So What Are My “Core” Muscles?

There has been a massive interest in and focus on “core muscles” and their importance over the last 10 – 15 years. Most of us would have engaged in some form of “core muscle training” either with a personal trainer, in a class or with your physio. While most of us have heard of them, there is a great deal of conflicting information out there and most of us have a pretty poor idea of what the core muscles really are and what their function is so let’s break it down for you...



Broadly, in terms of the skeletal muscles in the body (muscles that attach to and exert a pull on the bones of the skeleton), we have 2 different kinds of muscles which both perform very different functions;

1. Stabilisers

These muscles tend to sit very deep in the body, in many cases immediately over the top of the joints of the skeleton. Where they don’t sit immediately over the top of the joints, they tend to have deep soft tissue attachments to these structures. Essentially, the role of these muscles is to stiffen the joints of the skeleton, providing a stable base for the second group of muscles, our prime movers, to exert their pull and force from in order to generate movement. Our stabilising muscles are what is known as tonic muscles. They contain a much higher percentage of slow twitch muscle fibers that are not overly strong but have tremendous endurance and are great at gripping and holding us together for the entire day.

2. Prime Movers

The second category of muscles tend to be the more superficial muscles that we see and feel a lot more. These muscles are what we call phasic muscles, containing a much higher proportion of fast twitch muscle fibres. These muscles are extremely good at short bursts of very powerful work and essentially exist to generate the movements of the body. They are much stronger than the stabilisers but do fatigue quickly and require regular rests, turning on and off with movement.

Without your stabilising muscles working well, your prime movement muscles are operating off an unstable base, resulting in decreased movement efficiency or worse allowing joints to be loaded in positions which result in injury to the joint or surrounding structures. Because of this, it is important that our stabilising muscles switch on and engage fractionally before our prime movers to provide a stable platform for movement to occur from.

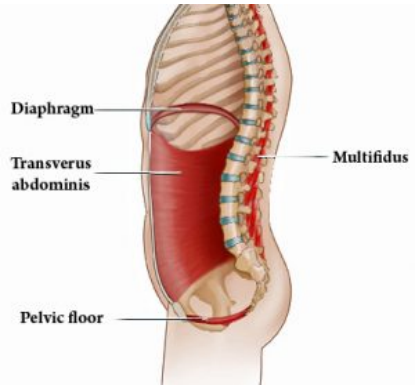
So how does this relate to my core?

Every joint in the body relies on deep stabilising muscles to protect and control it and technically all of these deep stabilising muscles could be referred to as core muscles. As a result of the

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prevalence of low back pain in the community and the large amount of research around the role of stabilising muscles in preventing low back pain, the term **core muscles**, has tended to be associated with the stabilising muscles of the low back and trunk.

The main stabilising muscles in this area are the pelvic floor, transversus abdominus, multifidus and the diaphragm. Due to its location in the centre of the body, poor function of these muscles has been associated with poor force transmission to other areas of the body and can be associated with overload to more distal parts of the body such as the shoulder, hip knee or even foot.



Great so now I know what my core muscles are, how do I train them?

So this is where it can get a little complicated and confusing. There are a range of exercises which tend to be advocated as great core exercises, either because they are performed on a wobbly surface or because they load the muscles of the trunk, particularly the stomach, heavily.

The problem is that your body is extremely good at cheating! If your core muscles are weak or not switching on well, performing high level or heavy exercise, often only forces the body to cheat and overuse the more superficial muscles of the trunk.

Now remember that these muscles are made of very different muscle fibres and are not very good at all at gripping and trying to hold us together, they also don't have the deep connections to the joints of the body that allow them to effectively stiffen and stabilise the joints. The end result is that at best these muscles tend to become very tired, stiff and tight, restricting movement of the trunk, and at worst allow the joints of the spine to be overloaded, resulting in injury.

The main take home message here is that if your core muscles are not working well, there is not necessarily any exercise that will automatically force them to switch on. Often as a result of pain, injury or poor postural habits, your brain has changed the way that it switches your muscles on. To undo this, it is first a case of learning how to consciously switch on your core muscles and then consciously engaging these muscles before loading the spine or initiating movement. By practicing this in a range of functional positions, your brain starts to learn to switch these muscles back on automatically.

Because of the nature of the muscles fibers that they are made of, turning on your core muscles is generally much more subtle and gentle than most think. Most joint pain comes from over compression of the joint, so simple heavy abdominal bracing is not a great strategy for either turning on your core or for protecting your back. Due to the subtle nature of switching on your core muscles, **real time ultrasound** is a tool often used in the clinic at In Balance to show you the contraction on the screen, helping you to learn what it is that you need to do.

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This is not to say that activities that involve some heavy bracing of the muscles of the trunk are bad or that the plank or crunches in the presence of an appropriate core contraction are not beneficial. Once you are able to switch your core on and are engaging it well in a range of functional positions, taking it to the next level and applying this to gradually heavier and more complex tasks can now be a great way to train your core to a higher level. Just remember, sometimes you have to crawl before you can walk!

If you are concerned about your core muscle strength or control or would like an assessment with one of our physiotherapists to assess the condition of your core, call the practice today to book an appointment.

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