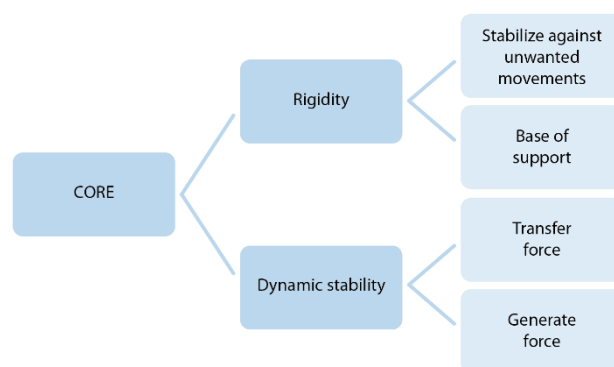


FUNCTIONAL CORE TRAINING

The core consists of the spine, pelvis and thoracic cage. This forms a platform from which our arms and legs are attached. The more stable (or resistant to unwanted movements) this platform is, the greater force we can produce from our arms and legs. The core is also required to contribute to movement patterns and is used to generate or transfer force when performing dynamic activities. The core therefore has two main functions: firstly, to provide a rigid structure from which our arms and legs can move from and secondly to stabilize our spine during movement. Core training exercises therefore have to reflect these functional requirements and is often misunderstood in many training programs. The diagram below outlines the functions of our core musculature.



Rigidity

Just as firing a cannon from a canoe will (at the least), have an unpredictable trajectory and at worst be a complete disaster, performing arm or leg movements from a weak or unstable core will reduce the effectiveness of the movement and may result or lead to injury. Therefore, exercises to train the core to perform as a rigid structure (i.e. resist unwanted movement) whilst moving our limbs is a very effective core training strategy that has carryover into functional movement patterns.

Dynamic Stability

This refers to the ability of the core musculature to maintain spinal stability whilst performing movements. The spine moves in multiple planes (forwards and backwards, side to side and left and right rotation, as well as combinations of these planes). Therefore, our core training needs to reflect these movements to ensure effective muscular activation throughout these movements not only to provide stability to the spine but also to contribute to the movement itself. Think about throwing a ball – in this movement you are using a rotational movement from your core to increase the distance that the ball travels.

Like using a strong rope when towing a car, a stable and strong core will also assist in the transference of force from your legs to your upper body and visa-versa. You wouldn't try towing a car with a bungy cord!!

In sport, consider a two footed jump from the floor. To gain maximum height, you would swing your arms upwards. The force generated from your arms is transferred through a stable core into the legs to increase your jump height.

Core strength training therefore forms the basis from which all functional movements must occur either to prevent unwanted movement or contribute to efficient movements. The brace is one of the fundamental movement patterns and a good start when incorporating core stability training. Lets have a look at the brace and how to progress it before introducing the concept of whole body (*or kinetic*) stability training:

The BRACE

Start by resting on your forearms and toes. Hold this position (time will depend upon your level of fitness). If this is too difficult, rest on your knees and hands.

Progress to hands and feet as you build strength.

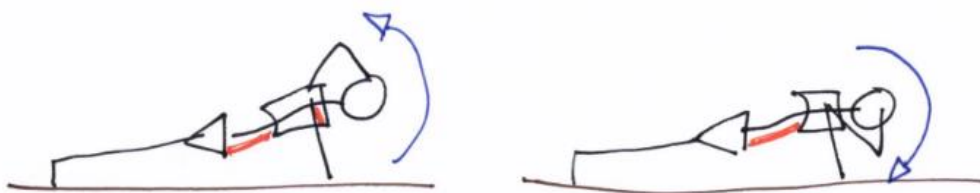
ANTI-ROTATION

Progress by taking one foot of the floor. This will increase the demand to resist rotation at the trunk. This can also be challenged by taking one arm of the floor. When you are able to hold these positions comfortably, try taking one foot AND the opposite arm of the floor and holding. Perform on both sides.



DYNAMIC MOVEMENTS

From the brace position, place one hand behind your head and then rotate your trunk upwards so that your elbow points to the sky. Slowly lower and repeat.



KINETIC STABILITY TRAINING

Kinetic Stability is a functional strength training concept that trains whole body movement patterns with an emphasis on maintaining stability and control through every joint including the spine. Fundamental to this is the active maintenance of a neutral spine and optimal hip joint and scapula position. Functional exercises are commonly performed in standing to involve and engage the entire kinetic chain (from head to foot). A weaker core may compromise spinal and joint stability and promote unwanted movements leading to ineffective movement and injury. A well developed and functioning core will allow greater output from the larger mobilizing musculature (i.e. greater resistance / more repetitions to failure). The stabilizing and mobilizing muscles must therefore work together to allow optimal movements whilst stabilizing the joints.

A good example of a kinetic stability exercise is a cable press trained in standing, this trains the pectorals, deltoids and triceps in a pressing movement. To be performed well, stability is required from the pelvis and lower limb, as well as the lumbar and thoracic spine to allow the scapulars to move effectively and train the mobilizing musculature (pectoralis, deltoids and triceps) to push the resistance forwards. Optimal stabilizing functioning will allow a greater resistance to be used integrating stabilizer and mobilizer musculature and progression of strength / function. However, using the same resistance with inefficient stabilizing musculature (a weak core) will result in poor movement patterns or compensatory movements such as knee falling inwards, overarching of the spine or shoulder hitching movements that could all lead to injury.

With this in mind, the limiting factor when considering your resistance is determined by the strength or capacity of the stabilizing musculature. The bench press movement will train the same mobilizing musculature (pectoralis, deltoids and triceps), however, stability will be provided by the bench allowing the stabilizing musculature to in effect 'switch off'. The role of kinetic stability training is to use the whole body through the foundational movements with an emphasis on correct movements through large range thereby training the stabilizers to do their job (i.e. provide stability) whilst the mobilizers do theirs (i.e. move the joints) – simple! This results in improved joint stability, whole body mobility and control and a great platform from which to implement strength training.

The kinetic stability program is a progressive system designed to train rigidity and dynamic stability using the foundational movements. There are two sessions each week and are progressive over a three-week period.

Perform each exercise for up to 60 seconds with a slow and controlled cadence. You should achieve between 12 and 16 repetitions in each minute. Progress to repeat each exercise four times.

See annex A for exercise details.