What is core stability?

Core stability training is essential to performance and injury prevention in the workplace, home, and on the sports field. The body's core muscles are the foundation for all other movement. The muscles of the torso stabilize the spine and provide a solid foundation for movement in the extremities.

These core muscles lie deep within the torso. They generally attach to the spine, pelvis and muscles that support the scapula (shoulder blade). When these muscles contract, we stabilize the spine, pelvis and shoulders and create a solid base of support. We are then able to generate powerful movements of the extremities.

Training the muscles of the core also corrects postural imbalances that can lead to injuries. The biggest benefit of core training is to develop functional fitness - that is, fitness that is essential to both daily living and regular activities. The aim of core stability training is to effectively recruit the trunk musculature and then learn to control the position of the lumbar spine during dynamic movements.

How does scientific research support the theory?

Hodges and Richardson (1996) discuss how the lumbar spine area is 'inherently unstable'. In practical terms, this means the lumbar spine relies upon sufficient stability from the muscles that actively support the area. One of the most important stabilising muscles is the Transversus Abdominis (TA). This muscle attaches to the thoracolumbar fascia (TLF). This fascia 'wraps' around the spine connecting the deep trunk muscles to the spine. When the TA contracts it increases the tension in TLF which, in turn, transmits a compressive force to the lumbar spine which enhances its stability. In addition the increased tension of the TLF compresses the Erector Spinae (ES) and Multifidus (MF) muscles, encouraging these to contract and resist spine flexion forces (Lewis et al, 2000).

Further study showed that it is not just the recruitment of these deep-trunk muscles, but how they are recruited that is important. Hodges and Richardson (1996) showed that the co-contraction of the TA and MF muscles occurred prior to any movement of the limbs. This suggests that these muscles anticipate dynamic forces which may act on the lumbar spine and stabilise the area prior to any movement. Hodges and Richardson showed that the timing of co-ordination of these muscles was very significant, and that back injury patients were unable to recruit their TA and MF muscles early enough to stabilise the spine prior to movement.
The onset of the contraction before any force can act on the lumbar spine is essential for these muscles to act as stabilisers. Furthermore Hides et al (1996) found that the MF muscle showed poor recruitment in back injury patients, again showing how the recruitment of these deep trunk muscles is very important.

Interestingly, as early as the 1920's, Joseph 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 very aware of the importance of these deep muscles and the supportive effect they produce.

How can my Physiotherapist help?

Your Physiotherapist can show you how to contract your core stability muscles correctly. This is usually commenced at a very gentle level lying on your back with your knees bent. Once mastering the basic contraction, the exercises can be progressed onto an Exercise ball (also known as a Swiss ball or Fit ball). By using a ball, the core muscles can be tested and strengthened in different positions and with varied resistance and difficulty. When progressed correctly, the ball provides an excellent and fun way to work out the right muscles to improve your core strength, and general function. The result is a healthier and stronger spine which improves posture and reduces the risk of back injury in the future. Exercise balls are available for purchase at Berwick Physiotherapy. Ask your Physiotherapist for the correct size and balls can be inflated on request.