

You can also train the deep layer by co-ordinating the TA and multifidus contractions while practicing your balance standing on one leg. Do this next to a wall for support as needed and while keeping your knees, hips, and shoulders in line, and without arching your lower back. Practice this as you would your TA contractions: holding for 10 seconds, repeating it 10 times, 3 times per day.

## What Is Core Stability

Your spine has deep spinal muscles (core muscles) that must be active in all activities for ideal spinal support. These deep muscles do not move your body parts (like the biceps move your elbow) but support your spine. When initially trying to retrain these muscles, try very slow, controlled contractions and mental imagery of gently increasing tension.

For ideal stabilization of the spine to take place the following must be working together.

1. The ability to find and control ideal posture (ie. The shoulders, hips and knees are in line while standing). This also involves training over-active muscles to relax, strengthening weak musculature, and stretching muscles that are too short in order to gain good spinal alignment.
2. The ability to consciously turn on the core muscles with proper spinal alignment in a variety of positions (ie. Lying, sitting, standing, walking, etc.).
3. The ability to activate these muscles while moving in and out of ideal posture including movements specific to your work or sport.

This is a general overview of spinal stabilization and the exercises given are only the initial steps to recovering and training the deep core muscles. There are numerous exercise progressions that you may reach with continued practice and training.

Please discuss any questions with your physical therapist in order to have specific exercises prescribed for your needs.

## For treatment of Spinal Stabilization

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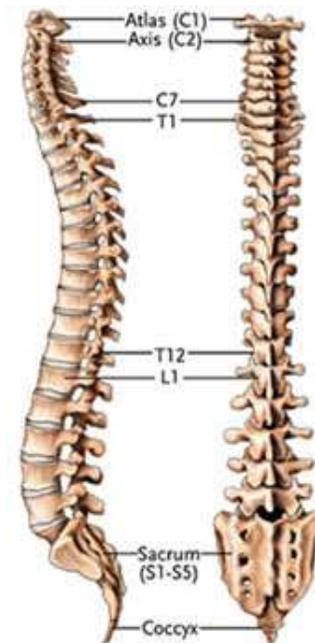


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**Our Expert services are committed and caring. We continue to excel in serving generations of the Burnaby Community.**

# Spinal Stabilization



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## What is Spinal Stabilization

Spinal stabilization is necessary for good spinal health, and requires the coordinated effort of 3 layers of muscles:

### Deep Layer Muscles

This includes small muscles which connect each vertebrae together, including their joints and spinal disks (spanning the entire spine).

In these deep muscles, there are position sensors that send information to the brain about the position of each part of the spine during every movement of the body.

The brain needs this information to properly control and co-ordinate body movements. Therefore this layer must be working properly to avoid or recover from a back injury.

### Middle Layer Muscles

Here, there are 2 muscles that, when working together, form your body's own corset around the lower back and abdomen:

**Transversus Abdominals** spans your lower abdomen and is the deepest layer of abdominal musculature. Its fibers run horizontally.

**Multifidus** lies alongside your vertebrae and its fibers run vertically.

These 2 muscles should activate together in anticipation of any body movement to help stabilize your spine (preventing excessive bending or rotating of each vertebrae)

By stabilizing the spine before movement it gives our limbs a stable platform on which to work, making them more efficient.

Without good activation of these muscles, your arms and legs have to work harder to dissipate loads, thus putting them at risk for injury.

### Outer Layer Muscles

These are larger, powerful muscles that are strengthened by traditional back and abdominal exercises. Many people tend to strengthen only this outer layer by lifting large amounts of weight or doing sit-ups. However, if the deeper core muscles are not strong enough to stabilize the spine in heavy loads, the outer layer will overpower them, creating compression and excessive rotation.

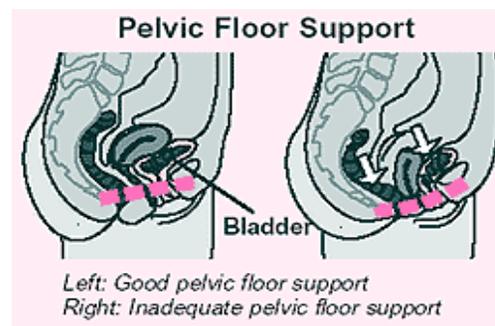
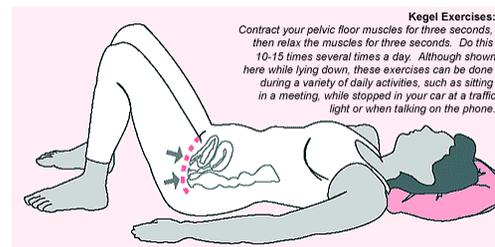
### Why does Back Injury Occur?

The back is at risk when a stabilizing muscle (deep or middle layer) does not turn on during a body movement (ie. turning, lifting). This leaves the vertebrae unsupported and poorly stabilized causing it to shift excessively.

Clinical research has shown us that **Multifidus** stops working soon after back injury (as early as 24 hrs) and does not spontaneously recover well afterwards. This sets you up for re-injury. Therefore training all 3 layers is critical to successful rehabilitation.

**Transversus Abdominus** (TA) is connected by the nervous system to the **Pelvic floor muscles** (used to hold in bodily fluids before reaching the washroom). Because of this connection, contracting your pelvic floor muscles causes some activation of TA. One can practice activating this muscle with the following exercise:

Lie on your back with your knees bent and feet flat on the floor. Contract the pelvic floor muscles as if you were trying to stop the flow of urine. Maintain the pelvic floor contraction and add TA by very slowly and gently drawing in your belly button. There should be no movement of the ribs, back or pelvis. Maintain regular diaphragmatic breathing. Practice this at 30% of maximum effort and hold for 10 seconds, repeat 10 times, 3 times per day.



**Multifidus** must also be trained to complete the corset ring around your low back.

Lie face down or on your side and feel this muscle just off the bony part of your low back vertebrae. Allow your finger tip to sink into the muscle and think of a tension line from inside your abdomen causing the muscle to gently bulge. It is helpful to co-ordinate this with a TA contraction.