

Core Considerations

There are better ways than crunches for runners to build sport-specific core strength. BY CARLA CUPIDO, D.C.

AND JON-ERIK KAWAMOTO

Picture yourself running hard. What do you see? Are your arms flailing all over the place? Is your trunk excessively rotating? Are your biomechanics breaking down? Or are your arms pumping like pistons back and forth with your legs powerfully propelling you forward with a strong, stable pelvis? The efficient mechanics in the latter scenario can be attributed to the integrated stabilizing system of a strong core. You've probably heard about how important a strong core is for good running, and you might devote significant time to strengthening your core. As American record-holder Shalane Flanagan, owner of an Olympic bronze medal and enviable form, says, "[This work] keeps my biomechanics correct during extended runs. With intense core stability exercises, I'd like to believe I don't break down in form as much as my competitors."

But when you're doing your core strengthening work, are you making the best use of that time?

Many runners know that the importance of their core far exceeds the look of a washboard stomach, and choose traditional core exercises, such as sit-ups and back extensions as their go-to core exercises. Unfortunately, these exercises and their variations result in excessive compressive and shear forces on the spine, which can result in significant spinal injury. In addition, these exercises don't improve the function of the core, which is to prevent excessive torso rotation, transfer force and stabilize the spine. To get a better idea of what exercises improve core strength, let's start by looking at why a strong core matters for runners.

INTEGRATED MOVEMENT

Just as a successful relay team requires a strong performance from each team member, core stability necessitates the involvement and correct coordination of a number of players. The core consists of more than just the abdom-

inal muscles; the following muscles are equally important in core stability:

- Transverse and rectus abdominus
- Internal and external obliques
- Pelvic floor muscles
- Multifidi and paraspinals
- Diaphragm

The diaphragm is our most important muscle of respiration, but it also happens to be an integral core stabilizer. When the diaphragm is positioned properly, correct breathing patterns are better facilitated and core function is improved, producing a more economical stride. The ideal posture for diaphragmatic function occurs when the lower back is neutral, the pelvis is level and the chest isn't sticking out or hunched over. That's why U.S. 800m champion and 2008 Olympian Nick Symmonds focuses heavily on correct posture and remaining tall when performing his core exercises — he finds this work enables a more powerful and efficient stride.

Developing effective communication between the nervous and muscular systems is another important goal of core conditioning. Think of the relationship between your nervous system and the rest of your muscles like a telephone conversation: With a better connection, exchange of information is more efficient. This results in improved movement with greater strength, power and endurance. The less energy wasted by the body trying to control movement, the more energy available for running fast. As McMaster University coach and two-time Canadian 1500m Olympian Paula Schnurr says, "Stride frequency and efficiency is improved with improved [neuromuscular] core function."

BRACE YOURSELF

Schnurr encourages the neuromuscular exercise of abdominal bracing, which entails simultaneously co-activating all of the muscles that surround the spine. The purpose is to teach the body how to prepare for stabilization. For example, if you're jostled in a race, or lose your footing on a trail run, your brace should naturally engage, stiffening the spine and improving your ability to quickly reposition.

Bracing should be performed during all core and whole-body strength/stability training. To practice bracing, pretend you're going to be punched in the stomach; this should stimulate all the muscles to tighten around the spine. However, you must be able to do this without holding your breath. Training the brace independent of breathing is essential for optimal exercise execution and performance in sport. This brace will help "groove" this supportive pattern so that, over time, it will activate with an unconscious effort.

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Shalane Flanagan

Core

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When performing core exercises, it's imperative that you maintain your lower back's natural curve. This natural curve is also known as neutral spine and is lost when performing the sit-ups and back extensions many people do in hopes of strengthening their core. This principle applies to all exercises, core and full body, to minimize the stress placed on the spine.

Canadian 2:11 marathoner Reid Coolsaet understands the importance of training a neutral spine in the standing position. Coolsaet's favorite core exercise, the axe chop, is extremely functional. It involves a forward step while quickly drawing a medicine ball from his ear to his opposite hip with an abrupt

stop. This halt requires a tremendous amount of anti-rotation core stability to maintain a strong, neutral and supported spine. Coolsaet's coach, Dave Scott-Thomas, says, "One of the challenges [for his athletes] was to appreciate a new level of kinesthetic awareness. There is less 'burn' during these exercises, and most of us are taught that when you're working really hard it's going to hurt more. Such is not the case with this more functional approach."^{RT}

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Carla Cupido, a chiropractor, and Jon-Erik Kawamoto, a certified strength and conditioning specialist, work with runners and other athletes in Vancouver, British Columbia.

Your Core Approach

When thinking about core work for running, keep these concepts in mind:

- Core endurance is more important than core strength in regards to injury prevention. This should be a major focus in your program.
- Use the "bracing" cue during each exercise and make sure you're able to breathe.
- Instead of isolating abdominal muscles with partial sit-ups and back extensions, focus on training the core to function as an integrated stabilizing system.

1 AXE CHOP



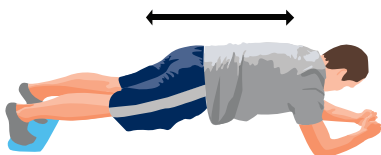
Hold a medicine ball or heavy book beside your right ear. Take a step forward with your left foot and quickly draw the heavy object to the outside of your left hip. Stop the object abruptly while staying tall and not flexing your spine. Repeat going from left to right. Perform 3 to 5 sets of 10 repetitions per side three times a week.

3 UNILATERAL CARRY



This is also known as a single-arm farmer's carry, and it's a fantastic exercise to develop lumbar and pelvic stability. When walking with a heavy weight held in one hand, the lower back and abdominal muscles have to stabilize the lumbar spine and the pelvis. The gluteus medius and minimus muscles on the stance leg also have to contribute a great deal of stability to the pelvis. Hold a heavy weight in one hand; a 5-gallon water jug works great. Walk around your house for about 30 seconds and repeat on the other side. Perform 3 to 5 sets per side three times a week.

2 BODY SAW



Go into a front elbow plank with your toes on a slippery surface; a towel on a hardwood floor works well. Brace your abdominals to keep your spine neutral, squeeze your legs together and squeeze your gluteals. Move your body forward and back by pushing/pulling with your elbows. Maintain the lumbar curve throughout the movement. Go back and forth slowly for 15 seconds. Repeat 4 times to complete a minute-long set. Perform 3 to 5 sets three times a week.

4 BIRD DOG WITH SQUARES



Go on your hands and knees and brace with a neutral spine. Without moving your spine, reach out one leg and the opposite arm. Outline a square with each outstretched limb while maintaining the curve in your spine. Return both to the starting position and repeat on the other side. Perform 6 repetitions per side and perform 3 to 5 sets three times a week.