

Core stability - advice for lower limb amputees

This leaflet offers more information about core stability. If you have any further questions or concerns, please speak to the staff member in charge of your care.

What is core stability?

Core stability is your ability to control the position and movement of the central part of your body.

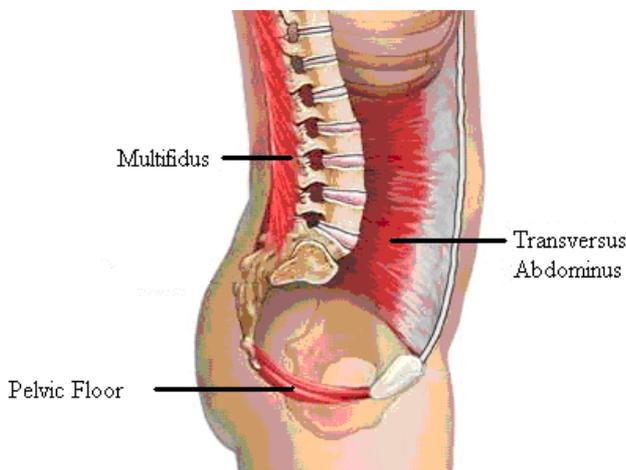
Core stability training helps the muscles deep within the abdomen which connect to the spine, pelvis and shoulders.

The core is made up of:

- transversus abdominus, the deepest abdominal muscle
- multifidus, which runs down either side of your spine
- pelvic floor muscles.

Together these muscles form an internal 'corset' that helps you to have good posture. They also give you the foundation for all arm and leg movements through stabilising the joints of the spine, pelvis and shoulders.

Because your core is made up of postural muscles it is designed to work at low levels throughout the day.



How can core stability exercises help me?

Core stability exercises can help improve the strength and endurance of your core muscles by gently contracting them. They have become very popular, both in the mainstream and in rehabilitation following an injury and are backed up by clinical research.

We know that moving with a prosthesis puts an increased demand on your core muscles.

Even though there is only limited research into how core stability exercises can help in amputee rehabilitation, they should:

- help you have good posture and limb movements with your prosthesis;
- improve the stability of your spine, pelvis and shoulders and so reduce your risk of injuring these joints.

How do core stability exercises work?

There are some key things that underpin all types of core stability exercise. You need to try them lying on a mat.

Lateral breathing

People often breathe with their stomach muscles, making it hard to keep the core muscles contracted.

Because of this, you should use a lateral breathing technique while carrying out core stability exercises, which involves taking a deep breath all the way into the base of your lungs by expanding your rib cage out to the side.

The following should help:

- place your hands across the lower half of your rib cage with the tips of your fingers slightly interlaced
- breathe in and allow your rib cage to expand widthways, letting your fingertips draw apart from one another slightly
- breathe out and allow your rib cage to sink inwards and downwards; your fingertips may interlace slightly as you empty your lungs
- do not lift your breastbone as you breathe in but instead imagine the back of your rib cage spreading wide into the mat underneath you.

Correct positioning

Your back, shoulders and neck need to be put in their neutral positions to make it easier to activate the core muscles.

You can find your spine's neutral position by:

- putting your thumbs and forefingers into a diamond shape
- placing your thumbs on your belly button and pointing your fingers towards the pelvic bone
- tilting the diamond away from you, so your lower back arches off the mat
- tilting the diamond towards you, so your lower back flattens against the mat
- repeating these movements and settling into a position between the two extremes
- keeping in this position – it can help to imagine a tray of drinks lying on your stomach that you don't want to spill.

To find your shoulders' neutral position, gently pull your shoulder blades downwards and inwards in the shape of a small V. You should feel your collarbones widen across the front of your chest. As you do this make sure that you are not flaring your rib cage up – your upper back should stay flat against the mat.

Now gently lengthen your neck, feeling the back of your head gently pulling up and away from the base of your neck. This should be a subtle, gentle feeling. Feel the muscles at the front of your neck and check that they are soft, relaxed and not straining.

Activating your core muscles

Try the different ways below to activate your core muscles and choose the one that works best for you.

To check you are using the right muscles, place your fingertips on your bony pelvic bones and then come in 2cm and down 2cm. You should feel a gentle tightening under your fingers. If it bulges you are working too hard.

- Imagine you have a low belt positioned below your belly button with 10 notches in it. Breathe in and out again, and then imagine that you are tightening the belt by just 3 of the notches.
- Imagine that you are away from home and need the toilet and are trying to save yourself from an embarrassment.
- Men can imagine that they are pulling up the crown jewels!

