

BACK PAIN

HOW TO BEAT IT FOREVER!

ULTRASOUND RETRAINING

YOUR NEW RESEARCH-PROVEN BACK PAIN SOLUTION



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BACK PAIN: HOW TO BEAT IT FOREVER!

If you suffer back pain, you'll know it has a nasty habit of returning. Not only is it painful, but also it can interfere with your work, sport or just everyday life.

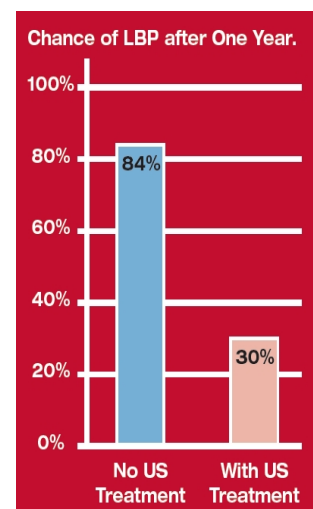
Acute back pain usually settles with conventional spinal treatment. However, the recurrence rate is extremely high. In fact, there's an 84% chance of recurrence within one year! (Hides et al 2001)

WHY DO YOU KEEP GETTING BACK PAIN?

Researchers discovered that a couple of deep muscles in your abdomen and lower back need to contract to support your spine. When they work correctly, you're much less likely to suffer back pain. The bad news is that these muscles **turn off every time** you suffer back pain and **don't automatically turn on** again. This leaves your back at risk of injury.

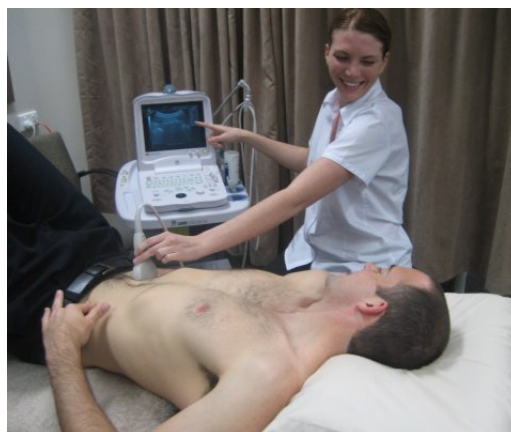
However, the good news is that these deep muscles in your abdomen and lower back can easily be retrained using an ultrasound (US) scanner. The chance of lower back pain (LBP) recurrence within one year is reduced significantly.

(Refer to graph opposite.)



WHAT IS ULTRASOUND RETRAINING?

An ultrasound scanner allows your muscles to be seen on a TV monitor. You can watch these specific muscles contract as you retrain them. Your specially trained Physiotherapist will assess, educate and help you to perform the correct contractions that fix and prevent back pain.



WHICH ARE THE DEEP CORE STABILITY MUSCLES?



TRANSVERSUS ABDOMINIS

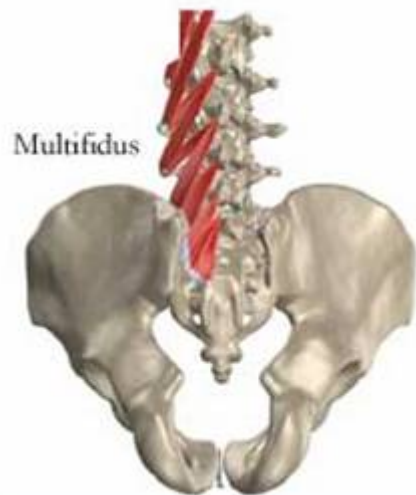
The Transversus Abdominis (TA) is the deepest abdominal muscle. It is the "corset muscle" of the spine and pelvis. In the normal situation, TA contracts in anticipation of body motion to guard the spinal joints, ligaments, discs and nerves.

When TA contracts, your abdomen will draw inwards and apply a squeezing effect on the abdominal contents and front of the spinal column. As it contracts, your ribs and spinal joints are pushed upwards and away from your pelvic. Your spine and trunk becomes a pillar of strength!

