What is core stability?

There are many terms used to describe the concept of core stability but all refer to the muscular control used to maintain stability around the lumbar spine and pelvis. There are many different components to core stability each playing its own part to stabilize the region. The strength of the muscles is not so much important as their ability to fire and activate during specific movement sequences to stabilize the low back and pelvis giving a stable base from which force can be generated through the limbs to run, jump, kick etc.

- What muscles provide core stability?

There are two types of muscle used when stabilizing the lumbar spine and pelvis:

![Image of core stability muscles](MUSCLE~1.jpg)

a) Local postural muscles: these are the deeper muscles in the area. They are traditionally known as the core muscles. They attach directly to the lumbar vertebrae and surrounding thoracolumbar fascia tensing and relaxing to provide stability to the area. The main postural muscles are:
   i. Multifidus
   ii. Transversus Abdominus
   iii. Diaphragm
   iv. Pelvic Floor

b) Global dynamic muscles: these are the large torque producing muscles which link the pelvis to the thoracic cage and provide a more general stabilization to the area along with trunk movement. Overuse of these muscles can decrease the function of the local postural muscles. Some of these muscles include:
   i. Rectus Abdominus
   ii. Internal Oblique
   iii. External Oblique
   iv. Erector Spinae (Longissimus and iliocostalis)
• **What use is core stability?**

The function and endurance of the core muscles has been shown to greatly improve the stability of the lumbar spine and pelvis. This has too main benefits to GAA players:

i) **Injury Prevention and Treatment:** Research has shown that people suffering with chronic low back pain have weakened core muscles. The retraining of the core muscles allows for greater stability in the area and less stress on the structures of the lumbar spine. Improved core stability also provides a more stable base for the joints around the lumbar spine and pelvis such as the hip thus reducing the strain on the muscles moving those joints such as the adductors and hamstrings.

ii) **Power Generation:** The more stable the base the more power that can be generated. For example if you fire a cannon from a boat and dry land which will go further? The cannon on dry land has a more stable base therefore the power generated is transferred more effectively to the ball. The same applies in sport when kick the ball, sprinting or jumping. The more stable your lumbar spine and pelvis the more power can be generated.

• **How do I activate my core muscles?**

Rehabilitation of the core muscle should take place in 3 phases:

i) **motor skill learning** (i.e. learning how to activate the core muscles)

ii) **functional progression** (i.e. simple exercises which challenge your ability to maintain stability using your deep postural stabilizing muscles)

iii) **sports specific training** (i.e. progressing these exercises into drills which replicate your sport)
• Core Stability : THE BEGINNING

It is essential to be able to properly activate the deep core muscles (Multifidus, Transversus Abdominus, Diaphragm, Pelvic Floor) before any progression is attempted otherwise the global stabilizers will be used to compensate.

It is wise to attend a suitably qualified practitioner to demonstrate and check that your properly activate the deep core muscles.

The best positions to train these muscles is while lying on your back or in 4 point kneeling (on your hands and knees).

- Neutral Spine: Knee flexed at 90° and feet on ground
  Folded up hand-towel under head
  Feet and knees parallel and hip width apart
  Place pelvis in neutral position ie: 1/3 from flat.
  Relaxed shoulders
  Normal Breathing

- Engage Transversus Abdominus- Multifidus muscles:
  Breath in ……Breath out……Relax
  Slowly and gently draw in your centre
    ie below your belly button = 100% contraction
    (feel the internal oblique muscle!)
  Initiate a 30% contraction
    ie ease your contraction and hold.
    (feel the internal oblique muscle ease)
  Hold position and focus on 10 (slow) breaths
  Relax.

- Repeat this for a set of ten.

As you get better your will be able to set your core muscles sitting and then standing. When you have sufficient ability to activate and hold these muscles you can progress to the functional exercises.

Remember: - No matter what core exercise you are doing your aim should be for maximal control and stability with minimal use of the global stabilizers.
- If an exercise is too difficult go back and master a simpler exercise and then progress.

For examples of exercises to progress to go to:
www.brianmac.co.uk/corestabex.htm.