[IMAGE]

It Starts With the CORE

By Dr. Jeffrey Tucker

The *core* is the center of the body, where all movement begins. When you lift a heavy grocery bag, reach for a suitcase, pick up one of your children, move a bookcase or throw a ball, the core muscles should activate even before your limbs are in motion. Healthy core muscles will provide your body with the structural integrity and support to your spine for everything from walking and running to lifting to standing to sitting.

During most activities, do you feel that the way you are using your body is efficient and coordinated or inefficient and uncoordinated? The core should work in an efficient and coordinated fashion to maintain correct alignment of the spine and pelvis while the limbs are moving. As you move your arms and legs, the core muscles create a solid base of support to hold the spine still. If you feel uncoordinated and have a weak core, you are susceptible to lower back pain, poor posture and a whole host of muscle injuries. Strong core muscles act as a "brace" or support to help prevent pain and injury. Strong core muscles increase the recruitment efficiency of the smaller, deeper "stabilizing" muscles around the abdominals, low back, hips and pelvis. They protect your back from potential injury. Strengthening weak core muscles can reduce existing back pain problems. Core training will help runners avoid hamstring and knee injuries; gymnasts, soccer, football and rugby players avoid groin injuries; dancers, golfers and weight-lifters avoid back injuries; and help *you* become stronger, fitter and healthier.

How to Perform Core Exercises

Pencil drawing - Copyright â Stock Photo / Register Mark The overall core exercise prescription is 1) Create a muscle contraction that involves reduction in the muscle’s length and contributes to healthy joint motion. 2) Isometrically hold this position to sustain postural alignment or support functional trunk or limb load. 3) Control the smooth return to the beginning of the motion (limb lowering against gravity). The muscles are required to control the back and forth motion, or decelerate rotational strain at all joints, especially the trunk and girdles. 4) Control whatever functional range of motion is available.

Your doctor of chiropractic can help you identify and fix your core weakness and provide you with the proper treatment approach that includes chiropractic mobilizations and adjustments to the joints to make

sure they have proper movement; teach you stretches to relax tight, overactive muscles; and train you how to perform exercises for your underactive or weak core muscles. In conjunction with core stability training, as an injury prevention tool, plyometric exercises (fast, powerful muscle movements/contractions) are recommended to improve proprioceptive and reactive capabilities, which may reduce the likelihood of lower-extremity injuries.

The proper progression begins with exercises that teach you to handle your own body weight. Static body-weight exercises focus on developing stability and/or strength endurance in certain postures. The "bridge" (see description later on in this article) is an example of an exercise requiring co-contraction of the small stabilizer and larger mobilizer muscles. Next, you'll improve your overall fitness by progressing to a variety of exercises by adding resistance bands. The next progression adds stability balls, which are an excellent tool for adding instability to torso stabilization exercises or upper-body exercises such as push-ups. Finally, you'll add an unstable surface, such as a 12-inch half foam roller or soft mats, changing the lever arm, balancing on one leg or utilizing one arm. (Your doctor can give you more information on all of these exercises.)

You never know how strong you can be until you challenge yourself, which is why it's important to continually provide new stimulus to your muscles. A wide variety of movements that progressively become more and more challenging is a key component to a long-term successful exercise program. It's important to train the core while standing on both feet as well as on one leg at a time. The lunge is a good example of a dynamic core stability exercise. It requires coordination of all the trunk and pelvic muscles. Maintain a neutral lumbar spine (not rounded, twisted, etc.) throughout the whole movement. When simple balancing exercises are familiar, you can try to perform core exercises on a soft foam pad. This can increase your trunk muscle activation. Since many sporting actions require strong rotational movements (baseball, tennis, golf), we can add weighted medicine ball exercises during stability ball training and soft pads surfaces to help guard against injuries.

If you haven't already begun core training, or you aren't sure if your current exercises are safely progressing your core strength and flexibility, you should try the following program. Complete three workouts a week, resting at least a day between sessions. On the days you do not do this core program, you can perform cardio workouts such as walking, biking, interval running or sprints. Talk to your doctor before getting started, particularly if you have a pre-existing health condition that could affect your ability to perform any of these exercises.