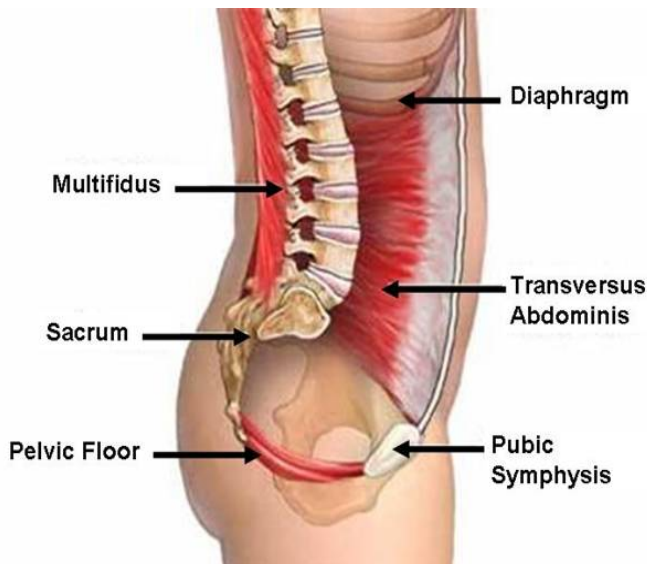
MULTIFIDUS

Multifidus (MF) muscles are very short muscles running from the transverse processes (on the sides) of one vertebra up to the spinous process (the middle of the back) of the next vertebra upwards.

Their main function is back stability. They do not produce a large range of movement, but work to produce small, "fine-tuning" postural movements, all day long.



PELVIC FLOOR & DIAPHRAGM



The TA and the MF work in conjunction with your pelvic floor muscles and diaphragm to make a flexible but stable region around your lumbar spine.

It is this ability to stabilise your lumbar spine in its many positions that enables you to overcome back problems and reduce your chances of a reoccurrence.

WHY ARE YOUR DEEP CORE MUSCLES IMPORTANT?

Back pain causes your "Deep Core Stability" muscles to **STOP working in EVERY case.**

The first time you experience low back pain your brain automatically inhibits the normal activity of the Transversus Abdominis (TA) muscle. This occurs in **100% of sufferers.** Unfortunately, even once the back pain has eased the TA muscle **does not automatically switch on again.**

Inhibition of the TA muscle exposes your spine to further trauma and "recurrent back pain". Each incident becomes a little more severe and consequently further wasting of the TA occurs.

Other causes of muscle inhibition include: previous abdominal surgery, pelvic pain and post-pregnancy.



WHY IS GOOD "CORE STABILITY" IMPORTANT?

"Core Stability" is your body's ability to dynamically control and support your spine via specific muscles.

Your spine is an inherently unstable area of your body. Your lower back has five vertebrae that allow twisting, bending and arching with no other bones to assist. They sit on top of a triangular bone called the sacrum, which wedges itself into the pelvis. Unfortunately, without muscular support, all of these bones would fall in a heap on the ground.

Your deep core muscles are the main structures that support, control and move your lower spine and pelvis. They are also the most energy efficient and best-positioned muscles to do the job for 24 hours a day.

However, when they turn off, your spine is not fully supported by its normal muscular corset. This makes it quite vulnerable to injury and chronic pain.

HOW CAN YOU TURN ON YOUR CORE STABILITY MUSCLES?

Special low-level deep core recruitment exercises have been developed that successfully reactivates your important stability muscles. The most effective way of recruiting these muscles is via **ultrasound guidance**, which allows you to see these specific muscles deep inside your stomach and back as you attempt to contract them.

WHAT ARE THE BENEFITS OF CORE STABILITY TRAINING?

Researchers have shown that the correct use of your core stability muscles not only **prevents pain** but also **alleviates pain** if you're already suffering.

