

## Abdominal muscles

The abdominal muscles are located between the ribs and the pelvis on the front of the body. The abdominal muscles support the trunk, allow movement and hold organs in place by regulating internal abdominal pressure.

Consult with your doctor, physiotherapist or sports physician for proper diagnosis and treatment of abdominal muscle injuries.

### Abdominal muscles explained

There are four main abdominal muscle groups that combine to completely cover the internal organs:

- **Transversus abdominus** – the deepest muscle layer. Its main roles are to stabilise the trunk and maintain internal abdominal pressure.
- **Rectus abdominus** – slung between the ribs and the pubic bone at the front of the pelvis. This muscle has the characteristic bumps or bulges, when contracting, that are commonly called 'the six pack'. The main function of the rectus abdominus is to move the body between the ribcage and the pelvis.
- **External oblique muscles** – these are on each side of the rectus abdominus. The external oblique muscles allow the trunk to twist, but to the opposite side of whichever external oblique is contracting. For example, the right external oblique contracts to turn the body to the left.
- **Internal oblique muscles** – these flank the rectus abdominus and are located just inside the hipbones. They operate in the opposite way to the external oblique muscles. For example, twisting the trunk to the left requires the left side internal oblique and the right side external oblique to contract together.

### The core

Think of your core as a strong column that links the upper body and lower body together. Having a solid core creates a foundation for all activities. All our movements are powered by the torso – the abdominals and back work together to support the spine when we sit, stand, bend over, pick things up, exercise and more.

Your core muscles refer to the muscles deep within the abdominals and back, attaching to the spine or pelvis. Some of these muscles include the transversus abdominis, the muscles of the pelvic floor, and the oblique muscles.

Another muscle that is involved in moving the trunk is the:

- **Multifidus** – this is a deep back muscle that runs along the spine. It works together with the transversus abdominus to increase spine stability and protect against back injury or strain during movement or normal posture. Proper 'core strengthening' techniques, learned from a skilled allied health professional, can support the combined function of these muscle groups.

### Effective abdominal exercises

When you decide to add some abdominal exercises to your exercise program, be careful about which ones you choose. Some 'abdominal' exercises that used to be popular are dangerous and ineffectual.

Incorporate exercises to train your core muscle group, rather than standard crunches that target separate muscles.

A qualified fitness instructor can help you develop a safe, effective program. Or if you have a pre-existing injury or medical condition, consult an exercise physiologist or physiotherapist. Some more recent training ideas and equipment include:

- Pilates (pronounced Pi-lah-teez) is an 80-year-old exercise technique traditionally used by dancers for deep-body conditioning and injury rehabilitation.
- The stability ball (or fitbal, Swiss ball, exercise ball) is an extra-large, inflatable ball designed to improve balance while targeting specific muscle groups. You can use exercise balls in a variety of ways to challenge balance, stability and torso strength.

## Muscle strains

You can strain your abdominal muscles from overstretching or overuse. A violent, poorly performed movement of the trunk can strain the abdominal muscles. Other common causes of strains include overstretching or overusing the muscles. Strains of the abdominal muscles are painful and difficult to manage if they occur close to ribs, pubic bone or hipbone.

Prevention strategies include regular stretching, warming up prior to exercise and cooling down afterwards, and keeping good form while playing sport.

## Where to get help

- Your doctor
- Doctor specialising in sports medicine
- Physiotherapist
- Exercise physiologist ESSA Exercise & Sports Science Australia
- Sports Doctors Australia Tel. (02) 6241 9344
- Sports Medicine Australia – Victoria Tel. (03) 9674 8777

## Things to remember

- The abdominal muscles support the trunk, allow movement and hold organs in place by regulating internal abdominal pressure.
- The deep abdominal muscles, together with muscles in the back, make up your 'core' muscles and help keep your body stable and balanced, and protects your spine.
- Causes of abdominal muscle strains include overstretching, overuse or a violent, poorly performed movement of the trunk.

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Physical Activity Australia

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