Core Stability

Description, benefits, and integration into a running program

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Core Stability: What is it?

Common synonyms include:
Trunk Stability
Core Strength
Core Training
Lumbar Stabilization
Neutral Spine Control

Core Stability: What is it?

General Definition:
“...The ability to control the position and motion of the trunk over the pelvis and leg to allow optimum production, transfer and control of force and motion to the terminal segment in integrated kinetic chain activities1”

The muscles that accomplish this include:
Abdominals
Spinal extensors
Proximal hip musculature
Proximal shoulder musculature

It has been found that contractions that increase intra-abdominal pressure are present before upper limb movement and that gluteal musculature stabilizes the trunk over the legs to provide power for forward leg movements1

Why is this important?
From a biomechanical perspective the parts of the body are connected as a chain, therefore:
- Any force acting on a distal part of the body will be directly translated up the chain to more proximal parts of the body
- Small forces at the proximal parts of the body will translate down the chain into larger movements at the distal parts (like cracking a whip)

Control, through stability at the proximal parts of the body will directly affect the distal parts

Core Stability: Benefits for Runners

Commonly held beliefs:
- Core strength and stability directly translates to better running performance
- Core strength and stability can help to prevent leg injuries
- Strengthening the lower abdominals is more effective than strengthening the upper abdominals
- Strengthening the core in “functional” positions is better than traditional positions (exercises on the floor on your back)
Core Stability: Benefits for Runners

What the research says:
- Although a strong biomechanical basis exists for core stability improving lower extremity performance, no research has been done to prove this.5
- There is evidence that core strength and stability is a factor in the prevention of lower extremity injuries.3
- Strengthening and stabilizing exercises done in different positions and using different techniques (isometric vs isotonic contractions), are effective for different elements of muscular performance; however, there is no definite “best” way.4,5

Core Stability: Integration into running program

Stability and strength can be divided into 4 main stages:6
1. Dynamic stability - proximal parts stabilized, while distal parts moving
2. Postural stability - muscles contracting to hold the body in a fixed position
3. Controlled mobility - weight shifting while stabilizing proximally
4. Skill - proximal parts stabilized while distal parts are performing skilled movements

Core Stability: Integration into running

Muscles need to be stable and strong:
- Stability can be developed in both weightbearing and non-weightbearing positions
  - Involves low load (<40% of effort), and longer times
- Strength is usually developed in a postural or more functional position
  - Involves higher load (>60% of effort) and shorter times

Exercise Progressions

These are based on the stages, and have levels added to them, to make them continuously challenging.

They can easily be incorporated into your running program and the following exercises can be done in about 10min 3x per week to be effective.

Note: The following activities being presented are safe for healthy individuals. If you at any time feel as though you cannot safely participate in an activity presented, please refrain from that portion of the session.

References