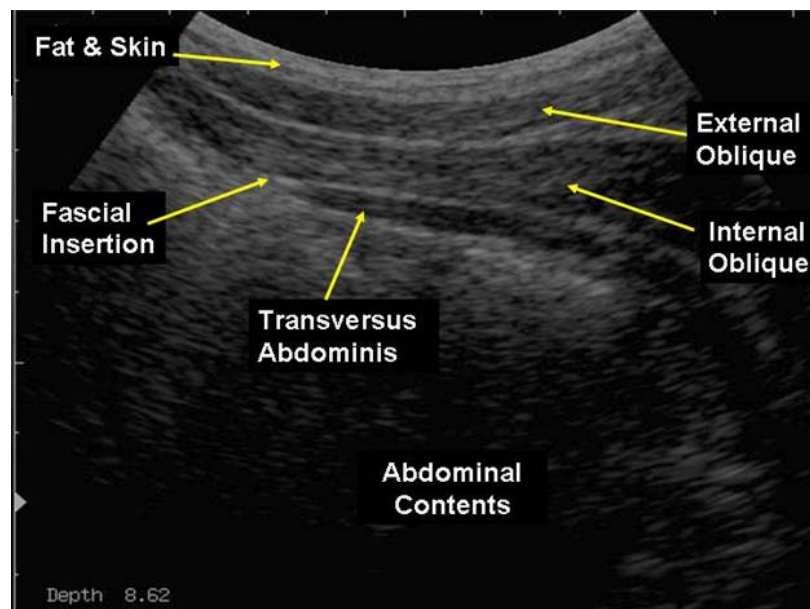
In addition, your body's strength, power, endurance and performance will also improve. You'll be able to run faster, jump higher and even throw further when these muscles work properly.

HOW CAN YOU RETRAIN YOUR DEEP CORE STABILITY MUSCLES?

ULTRASOUND RETRAINING IS THE MOST EFFECTIVE SOLUTION

The best way to activate the correct core stability muscles is to actually see them working on a real-time ultrasound scan. Yes, it's just like seeing an unborn baby.

When we attempt to retrain your Transversus Abdominis (TA) or Multifidus (MF) muscle, being able to feel the muscle working is very important. Unfortunately, since the TA muscle is located deep in your abdomen and beneath two outer muscles, it can be quite hard to feel whether it is switching on or not. And, it's almost impossible to detect whether the outer two muscles are working rather than the correct muscle.



Ultrasound image showing Transversus Abdominis (TA) & Oblique's (IO & EO)

This is where the ultrasound scanner is unique. The technique of Ultrasound Retraining, carried out with the guidance of a specially trained physiotherapist, enables you to quickly learn how to correctly contract your TA and MF.

The scanner provides you and your physiotherapist with a video picture of your muscles working. This enables you to precisely match up what you think you feel with what is actually happening beneath your skin at that very moment.

This makes it much easier for you to correctly do your TA and MF exercises at home, which will quicken the solution to your low back pain.

HOW SUCCESSFUL IS ULTRASOUND RETRAINING?

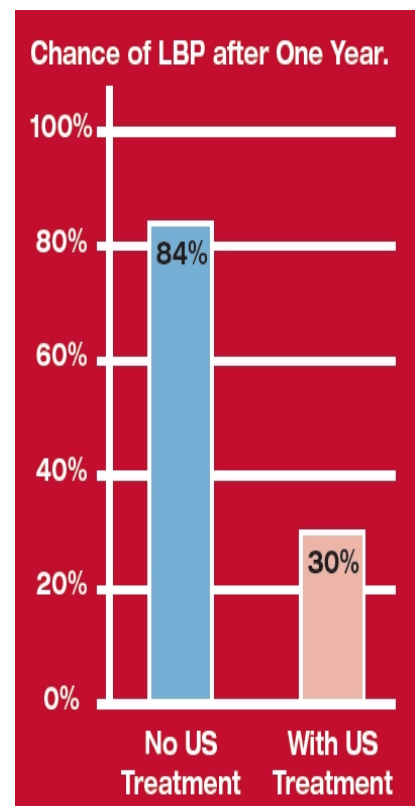
Ultrasound (US) Retraining has a **70% success rate** preventing a return of back pain within 12 months. The same study showed that those patients who didn't undergo the ultrasound retraining had only a 16% chance of remaining pain free. This means your chance of avoiding repeat back pain is **4.4 times better with US Retraining**.

HOW LONG DO THE BENEFITS LAST?

Researchers have discovered that **65%** of sufferers didn't have another bout of pain **within three years** after undertaking US Retraining. This means the treatment also endures the test of time. Now that's good news.

HOW DOES THIS COMPARE TO JOINT MANIPULATION TREATMENTS?

