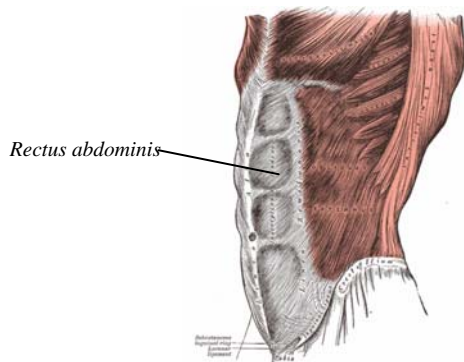


Abdominals

The abdominal muscles are comprised of four separate muscles

Rectus Abdominis

Anatomy: The familiar “6-pack” abdominal muscle, this is a pair of parallel segmented muscles that extends the entire length of the abdomen attaching at the pubic symphysis and the xiphisternum as well as the cartilages of the lower ribs.



Action: Flexion of the lumbar spine, important in maintaining correct posture. Can also assist in exhaling of breath

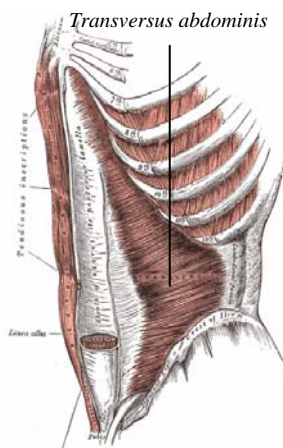
Common disorders: The most common problem associated with rectus abdominis is incorrect firing of the muscle in posture, caused by weakness, poor muscle control, or learned posture positions. This can cause an increased anterior pelvic tilt and increased lumbar lordosis.

Training: This muscle is traditionally trained using the abdominal crunch or sit-up. For best results, the muscle should be exercised right throughout range which includes extension of the back, such as is achieved on a Swiss Ball or Ab machine. It is important to control the extension as well as the flexion, and avoid “flopping” back.



Transversus abdominis

Anatomy: The major muscle of the body’s “Core” structure, this is the deepest muscle of the abdominal group. Arising from the lumbodorsal fascia, the iliac crest, and the cartilages of the lower six ribs, and finishing in a broad aponeurosis in the middle of a person’s abdomen.



Action: The action of this muscle is to “suck” the abdomen inwards, compressing the vital organs. Because of its attachment to the lumbar spine via the lumbodorsal fascia, this muscle also offers additional support to the back during movement.

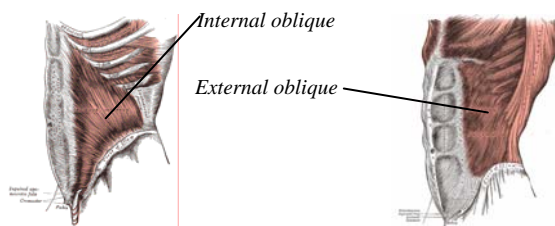
Common disorders: Despite being designed as a “tonic” muscle which should always be working to support the back, in many people the muscle is either weak, or lacks

control. *Weakness in postural muscles such as transversus abdominis is a major cause of back injury and pain.*

Training: The first step in training this muscle involves learning to contract it correctly and specifically. This should be done lying on your back with your knees bent. Using your abdominals, slowly suck your belly button towards your spine, pulling your tummy inwards. Care must be taken to avoid contracting the larger rectus abdominis muscle, therefore breathing must continue throughout the exercise, and the actual movement at the stomach should be very small. Because the nature of this muscle training should be tonic (always on) and not phasic (on/off), it is advisable to hold the contraction for as long as possible until you feel the muscle fatigue, instead of holding for a specific time. Once a good contraction of at least 10sec can be easily achieved the exercises can be progressed by adding additional body movements throughout the contraction. See your physio for specific progressions.

Internal Oblique

Anatomy: From the iliac crest and the thoracolumbar fascia this muscle runs upwards diagonally to attach at ribs 10-12 and to the linea alba.



Action: The main action is to side flex and laterally rotate the trunk to the same side. It also aids in exhalation in breathing.

Training: This muscle can be trained with a sit-up with rotation as shown, or as a normal sit-up with both knees put to one side.



External Oblique



Anatomy: Situated on the lateral and anterior parts of the abdomen, originating from the lower six ribs and inserting into the inguinal ligament and iliac crest.



Action: Compresses the abdominal cavity, assists in flexion and rotation of the trunk.

Training: This muscle is usually trained in a similar fashion to the internal obliques.

Pyramidalis

Pyramidalis is a small and largely insignificant muscle which is absent in 20% of humans. It lies inside the rectus sheath anterior to rectus abdominis, when contracting, it has the action of tensing the linea alba. This muscle may be present in several variations, either on one or both sides of the midline, and occasionally it is doubled on one side, which may give the abdominal muscles an unusual lopsided appearance