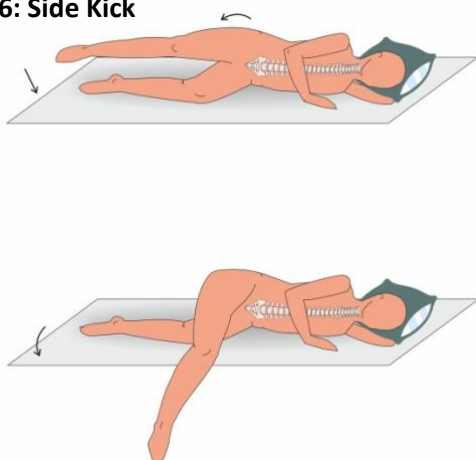


### Exercise 15: Thoracic Twist



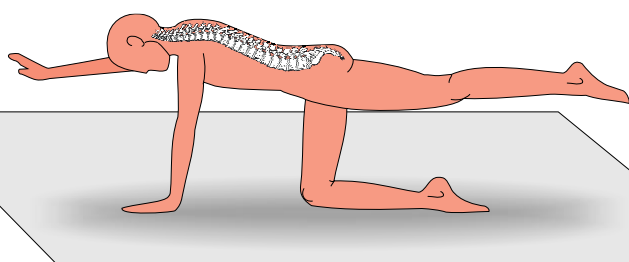
The joints of the middle and upper back (thorax) are designed for rotation more so than the lower back, this exercise encourages controlled thoracic rotation whilst keep a stable core and lower back. Lie on your side with your head on one or two pillows, knees bent, neutral lumbar spine (slight arch and gap between the side of the waist and the floor). Set the core (Trans Abs to 25% effort). Keep the top hip directly over the bottom hip. As you breath out float the top arm upwards using a twisting action of your middle and upper back to create the majority of the movement, one segment at a time, rather than simply stretching the chest muscles. Try to avoid any movement through your lower back, think of moving from above the waist only. Breath in as you return to the start position. Repeat for 10 repetitions then lay on the other side and repeat in the opposite direction.

### Exercise 16: Side Kick



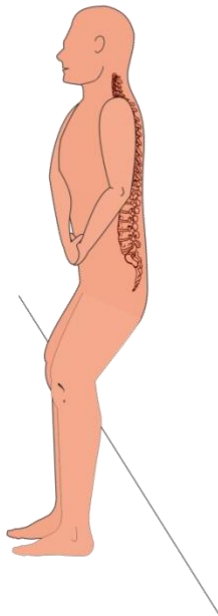
Lie on your side with your head on one or two pillows, knees bent, neutral lumbar spine (slight arch and gap between the side of your waist and the floor). Set the core (Trans Abs to 25% effort). Allow your top hand to lightly rest on the floor but do not lean onto your hand. Keep your top hip directly over the bottom hip. With your top leg almost straight perform 5 repetitions raising the leg straight upwards, then 5 repetitions slowly kicking your leg forwards whilst maintaining a neutral lumbar area. Roll onto the other side and repeat for the other leg.

### Exercise 17: Superman



Kneel on all fours as shown. Set your spine into a neutral position, keep your neck long and eyes looking to the floor. Set your core by pulling your tummy in to 25% effort. Slowly raise one leg at a time behind you ensuring not to twist your lower back / pelvis as you do so. Imagine balancing a tray of drinks on your lower back. For a more advanced version, raise the opposite arm at the same time as raising the leg. Repeat 10 times for each leg.

### Exercises 18: Three Quarter Standing Trans Abs

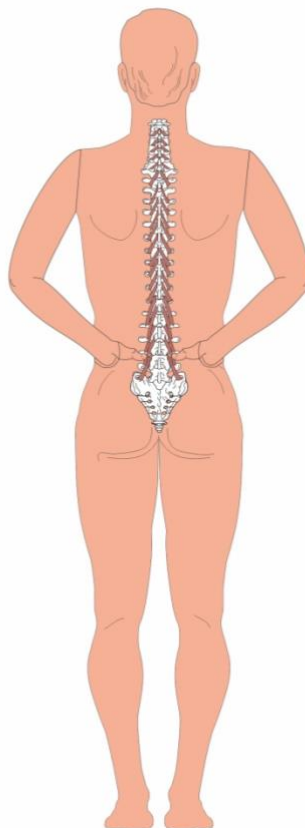


Lean against a wall so that the back of your head, shoulder blades, and bottom make contact with the wall whilst keeping the back of the neck long. Trying to maintain a slight arch (just enough space for an imaginary grape). Place your finger tips just inside the two bony prominences at the front upper part of your pelvis (*Anterior Superior Iliac Spines, ASIS*). Breathe using your diaphragm and lower ribs, midway through the out-breath start to pull your lower tummy (below the belly button) inwards and uppers (without raising the chest or losing contact with the lower ribs imprinting into the wall). At the same time try to contract your pelvic floor muscles. If you are using the correct muscle groups you should feel a slight contraction under your finger tips.