Unfortunately, Spinal Manipulative Therapy (eg Chiropractic treatment) without an exercise regime **does not** stimulate transversus abdominis or multifidus contraction. You still need specific muscle retraining. (Ferreira et al 2007)



WHAT'S THE NORMAL CO-CONTRACTION THAT ALLEVIATES LOW BACK PAIN?

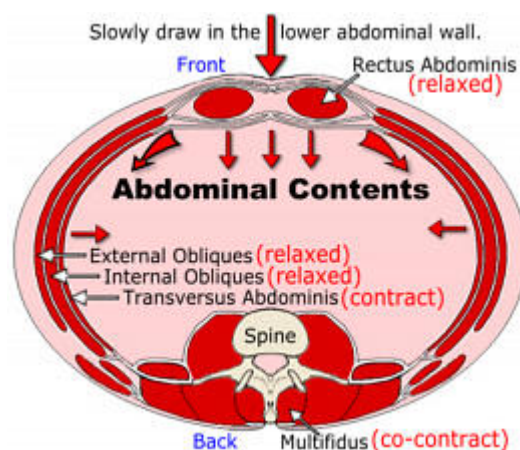


Figure 2. Cross-section of abdomen

WHAT CONDITIONS BENEFIT FROM ULTRASOUND RETRAINING?

ULTRASOUND (US) RETRAINING IS VERY EFFECTIVE FOR THE FOLLOWING CONDITIONS:

- Low Back Pain
- Sciatica
- Sacroiliac (SIJ) Joint Dysfunction
- Pelvis Instability
- Pregnancy & Post-Child Birth Back Pain
- Post-Abdominal or Pelvic Surgery
- Pre-Pilates, Yoga and Gym Programs
- "Pot Belly" Syndrome

LOW BACK PAIN

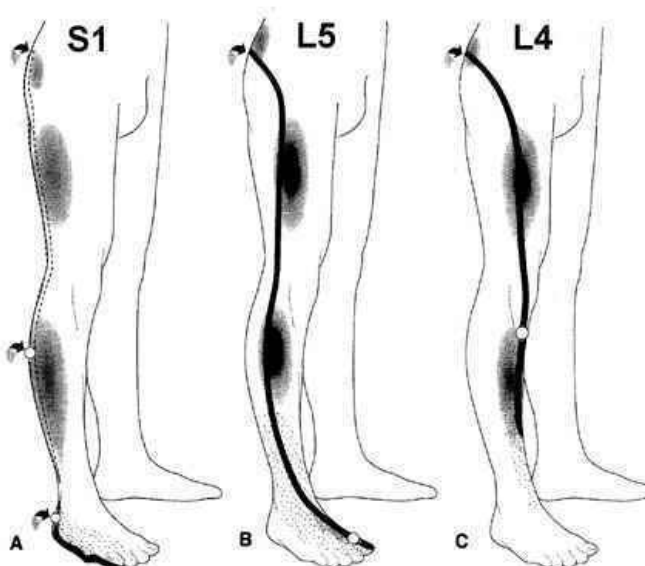
Ultrasound retraining of your Core Stability Muscles has fantastic benefits for low back pain sufferers. Researchers have investigated the benefits of ultrasound retraining since the 1990's.

They have discovered that your chances of not experiencing another bout of low back pain (LBP) within 12 months are **4.4 times better** if you have undertaken an ultrasound guided exercise program: 70% vs 16%.

Its effectiveness also lasts. After three years you still have a 2 in 3 chance of not experiencing LBP if you did the exercises. Hides etal (2001).



SCIATICA



Sciatica describes pain felt along the sciatic nerve, which runs from your lower back, down through the buttock, hamstrings and into the lower leg. The sciatic nerve is the longest nerve in the body. Pain results when this nerve is irritated or pinched. The spinal sections it originates from include L4, L5 or S1. See the diagram opposite for a general idea where you would feel symptoms from each part of the sciatic nerve.

Ultrasound retraining of your Core Stability Muscles has great benefits for sciatica sufferers. Since the vast majority of sciatica is caused by sciatic nerve pinching in the low lumbar spine, treatment that helps you elongate and dynamically support your back will almost always alleviate sciatica.