Key Exercises to Develop Your Core

The Benefits of Core Training:

- Better posture and balance
- Better energy transfer from one body part to another
- More powerful performance
- Enhanced protection against injury
- Increased protection and "bracing" for your back
- More stable center of gravity
- More stable platform for sports movements.
- Toned torso and abdominals
- Healthy and flexible lower back

Traditional Ab Curl: This builds good abdominal strength and co-contraction of the abdominal wall musculature to hold the lumber spine and pelvis in correct alignment. Muscles targeted in the curl-up are the rectus abdominis and abdominal wall (transverse abdominis and internal obliques). Lie on your back with your hands behind the low back. Don't flatten the back to the floor. Keep one knee bent and the other knee straight. Tighten the abs and slowly crunch up from the sternum (that T-shaped bone in the center of your lower chest, also known as the breast bone), bringing your shoulder blades off the ground. Don't forget to breath in and out. *12-15 repetitions, 1 set.*

On-Your-Back Bent-Leg Knee Raise: Lie on your back with your head and neck relaxed and your hands above your head, holding onto the sides of a bench or a piece of heavy furniture. Your feet should be flat on the floor. Use your lower abdominal muscles to raise your knees up toward your rib cage and face, the heels toward the butt, and toes to the shin. This will activate the external obliques, hamstrings and anterior tibialis (the muscle on the front of the lower leg/shin). Then slowly lower your feet back to the starting position. As your feet lightly touch the floor, repeat. *12 reps, 1 set.*

Plank: The plank is a good example of an isometric exercise (static contraction of a muscle without any visible movement in the angle of the joint) that focuses on the recruitment of the core stabilizing muscles. In the beginning it might feel like a challenge without moving an arm or a leg occasionally.

Start to get in a push-up position, but bend your elbows and rest your weight on your forearms instead of your hands. Your body should form a straight line from your shoulders to your ankles. Pull your abdominals in; imagine you're trying to move your belly button back to your spine. Continue to brace the abdominals and put the low back in the neutral position. Hold this position for an increasing length of time up to a maximum of one minute, breathing steadily. As you build endurance, try to do at least a 60-second set. *2-3 sets, 1 minute per set.*

Progressions/variations: The plank has many variations: You can plank starting out on the forearms and toes, then progress to more difficult challenges such as a plank with single-arm support or single-leg support. Planks can become even more challenging to the core with the use of a stability ball and challenge balance as well. Plank on a stability ball with the elbows on the ball or hands on the ball; plank on a stability ball with hands on the ball and feet on a bench.

Side planks can start out in static holds and progress to side planks with single-leg support; side plank on a stability ball with your elbows on the ball; progress to alternating side planks to the elbow or hand; plank on the elbows and walk to a push-up; or plank on elbows on the ball. You can even perform stability ball kneeling rollouts from your elbows.

Plank on ball: To really activate your abdominal muscles, kneel in front of the stability ball and place your elbows on the top of the ball (in the center). Slowly roll the ball away from your body until there is a straight line through the knees, hips and head and your weight is being supported through your elbows down on to the ball. Once in this position, it may be necessary to tilt the pelvis so that it is held in neutral with correct lumbar spine alignment. Also be careful not to round off the shoulders: aim for a "long spine." Build up to holds at the far point for 30 to 60 seconds. *2-3 sets, 30-60 seconds per set.*

plank on ball - Copyright â Stock Photo / Register Mark

Stability Ball Push-Ups: These are your basic push-ups, but you're doing them with your feet on a stability ball. Keep your body straight - don't let your hips sag or stick your butt up in the air - to max out on the exercise's core-strengthening benefits. Do as many as you can with strict form. *1 set to failure.*

Side Bridge: The side bridge is a safe and effective exercise for the obliques and quadratus lumborum (a key lumbar stabilizing muscle). It also targets the lower abdominal muscle. Lie on your nondominant side with your forearm on the floor under your shoulder. Support your weight with that forearm and the outside

edge of the same side foot (your legs should be stacked one on top of the other). Your body should form a straight line from head to ankles. Contract your abs and glutes in as far as you can, and push your hips off the floor. Create a straight line from ankle to shoulder and keep your head in line with your spine. Hold this position for an increasing length of time up to a maximum of one minute, breathing steadily. Relax and lower under control. Repeat on your other side. *2-3 sets, 1 minute per set.*

cobra or arch-up - Copyright â Stock Photo / Register Mark **"Cobra" or "Arch-Up":** This is more of a low back exercise than a gluteal exercise, but it will train you to recruit the gluteals as well. Lay face down on the floor with the arms beside the hips. Activate the core by drawing in the naval toward the spine and squeezing the glutes. With the core and glutes activated, lift the chest off the floor. Keep both feet on the floor. Pause momentarily at the top of the lift while targeting the buttocks (gluteus maximus) and erector spinae/multifidus (muscles in the back).

Progress to changing the arm position. Hold your arms straight out in front of you. Your body should form a straight line from your hands to your hips. Raise your upper body until it's slightly above parallel to the floor. At this point, you should have a slight arch in your back, and your shoulder blades should be pulled together. Pause for a second, then repeat. *12-15 reps, 1 set.*

Progression: Kneel over a stability ball with thighs and stomach in contact with the ball and head and shoulders dipping over the front of the ball. With your back straight and parallel to the floor, position the lumbar spine in neutral and then set your hips so they do not move. Allow the chest to drop and fall over the ball, flexing the upper back. Place your hands at the sides of the head, elbows bent. From this position, lift your chest up, extending your upper back until it is higher than at the starting position. Maintain abdominal contraction throughout to fix the hips and limit hyperextension of the lumbar spine. *10-20 reps, 2-3 sets.*

