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## Abdominal muscles

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### Summary

- 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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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

The four main abdominal muscle groups that combine to completely cover the internal organs include:

- **transversus abdominis** – the deepest muscle layer. Its main roles are to stabilise the trunk and maintain internal abdominal pressure
- **rectus abdominis** – slung between the ribs and the pubic bone at the front of the pelvis. When contracting, this muscle has the characteristic bumps or bulges that are commonly called 'the six pack'. The main function of the rectus abdominis is to move the body between the ribcage and the pelvis
- **external oblique muscles** – these are on each side of the rectus abdominis. 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 abdominis 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.

### Core muscles

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 are 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 abdominis 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

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When you decide to add some abdominal exercises to your exercise program, be careful about which ones you choose. A qualified fitness instructor can help you develop a safe, effective program. If you have a pre-existing injury or medical condition, consult an exercise physiologist or physiotherapist.

Incorporate exercises to train your core muscle group, rather than standard crunches that target separate muscles. Some effective abdominal muscle training methods include:

- Pilates (pronounced Pi-lah-teez) is an exercise technique traditionally used by dancers for deep-body conditioning and injury rehabilitation.
- The stability ball (or fitball, Swiss ball or 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. 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 Tel. (07) 3862 4122
- Sports Doctors Australia Tel. (02) 8116 9815
- 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.
- Your core muscles help keep your body stable and balanced, and protect your spine.
- Muscle strains can be prevented by regular stretching, warming up prior to exercise and cooling down afterwards, and keeping good form while playing sport.

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