SACROILIAC JOINT (SIJ) DYSFUNCTION

The Sacroiliac Joint (SIJ) should be a fairly rigid link between the pelvic bones. In some people due to trauma or just extra mobility, the SIJ has too much uncontrolled motion. This allows the joint to adopt an unusual position which may result in pain.

The transversus abdominis (TA) and oblique abdominals through their attachments to the iliac bones helps closure of the pelvis and improves the position, control and stability of the sacroiliac joints.

Researchers have discovered that contraction of the TA muscle significantly stiffens and supports the sacroiliac joint. This improvement is larger than that caused by an abdominal bracing action using all the lateral abdominal muscles. (Richardson et al 2002)



PELVIS INSTABILITY

Some people are born a little more flexible than the rest of us. Usually these people have poor muscle tone in their deep stabilising muscles. The transversus abdominis is the most important muscle that holds the two halves of the pelvis together.

Core stability retraining will improve your deep core muscle control, which dynamically stabilises your pelvis, SIJ and lumbar spine.

PREGNANCY OR POST-CHILD BIRTH BACK PAIN



Carrying a child is a physically demanding task. The weight of the baby places continual pressure on the pelvic floor muscles and stretches the lower abdominal muscles.

The trauma of birth involves further stretching of the pelvic floor muscles and sometimes tearing. Hence, the pelvic floor muscles and the transversus abdominis become weak, stretched and inhibited. Along with this, a hormone called "relaxin" is released through your body during the months prior to and post-delivery. Relaxin makes the pelvic ligaments soften to enable the pelvis joints to stretch for the delivery. This means that the transversus muscle has to work even harder to stabilise the pelvis and lumbar spine.

The good news is that Ultrasound Retraining is very safe for the unborn child. The ultrasound equipment is the same as that used by your

Obstetrician for routine pregnancy scans.

Caesarian births have additional complications due to the cutting of muscle layers and in some cases, nerves. We highly recommend US retraining following a Caesarian delivery.

POST ABDOMINAL SURGERY

Abdominal and pelvic surgery involves cutting through the muscle layers. Along with the post-operative pain, cutting the muscle changes the ability of the core stability muscles to work efficiently. Your Transversus Abdominis (TA) will remain inhibited and weakened with time. It needs to be strengthened post-operatively. Otherwise it will almost certainly remain permanently weak, making you vulnerable to back injury.

With some surgeries the nerve supply to the lower part of the transversus muscle is cut (such as in appendix removal and caesarean births). Because of this, you need to retrain the TA muscle to learn how to correctly use it again.

PRE-PILATES, YOGA, GYM & EXERCISE PROGRAMS

Exercise programs that aim to develop your core strength can often do just the opposite. The most common reason for injury and back pain is the incorrect timing of muscle recruitment. Pilates, Yoga, gym strengthening and other forms of exercise place high demands on your core stability system. If the core muscle recruitment order is abnormal, your chance of injury increases in proportion with the exercise difficulty.

Research has identified that the order of core muscle recruitment is an important factor in the prevention or resolution of back pain.

Remember, if you build a tower on a poor foundation it will eventually topple. The same goes for your core stability muscles. Recruit the deeper muscles prior to your superficial layers just like adding floors to a sturdy building and your back will be strong and pain free forever.



WHAT'S THE LINK BETWEEN PILATES AND CORE STABILITY?

Joseph Pilates, whose exercise regimes carry his name, started the whole 'core stability' phenomenon back in the 1920's. Pilates talked about developing a 'girdle of strength' by learning to recruit the deep-trunk muscles. Even without a complete knowledge of anatomy and the benefits of the latest muscle activity research, he was aware of the importance of these deep muscles and their supportive effects.

Is Pilates for Everyone? **Sadly, No!** Exercise programs that aim to develop your deep core strength can often do just the opposite. To reduce your injury risk you must retrain your deep core stability muscles to an appropriate level for your needs. If you are fairly sedentary you may only need a low level of control, however if you are a high level sportsperson or a manual worker you will need to work up to a much higher level of deep core strength.

In the initial stage you need to be able to activate these muscles consciously and then incorporate them into an exercise program. A lot of people find it difficult to isolate these muscles and need help to be able to effectively activate them. Research has discovered that real-time ultrasound guided treatment is the **most effective way** to successfully retrain an isolated and well-timed core stability contraction.