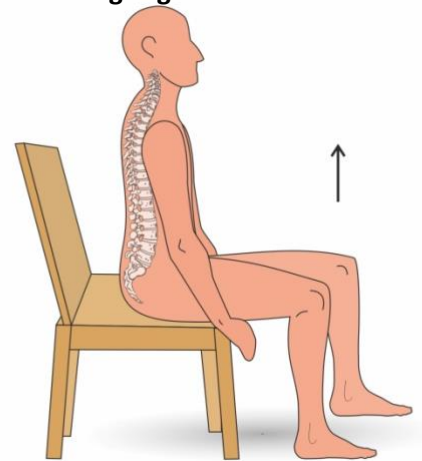
Initially make a strong contraction, hold this contraction for the count or one second then relax to half way (50%) then relax half way again so you are contracting with approximately 25% effort. Try to hold this 25% effort contraction for 10 seconds whilst you maintain the breathing pattern as described in 1(b), this constitutes one repetition. Build up to 10 repetitions. This exercise is essentially the same as no.2 but performed in a more functional position in preparation for sitting and lifting exercises to follow.

### Exercise 19: (Sitting) Multifidus Swelling

Place your thumbs into the gutter of muscle just either side of the bony prominences of your spine (spinous processes). Whilst maintaining a neutral spine and keeping everything still try to perform a static ("isometric") contraction of your "Multifidus" muscles (the small intersegmental muscles of the spine), try to hold the contraction for 5 seconds then relax and repeat five times (harder than it sounds!). Move your thumbs up and down and repeat for different levels of your lower back, paying particular attention to the segment(s) where your problem is, e.g. L5/S1

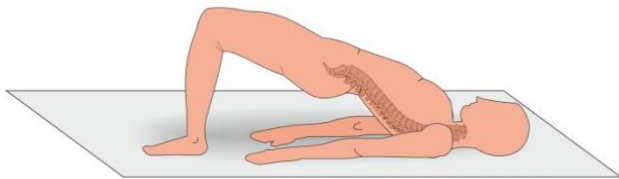


### Exercise 20: Sitting Leg Lift



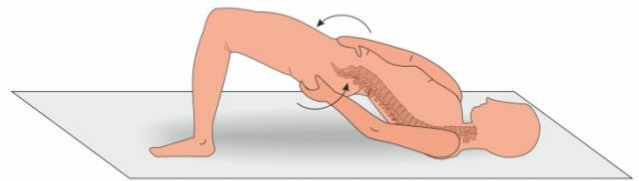
This exercise works the Psoas Muscle, a sling of muscle attaching from the front of the spine to the top of the hip. Sitting on the edge of a chair (or on a Swiss ball), start with both tip toes resting on the ground. Engage your core muscles (Trans Abs), keep a neutral spine, good shoulder, head and neck posture then lean back slightly as illustrated above. Breathe in to prepare then exhale as you slowly lift one leg off the ground, pause momentarily at the top then lower the leg to toe touch the floor again as you exhale. Repeat 10 times for each leg.

### Exercise 21: Back Bridge



Start by lying on your back with knees bent up and setting a neutral spine as described in exercise 1. Set your core (Trans Abs) as described in exercise 2. As you breathe out slowly push through your heels raising your bottom off the floor but keeping a neutral lower back. Pause for a second or two at the top so you feel the buttock muscles (Gluteus Maximus) contracting, then exhale as you slowly lower. Aim for 5 – 10 repetitions with good technique. Follow with two knee hugs stretches (exercise 6).

