

# Get your cylinder to FIRE

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## Muscle balance:

The relationship between the tone or strength and length of the muscles around a joint is known as muscle balance. Muscles can be divided into two types: MOBILISERS AND STABILISERS.

**Mobilisers:** These muscles are found close to the body's surface and tend to cross two joints. They are typically made up of fast twitch fibres that produce power but lack endurance. With time they tend to tighten and shorten. The mobilisers assist rapid or ballistic movement and produce high force.

**Stabilisers:** By contrast these muscles are situated deeper, cross only one joint and are made up of slow twitch fibres for endurance. They tend to become weak and long with time. Functionally the stabilisers assist postural holding and work against gravity

## Muscle imbalance :

Whilst initially both groups of muscles work in a complementary fashion to stabilise and move, over time the stabilizers weaken from inactivity and the mobilisers then take over the action of the stabilizers and begin to stabilise on their own. This inhibition of the stabilisers and preferential recruitment of the mobilisers is central to the development of imbalance and must be prevented at all costs.

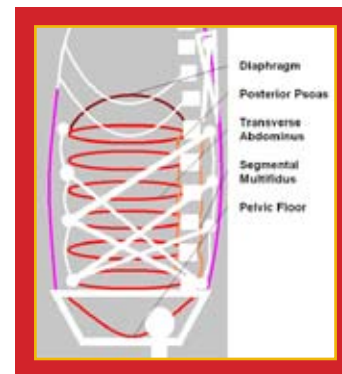
These imbalances develop in all of us over time as a result of overuse, stress, injury, trauma, dehydration and years of incorrect patterns of movement and bad posture. This then lead to structural abnormalities and pain is always an indicator that something is wrong.

## Focus on muscle function:

Function is integrated multi-dimensional movement involving mobilisation and stabilisation. Athletes should train and rehab in a functional environment to adequately develop functional strength and neuromuscular efficiency. Functional strength is the ability of the neuromuscular system to produce concentric force, isometrically stabilise and eccentrically decelerate the kinetic chain in all three planes of movement efficiently during functional activities. The goal of functional reconditioning and training is to provide the athlete with optimum levels of functional strength, neuromuscular efficiency and core stability. The most important link in the kinetic chain is the core. This is where all movement begins. A well developed core allows for improved forces output, neuromuscular efficiency and decreased incident of overuse injury. Most athletes have developed the functional strength

and power in their prime movers that will allow them to become successful in their particular sport, but they have not adequately developed functional stabilisation strength. This then leads to decreased performance and overuse injuries.

The concept of the 'core' has been expanded to include a more functional framework. The core is best represented as a double walled cylinder consisting of the lower back and abdomen and the upper back and chest (the trunk), which links to the limbs via the shoulder girdle and the pelvic girdle.



## Local Cylinder

The inner wall of the core cylinder is made up of the deep local muscle system (inner core). The muscles with a local stability role include:

- ⦿ The Diaphragm
- ⦿ Posterior psoas
- ⦿ Transversus Abdominus
- ⦿ Segmental Multifidus
- ⦿ The pelvic floor

## Global shell

The outer wall of the core is made up of the outer global muscle system. These global muscles influence postural alignment and contribute to the production and control of range of motion. They include:

- Oblique abdominus
- Superficial multifidus and spinalis
- Anterior psoas
- Oblique fibres of quadrates lumborum

All these muscles have to work in harmony to provide enough stability to be able to perform at your peak 🌈

## Examples of cylinder exercises



# High Performance Centre Physiotherapists

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