Only then, is it safe to progress onto Pilates and other Gym Exercise Programs that stress your Core Stability System.

"POT BELLY" SYNDROME

"Pot Belly" - or whatever you wish to call it, is a cosmetic problem related to your lower stomach muscles.

Some people have lax lower stomach muscles. No matter how hard you pull in your tummy, the lower part just doesn't seem to pull in. The problem is that the transversus abdominis muscle has stopped working effectively and the upper abdominal muscles dominate. Hence as you attempt to pull in your stomach muscles, the upper tummy sucks in but the lower part doesn't. The end result is a "Pot Belly". "Pot Belly" is a common problem post-pregnancy.

With Ultrasound Retraining you can learn to draw in your lower tummy muscles and solve your "Pot Belly" forever!



HOW MUCH DOES ULTRASOUND RETRAINING COST?

While many clinics will charge you a substantial amount more for ultrasound guided training, we don't. At PhysioWorks, **we only charge your normal consultation fee** for this specialised service. Please check with your nearest clinic for exact fees and when bookings are available.

HOW OFTEN SHOULD YOU HAVE AN ULTRASOUND SCAN?

Will You Need an Ultrasound Scan Every Treatment?

No. You will not require ultrasound guidance at every session. Using the ultrasound aims to improve your TA or MF muscle contractions. Patients who undertake ultrasound guided retraining improve their TA and MF contraction quicker than those who don't use the scanner. This results in a **faster and more effective outcome**.

After your initial scan, we normally recommend a monthly review to compare the results against your initial scan. If you have a major difficulty with the correct muscle recruitment, we may recommend a weekly or fortnightly review.

BOOKINGS ARE AVAILABLE BY APPOINTMENT ONLY

PhysioWorks is one of only a few ultrasound-retraining clinics in Brisbane. The diagnostic ultrasound equipment is expensive, so only a handful of Physiotherapy clinics offer this service.

At PhysioWorks we believe that cutting edge technology and treatment techniques deliver the best results for you. We welcome clients who are currently attending other spinal health practitioners without ultrasound guided rehabilitation. We are happy to work with you and your spinal health practitioner to solve your back pain as quickly and effectively as possible.

To make your booking, please contact one of the following PhysioWorks clinics that specialise in Real-Time Ultrasound Retraining Programs. Please allow 40 to 60 minutes for your initial scan.

WHAT CAN YOU EXPECT DURING YOUR ULTRASOUND SCAN?

YOUR SPECIALLY TRAINED PHYSIOTHERAPIST WILL...

EDUCATE YOU

- They'll use the Ultrasound Scanner to **explain** the various muscles and structures that you can see on the screen.
- You'll be able to **watch your muscles contracting**, sliding and thickening on the screen.
- They'll provide instructions on **how to correctly contract** your Transversus Abdominis (TA) and/or Multifidus (MF) to alleviate and prevent back pain.

ASSESS YOU THOROUGHLY

- They will **assess the quality** of your TA and/or MF activation.
- You will be shown what we are looking for in a good contraction, and where you have room to improve.
- Among other measurements, they will **measure** the slide and thickness of the muscles to detect any significant wasting or weakness.
- Measurements and observations can be re-assessed down the track to **monitor your improvements**.

PROVIDE YOU WITH CORRECTIVE EXERCISES

- Your physiotherapist will **prescribe or modify your home exercises** to optimize your outcome.
- Once your physiotherapist is happy that you can achieve a good TA or MF contraction in isolation, more complex exercises can be introduced in conjunction with TA or MF contractions.
- The type of program is dependent upon the individual patient and your sporting, work or recreational demands.
- As you advance through the progressively more challenging exercise stages, you can see an improvement in strength and stability of the spine.

WHICH CLINICS HAVE ULTRASOUND RETRAINING FACILITIES?

BULIMBA PHYSIOWORKS

175 RIDING ROAD

PHONE 3899 1226

CLAYFIELD PHYSIOWORKS

SPECIALIST CENTRE. 789 SANDGATE ROAD

PHONE 3862 4544

MANSFIELD PHYSIOWORKS

CNR NEWHNAM & WISHART ROADS

PHONE 3849 3099