Once you have chosen the best way for you, set your core and then stay in this position for around a minute. Don't forget to keep breathing!

What exercises can I do?

Before doing each of these exercises:

- **find your neutral spine, rib cage, shoulder blade and neck positions**
- **gently activate your core muscles**
- **remember to breathe laterally**
- **hold the contraction throughout the exercise.**

Mat exercises

For some of the exercises you will need to place a wedge or low stool under your thighs - or to make the exercise harder, a core ball. Whatever you use, make sure that your thighs are level with each other.

Arm openings

- Lie on your side with your knees bent and your feet in line with your hips and shoulders
- Arms reaching in front of the body and resting one on top of the other
- Slowly reach the uppermost arm towards the ceiling
- Continue to reach this arm out to the side, allowing the upper torso to rotate and front of the chest to open towards the ceiling
- Allow your head to follow the movement of your arm
- Slowly and carefully move your arm back to the resting position
- See if you can achieve a greater stretch with each movement.



One leg stretch

- Raise your leg up 90 degrees at your hip and 90 degrees at your knee (table-top position)
- Straighten your leg as if you are pushing a peddle
- Bring your leg back to table-top position
- Slowly and carefully move your leg back down to the wedge
- Change sides and repeat
- Try to keep your pelvis still throughout the exercise.



Mini sit-ups

- Place your hands on your thighs
- Slide your hands up your thighs gently raising your shoulders off the mat
- Then slowly move your shoulders back to the mat, sliding your hands back down your thigh
- Imagine you are holding a tennis ball between your chin and your chest to keep your neck in the right place.



Bridging

- Tighten your core and buttock muscles and tilt your pelvis back, flattening your lower back against the mat. Carry on this motion, rolling your bottom and then spine off the mat until your trunk is in line with your thighs
- Try to use the Pilates technique of peeling each back bone off the mat one segment at a time
- Hold this position for 5 seconds and then gently peel your trunk back down to the mat, one back bone at a time.



Hip abduction

- Lie on your side
- Try to keep your hips and top leg in line with your body - do not let your top leg come forwards
- Raise your leg up towards the ceiling and then slowly and carefully move it back down
- Make sure your pelvis doesn't rock backwards as your leg moves up.



Superman

- Lie on your front with your arms straight out in front of you and your head looking down
- Raise your opposite leg and arm together - left arm with right leg and right arm with left leg
- If this exercise is too difficult then try moving just one limb at a time.



Lower back twist

- Rest both legs on an exercise ball
- Place your arms out to the side
- Rotate the ball from side to side using your legs and your trunk to control the movement
- Look to the opposite direction to your legs to increase the stretch
- You can also do this exercise with your prosthesis on – (see the smaller photo).



Hamstring Stretch

- Sit up with your legs stretched out wide in front of you
- Try to keep your knees straight
- Place your hands on an exercise ball
- Roll the ball forwards and stretch forwards with your trunk
- You should feel a stretch at the back of your legs, hold in this position for 20 to 30 seconds
- Vary the angle of your trunk as you come forwards to vary the stretch.



Single hip rotation – using your prosthesis

- Keeping one leg still, allow the opposite knee to drift out to the side
- Do not let your pelvis rotate
- Slowly and carefully move your knee back to the middle
- Keep the opposite knee still throughout the movement
- Change sides and repeat.



Contact us

If you have any questions or concerns about these stretches, please contact the therapy department on 020 8487 6042 (Monday to Friday, 9am to 4pm). Out of hours, please leave a message on the number above and someone will contact you as soon as possible.

For more information leaflets on conditions, procedures, treatments and services offered at our hospitals, please visit www.stgeorges.nhs.uk

Additional services

Patient Advice and Liaison Service (PALS)

PALS can offer you on-the-spot advice and information when you have comments or concerns about our services or the care you have received. You can visit the PALS office between 9am and 5pm, Monday to Friday in the main corridor between Grosvenor and Lanesborough Wing (near the lift foyer).

Tel: 020 8725 2453 **Email:** pals@stgeorges.nhs.uk

NHS Choices

NHS Choices provides online information and guidance on all aspects of health and healthcare, to help you make decisions about your health.

Web: www.nhs.uk

NHS 111

You can call 111 when you need medical help fast but it's not a 999 emergency. NHS 111 is available 24 hours a day, 365 days a year. Calls are free from landlines and mobile phones.

Tel: 111