

Core Strength Training

Dr. John Howell, DC

Strengthening the Core Reduces Back Pain

Abdominals get all the credit for protecting the back and being the foundation of strength, but they are only a small part of what makes up the core. In fact, it is weak and unbalanced core muscles that are linked to low back pain. Weak core muscles result in a loss of the appropriate lumbar curve and a swayback posture. Stronger, balanced core muscles help maintain appropriate posture and reduce strain on the spine.



Core Strength Training and Athletic Performance

The muscles of the trunk and torso stabilize the spine from the pelvis to the neck and shoulders, they allow the transfer of powerful movements of the arms and legs. All powerful movements originate from the center of the body out, and never from the limbs alone. Before any powerful, rapid muscle contractions can occur in the limbs, the spine must be solid and stable and the more stable the core, the most powerful the extremities can contract.

Training the muscles of the core also corrects postural imbalances that can lead to injuries. The biggest benefit of core training is to develop functional fitness - that is, fitness that is essential to both daily living and regular activities.

Core strengthening exercises are most effective when the torso works as a solid unit and both front and back muscles contract at the same time, multi joint movements are performed and stabilization of the spine is monitored.

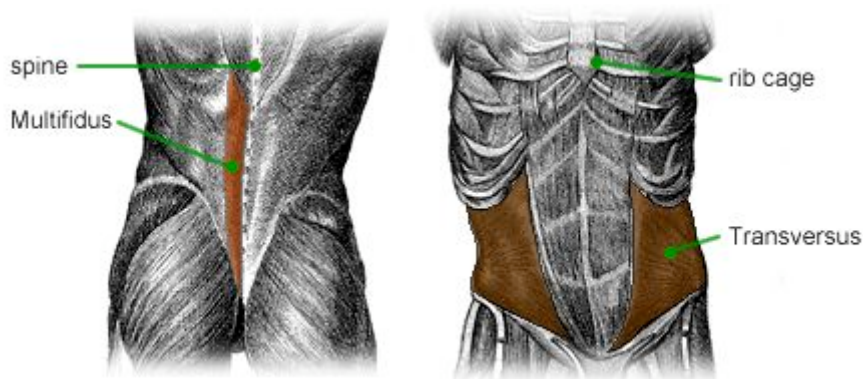
No Equipment Core Strength Exercises

Body weight exercises are very effective for developing core strength. They are also the type of exercises many athletes and coaches rely on for regular core training. I like to break core strengthening up into four stages – starting with the protective and fundamental stage and progressing to advanced sport/work specific strengthening.

Stage 1

- **Abdominal Bracing**

This is the main technique used during core exercise training. It refers to the contraction of the abdominal muscles the multifidus muscle and the transversus abdominis muscle.



To correctly brace, you should attempt to pull your navel back in toward your spine. This action primarily recruits transverse abdominus. Be careful not to hold your breath – you should be able to breathe evenly while bracing.

Important notes:

- This movement should not be confused with breathing in - it is important to breathe normally while activating the stabilizing muscles.
- Do not use the muscles at the front of the stomach - using your 'six pack' is not the correct technique.

Stage 2

Using the same techniques described in [Stage 1](#), you should eventually aim to hold the contraction for as long as is possible. You will find that once you have activated the muscles to this level it will become second nature to you.

To progress from Stage 1, simply increase the duration of the contraction to ten seconds, then twenty, while continuing to practice in sets of ten. Then progress the contraction to as long as possible, aiming for five minutes, then longer.

At this point, progress to contracting the deep stabilizers in different positions such as sitting and standing. Practice while you are doing everyday activities, such as sitting at the computer, watching TV or on an exercise bike.

Once you have mastered this you will be ready to progress to “semi-stationary” exercises

Stage 3

Exercise #1 **Abdominal Crunch**



Abdominal crunch

Abdominal crunches are a classic core exercise:

- Lie on your back and place your feet on a wall so that your knees and hips are bent at 90-degree angles. Tighten your abdominal muscles.
- Raise your head and shoulders off the floor. To avoid straining your neck, cross your arms on your chest rather than locking them behind your head. Hold for three deep breaths.
- Return to the start position and repeat.

