ISAEC Inter-professional Spine Assessment and Education Clinics

Lower Back Pain and the Importance of the Core

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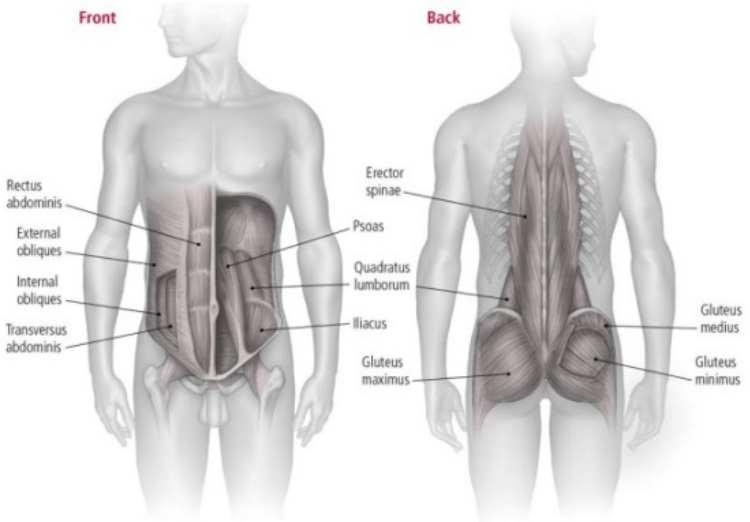
Core strength is one of the undisputed factors when it comes to winning the battle against low back pain. A weak core can play a role in the multifaceted world of recurrent lower back pain and as such, one of the most common recommendations when managing mechanical back pain or back related leg pain is to "train your core." For most people this recommendation translates to strengthening exercises. Although the need for muscle support for a healthy spine is undoubted, the experts have yet to agree which muscles constitute "the core" (anything from the elbows to the knees), which exercises to prescribe, or even what aspects of these muscles' function is most critical to recovery. There are generally two schools of thought when it comes to training the core: global abdominal "bracing" or motor control and deep abdominal "setting." There are several compelling studies outlining a role for each approach. In 1998, Dr. Paul Hodges began the discussion on the importance of a deep abdominal muscle co-contraction ("core setting") by showing that a change in function of the transversus abdominus (TA) occurred when we experience back pain. He showed there was no need for injury or damage to the back, simply feeling pain was enough to change the TA's spinal support function. The importance of the multifidus muscle was soon included to the argument for similar reasons.

Since then, there has been much controversy amongst the biomechanical experts over what type of exercises are best and which muscles contribute most to improved spinal support and stability. Specifically, the main opposition to the "abdominal setting" approach came from Dr. Stuart McGill and his lab out of the University of Waterloo. They showed that in order to improve spinal functional stiffness (a lack of which is thought to be related to an increased risk of developing lower back pain due to a state of "functional instability"), all abdominal muscles should be co-contracted in a "bracing" type maneuver which maximizes spinal stiffness.



Another consideration with abdominals and low back pain that must be taken into consideration is related to the speed with which they react to unanticipated events. This was observed in a study by biomechanist, Dr. J. Cholewicki. He recruited Varsity-level athletes with no previous history of low back pain. EMG electrodes were used to measure the speed of several postural muscles' response to an unanticipated release in trunk support. Although there were no injuries during testing, the analysis of the data predicted who would go on to hurt their back over the next 3 years. A delay in the reaction of the abdominal muscles of >14 ms was enough to predict a risk for future problems.

Both of the above-described exercise approaches purport to address muscle activation times but the outcomes of these approaches have yet to be proven. Recently there have been large meta-analyses published suggesting an emphasis on motor control to be key to preventing recurrent episodes of lower back pain. Despite the ongoing controversy, all can agree that failure to support our spine effectively is a key factor contributing to first and repeated episodes of low back pain. To address these factors therapy should include a review of the function of the abdominal muscles in a wide variety of activities. Otherwise, over time these day-to-day activities, in the absence of good core health, can culminate in injury. When referring your patient to ISAEC you can be confident that our practitioners have an expertise in the diagnosis of lower back related complaints, as well as the prescription of appropriate exercises to help improve a patient's self-management abilities, including an emphasis on the core.

Some consider the core to include the pectoralis, the gluteals, the hamstrings, the latissimus dorsi, and the deep neck flexors