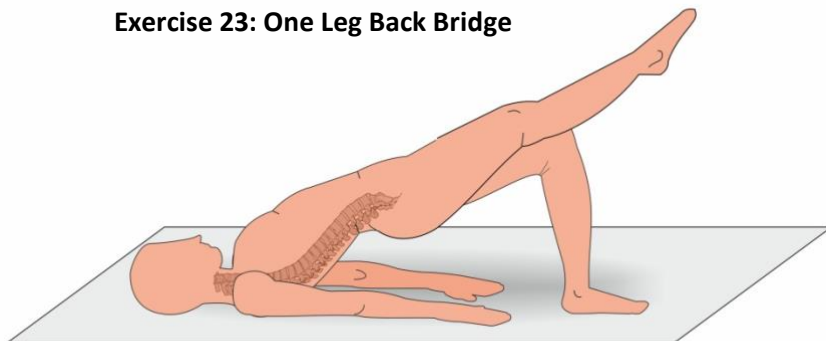
### Exercise 22: Back Bridge - - With Resisted Pelvic Twist



Place one hand on the side of your pelvis at the front and one hand on the other side at the back. Perform a back bridge as described in exercise 20 whilst at the same time using your hands to produce a twisting force of your pelvis, however, use your core muscles to resist this twisting force maintaining a neutral lumbar spine.

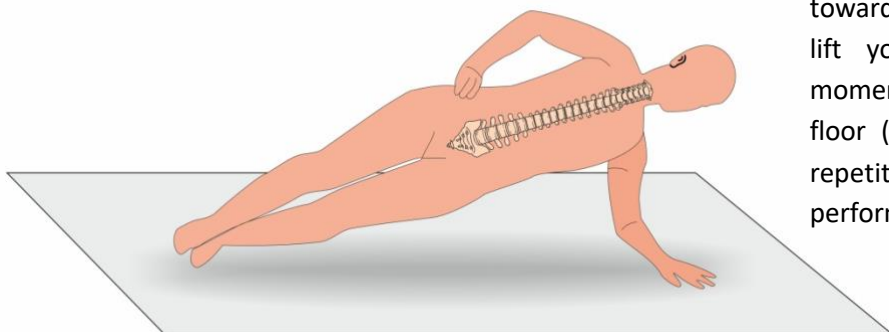
Repeat for 5 – 10 repetitions followed by with two knee hugs stretches (exercise 6).

### Exercise 23: One Leg Back Bridge



Starting with knees bent up, a neutral lumbar spine and a set core (Trans Abs). Place your finger tips on the front of your pelvis. Perform a partial back bridge with both feet on the floor. Then at the top of the movement slowly straighten one leg making sure your pelvis does not twist or drop to one side. Aim for 5 repetitions with each leg. Follow with knee hugs (exercise 6).