Exercise #2 **Bridge**

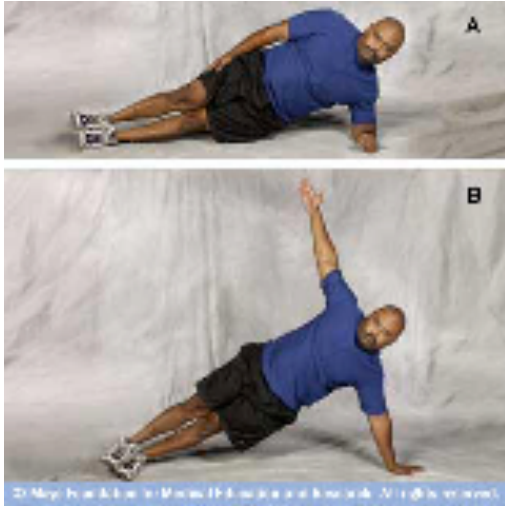


Bridge

To work various core muscles in combination, try a bridge:

- Lie on your back with your knees bent (A). Keep your back in a neutral position, not arched and not pressed into the floor. Avoid tilting your hips. Tighten your abdominal muscles.
- Raise your hips off the floor until your hips are aligned with your knees and shoulders (B). Hold for three deep breaths.
- Return to the start position and repeat.

Exercise #3 **Side Plank**



Side plank

The side plank challenges your stability and works the muscles along the side of your body:

- Lie on your left side, raising yourself onto your left forearm (A). Place your left shoulder directly above your left elbow, keeping your shoulders, hips and knees in alignment. Rest your right arm along the side of your body.
- Tighten your abdominal muscles. Hold for three deep breaths. Repeat on your right side.
- For added challenge, balance on your left hand. Raise your hips off the floor and extend your right hand toward the ceiling (B). Hold for three deep breaths. Repeat on your right side.

Exercise #4 **Modified Plank**



Modified plank

This core exercise is called the modified plank:

- Lie on your stomach. Raise yourself up so that you're resting on your forearms and your knees. Align your head and neck with your back, and place your shoulders directly above your elbows. Tighten your abdominal muscles.
- Create resistance by pressing your elbows and your knees toward one another. Neither should move from their positions on the floor. Hold for three deep breaths.
- Return to the start position and repeat.

Exercise # 5 **Plank**

Same as modified plank with lifting knees and only having feet and elbows touching ground. *Note: try to make a straight line from the feet to knees-hips and shoulders.*

Stage 4

The whole point of the Core Strengthening Program is to increase the support for your back and trunk in order to provide a more stable base for arm and leg movement. The best position to start these exercises is on all fours.



Exercise #1
Quadruped

Commence by contracting the deep stabilizers (as described in [Stage 1](#)) and hold this contraction. Then raise your right arm straight out to the horizontal. Perform the movement slowly and in a controlled fashion - there should be no wobbling or unwanted movement of the trunk. Hold the arm up for four seconds and then slowly lower.



Repeat for the left arm.

Next, whilst maintaining the same position, contract the deep stabilizers and then slowly lift your right leg up straight to the horizontal. Hold it there for four seconds and then slowly lower. The movement should be controlled and there should not be unwanted movement of the trunk or pelvis.



Repeat for the left leg.

Once you have mastered these exercises, while maintaining a contraction of the deep stabilizer muscles, you can start doing the core strengthening gym exercises.

Exercise #2 **Plank**



Plank with Leg/Arm Lift

Start in the plank position with your forearms and toes on the floor.

- Keep your leg straight with your toe flexed.
- Slowly raise one leg 5-8 inches off the floor (photo 2)
- Hold 1-2 seconds and slowly lower foot to the floor and repeat with other leg.
- Repeat with each arm.
- Progress to left arm right leg (hold 1-2 seconds) repeat right arm left leg.

Exercise #3 **Superman**



How to Do the Alternating Superman Core Exercise

- Lie face down on a mat with your arms stretched above your head (like superman)
- Raise your right arm and left leg about 5-6 inches off the ground (or as far as you comfortably can).
- Hold for 3 seconds and relax.
- Repeat with the opposite arm and leg.

Exercise # 4 **Bicycle crunch**

How to do the Bicycle Crunch Exercise

- Lie flat on the floor with your lower back pressed to the ground.
- Put your hands beside your head.
- Bring your knees up to about a 45-degree angle and slowly go through a bicycle pedal motion.
- Touch your left elbow to your right knee, Then your right elbow to your left knee.



- Breath evenly throughout the exercise.

Exercise # 5 **Segmental Rotation**

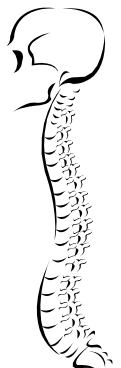


Segmental rotation

Segmental rotation is another way to exercise your core muscles:

- Lie on your back with your knees bent and your back in a neutral position. Tighten your abdominal muscles.
- Keeping your shoulders on the floor, let your knees fall slowly to the left (A). Go only as far as is comfortable. You should feel a stretch, but no pain. Hold for three deep breaths.
- Return to the start position. Repeat the exercise to the right (B).
- You make this exercise harder by lifting feet up off of the floor

Once these exercises have been mastered you can then increase the intensity with similar exercises using an exercise ball and/or myofascial roller.



Dr. John Howell, DC
Pearl Health Center
www.iohnhowelldc.com