Optimal Health University™

Presented by Dr. Smith

Core Strength, Posture and Back Pain

At any given time, 15 percent of adults have low-back pain (LBP). To make matters worse: Many simultaneously suffer from chronic widespread pain (Best Pract Res Clin Rheumatol 2007;21:77-91).

Research shows that developing strong core muscles reduces LBP — but that's not all. Core strengthening makes all physical activity easier, perfects posture, improves athletic ability and slashes the risk of spinal injuries.

Dr. Smith teaches patients that with sound core stability, the muscles in the pelvis, lower back, hips and abdomen work in harmony.



Core vs. Abs

Aren't core and abdominal muscles the same thing? Not exactly. Core muscles encompass both abdominal and back muscles.

Abdominal exercises isolate and strengthen individual muscle groups. On the other hand, core muscle exercises work both the abs and the lower back. By working them together, they learn to function better and more efficiently.

Core Muscles

So, just where are these core muscles located? The major muscles of the core include:

Transverse Abdominis: deep in the abdomen, under the obliques (muscles of the waist)

External Obliques: on the side and front of the abdomen, around the waist

Internal Obliques: under the external obliques, running in the opposite direction

Rectus Abdominis: a long muscle that extends along the front of the abdomen (It's often referred to as a "six pack.")

Erector Spinae: three muscles along the neck to the lower back

Multifidus: deep spinal stabilizing muscles

Latissimus Dorsi: large muscles in the mid and upper part of the lower back

Lessen Low-Back Pain

In desperation, many LBP sufferers turn to nonsteroidal anti-inflammatory drugs (NSAIDs) or other medications, which are loaded with side effects.

Dr. Smith wants you to know that these drugs only mask the pain and fail to solve the underlying problem. LBP sufferers often have weak core muscle strength, along with a condition called ***vertebral subluxation***, where spinal bones (vertebrae) are slightly misaligned or movement in the spine is restricted. These two conditions often go hand in hand, each one further exacerbating the other.

Researchers measured core muscle power in 739 men and 788 women, aged 70 to 79 years, in three muscle groups: lumbar paraspinals, lateral abdominals and rectus abdominis.

Participants reporting higher LBP severity during the past year had less trunk muscle strength in all three areas.

"Findings suggest a link between trunk muscle composition and history of LBP as well as reduced functional capacity in older adults. Improving trunk muscle quality may lead to reduced LBP severity and improved functional status," conclude researchers (*J Gerontol A Biol Sci Med Sci* 2005;60:882-7).

Strengthen Stability

Weak core muscles may also reduce stability, upping the risk of falls. For seniors, a simple fall can lead to broken bones, loss of independence — and even death. If your ability to balance is not quite ballerina-esque, put core-strengthening exercises at the top of your to-do list.



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Of the 1,527 participants in the study cited above, those with strong core muscles had improved overall physical performance, particularly balance, three years later. Subjects with moderate LBP before the study's onset showed a "significantly stronger" association between instability and core weakness. Participants with moderate to extreme back pain prior to the study exhibited the greatest decline in balance and function over time.



"Older adults with poorer trunk muscle composition (higher fat infiltration) exhibit reduced functional capacity, especially balance, 3 years later. Improving trunk muscle composition may be an important yet overlooked approach to maintain function and potentially reduce balance impairments, particularly in persons with a history of back pain." (*J Gerontol A Biol Sci Med Sci* 2005;60:1420-4.)

Take a Load Off

It's obvious that a toned core improves athletic performance, strength and endurance. But did you know that having strong abdominals and low-back muscles also takes pressure off the spine?

During physical activity, intervertebral (between the vertebrae) discs endure compressive forces, which can produce fluid loss. This loss decreases disc height, spinal length and overall stature, which is linked to spine loading and LBP.

Research shows that core exercises destress the spine, even more than resting does. In three experiments, nine volunteers performed several sets of military presses, which represented a spinal "loading" protocol.

Afterwards, participants rested or performed three sets of abdominal exercises, either on a flat surface or inclined board. Researchers measured spinal loading after both exercises and the rest period. The result? Both the regular and inclined abdominal exercises produced greater recovery than simple resting.

"Abdominal exercises may be introduced between sets of resistance training to decrease the negative effect of compressive forces imposed during such highly stressing activities." (*Clin Biomech* 2007;Epub.)

Ease Daily Activity

You don't need to be a world-class athlete or a sports fanatic to benefit from a toned core. Strong core muscles make simple, daily activities more manageable. These muscles assist with everything from getting dressed to reaching for a heavy platter from the cupboard. Core muscles provide postural support necessary to stay balanced when the body is in motion.

Perfect Posture

How does your posture stack up? Try this posture test: Stand with the back of your head and shoulders touching a wall and your heels six inches from the baseboard. Now try to stick your hand between your lower back and the wall, and then between your neck and the wall. Ideally, you should have an inch or two at the low back and two inches at the neck.

For most people, perfect posture is a challenge. The good news is that core strengthening can have a dramatic influence on postural health.

Sit Better

On average, most people sit anywhere from eight to 10 hours per day, often the majority of their waking hours. Sitting may be great for working, but it's destructive for LBP — especially if posture slumps.

While sitting hunched, the low back flattens as the pelvis rotates backwards. Disc pressure and spinal load increase. Sitting slumped for long periods will aggravate chronic LBP. However, a strong core vastly improves seated posture.

Ten healthy male volunteers without chronic LBP participated in a short seated posture exercise. Researchers measured spine curvature and core muscle activation (rectus abdominis, external and internal obliques, low-back muscles) using surface electrodes.

As measurements were taken, subjects performed two different seated postures: (1) slumped and (2) sitting with trunk muscles contracted and leaned slightly forward to simulate deskwork posture.

Contracting trunk muscles produced "significantly less" incorrect lumbar curvature and more sacral angle than during slump sitting.

"The results of this study indicated that co-contraction of the trunk muscles during sitting while doing desk work could bring about the correct lumbar curvature, and effectively stabilize the lumbopelvic region, and decrease focal stress on passive structures." (*Electromyogr Clin Neurophysiol* 2007;47:273-8.)

Core Strength Stacks Up

This office is committed to helping you achieve optimal health through preventive care. Why wait for pain and illness before taking action? Let us coach you toward optimal wellness right now.

Strong core strength is just one way to improve current well-being and prevent future illness. Ask us about simple exercises and programs that can jumpstart you on the road to topnotch strength!

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