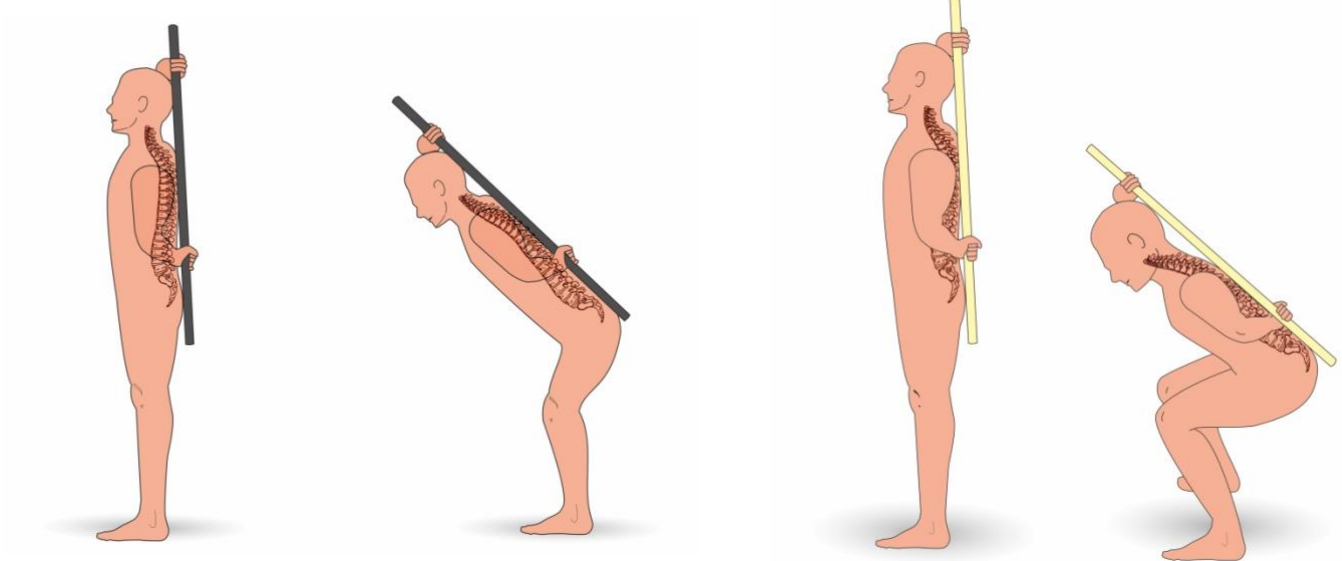
### Exercise 24: Side Bridge



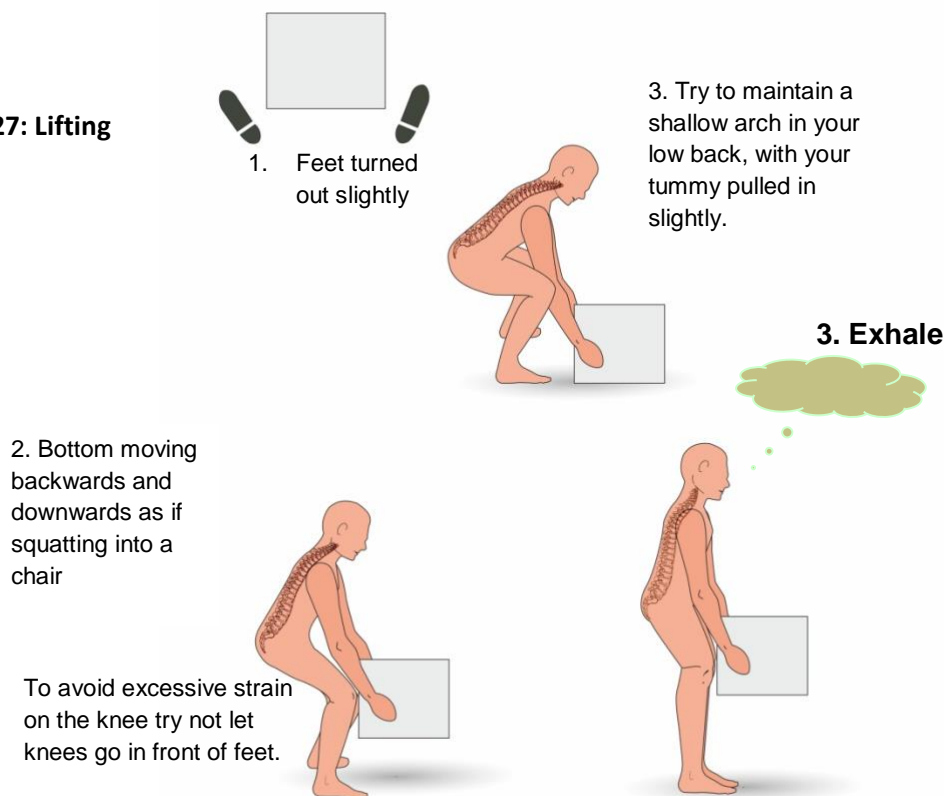
Lie on your side, leaning on one elbow, knees bent, neutral lumbar spine, Trans Abs engaged. Make sure your shoulder nearest the floor is not shrugged towards your ear. Inhale to prepare then exhale as you lift your hips up away from the floor, pause momentarily then lower the hip so it just touches the floor (without resting) and repeat. Aim for 5 – 10 repetitions. To make the exercise more challenging perform with straightened legs.



## Exercise 25: Broomstick Hip Hinge and Broomstick Squat



## Exercise 27: Lifting



Correct lifting technique is very important, even for light objects as it is such an every day task, repeated lifting with poor technique can subject the discs in the back to accumulative strain. Practice using an empty cardboard box, start by standing close to the box, feet turned out slightly. Keeping a neutral lower back (slight arch) and engaged Trans Abs (tummy pulled in) squat down trying to keep your heels on the ground without allowing your knees to go forward past your feet. Grip the box on either side, then start the lift by driving your hips upwards and forward whilst keeping a neutral lumbar spine, try to push through the heels rather than toes, exhaling as you lift. Repeat 5 – 10 times. As and when you feel confident and when directed by your therapist / specialist you may start to add weight to the object you are lifting BUT this should not be done before 3 months after the commencement of treatment or at least 3 months after surgery on your