

## Core Strengthening

How it can help your low back pain!

What is your core? Your core is like a “muscular box” composed of abdominals like your transverses and rectus abdominus in the front and back; glute muscles in back, the obliques on the sides, the diaphragm at the top, and the pelvic floor and hip girdle muscles at the bottom. These muscles can be split up into two groups: the local stabilizers and the global mobilizers. The local stabilizers are attached to the vertebrae in your lumbar spine (low back) and are equipped to stabilize the trunk and respond to changes in posture. The global mobilizers are attached to your pelvis and thoracic cage and are equipped to produce rotational trunk movements and gross movements of your limbs. For your limbs to move, the local muscles must first contract to stabilize the spine.

Back pain is among the most common chronic conditions in Canada and 80% of all adults will experience an episode of back pain in their lives. While back pain can occur as a result of injury or trauma to the back, around 85-90% of cases of low back pain have no specific cause. However, clinical findings of people with chronic low back pain show trunk and abdominal muscle weakening, reduced lumbar mobility, and insufficient recruitment of appropriate core muscles. Several studies have been done to support this idea, concluding that weakness in the superficial and/or deep trunk and abdominal muscles are significant risk factors for low back pain.

But there is good news! While core strengthening can reduce the risk of low back pain in the first place, it can also alleviate low back pain should it occur. Several studies looking at the efficacy of core strengthening have shown that core strengthening programs are not only effective in alleviating low back pain, but they are superior to general strength training. Core strengthening can also be an effective rehabilitation technique regardless of how long you have experienced back pain, whether it be one month or one year. Exercises that focus on segmental stability, meaning the strengthening and recruitment of deep trunk muscles like the transverses abdominus and multifidus, are more effective than exercises aimed at strengthening the superficial or global muscles. Segmental stability exercises have proven to decrease pain, increase functional capacity, and improve the patients ability to recruit appropriate deep trunk and abdominal muscles.

Examples of exercises would be to first teach the “drawing in maneuver” where the patient learns to contract their deep core muscles. Once the patient is able to hold the contraction in various positions (quadruped, supine, prone, standing), more complex exercises that include movement of the limbs could be added. For example, once the patient has mastered the contraction of the transverses abdominus in supine, they will then try the contraction with a heel slide, and can later progress to several variations of the dead-bug (shown below).



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