Gluteal Bridge: This maneuver has many progressions. Start by lying on the floor with your knees bent. Squeeze your gluteals and then push your hips up until there is a straight line through the knee and hip to the upper body. Shoulders should remain on the floor. Beware of raising up too high or flaring the ribs, which pushes the back into hyperextension. Hold this position for an increasing length of time, up to a maximum of one minute. After you can hold this pose steady for one minute, bridge up and down repeatedly concentrating on squeezing the glute muscles and not using the lumbar spine for hip motion. *2-3 sets of 1 minute per set.*

Progression 1: Progress to lying with your upper back and head on the floor with your heels on the top of the stability ball, hip-width apart to aid stability. Suck in the abdominals and squeeze up from your gluteals, lifting your hips until there is a straight line from heels to upper back. Shoulders and head should stay firmly on the floor. Take care not to lift the hips too high or flare the ribs so that your back hyperextends. Build up to holds of 30 seconds and lower. *2-3 sets of 30 seconds per set.*

Progression 2: Progress to bridging with your back and head on the top of the stability ball. Hold the back in a static table-top position with the feet on the ground (hip-width apart), the knees bent 90 degrees. Squeezing up from the gluteals, lift hips until there is a straight line running through the knees, hips and shoulders. Do not lift the hips too high or flare the ribs so that your back hyperextends. Hold for a count of five and lower. *15-20 reps.*

Progression 3: Combine the stability ball and a small weighted ball: Hold a light weight medicine ball between your palms and keep elbows straight. Keeping both arms straight bring arms back behind your head, and back up to the starting position. This re-establishes proper scapular glide and promotes thoracic extension.

Quadruped Birddog: The quadruped opposite arm/leg raise is effective for the lumbar and thoracic portions of the erector spinae muscles. This exercise also requires co-contraction of the abdominal wall muscles to stabilize the pelvis. Start with hands below shoulders and knees below hips. Set your low back into neutral and brace your abdominals slightly. Slowly slide back one leg and slide forward the opposite arm. Ensure that the back does not slip into extension, and that the shoulders and pelvis do not tilt sideways. Hold for two slow breaths in and out. Slowly bring your leg and arm back and swap sides. You can progress to using resistance bands around the hands or ankles. *Build to 15-20 reps per side.*

stability ball push-ups - Copyright â Stock Photo / Register Mark

One-Arm Rotational Row: This is a strength exercise that you'll feel throughout your back, torso, shoulders, and arms. Use an anchored resistance band with a handle to a low point near the floor. Kneel perpendicular to the anchored point, with your right knee and left foot on the floor. With your right hand, reach across your body to grab the handle, turning your hips and shoulders. Now rotate your right shoulder back and pull the handle to your right hip. Maintain a tall spine. Slowly reverse the motion. *12 reps per side.*

Up-chop /Down-Chop Kneel: *This exercise develops excellent core stability and trunk rotation strength.* Swimmers and runners will appreciate this exercise. For the up-chop, kneel next to a band with a handle attached below hip height. Grasp the handle in both hands to the side of the hip nearest the band anchor. Lift the arms up and at the same time rotate the shoulders away from the band, keeping hips facing forward and arms straight. *2-3 sets of 8-10 reps, both sides.*

As you might expect, the down-chop is the opposite of the up-chop. Begin with the handle attached high up above head height, grasping the handle in both hands above the head to the side of the band anchor. Keeping the hips facing front and the arms straight, pull the hands down and turn the shoulders away from the anchor. *2-3 sets of 8-10 reps, both sides.*

Dumbbell Lunge-Press: Strength, endurance, balance, coordination: There's not much this one doesn't hit. With a neutral grip (palms facing toward each other) and elbows bent, hold a dumbbell in each hand at shoulder level. Feet should be shoulder-width apart. As you step forward into a lunge position, press the dumbbells toward the ceiling and finish the press with palms facing forward. Step forward with the back leg while lowering the dumbbells to return to the starting position. Form is key: Make sure your front knee is aligned over the second toe in the lunge position and concentrate on keeping your torso erect, chin level, eyes looking straight ahead throughout, as if you were trying to balance a book on your head. If you have trouble doing that, reduce the weight; if that still doesn't work, switch to a single plateless barbell instead of dumbbells. *10 lunges per leg.*

Medicine Ball Slams: Believe it or not, this can be a great ab exercise. Take a medicine ball and get in an athletic-ready position (knees slightly bent, ball held with both hands at lower chest level or so). Bring the ball overhead as fast as you can under control and slam it down as hard as you can. Make sure you do a few slow ones first to get a feel for the bounce of the ball, since you have to catch it. This exercise involves complete integration of the total body. It will also teach you power development from the ground up and get your heart racing. *1-2 sets of 12-15 slams.*

If you haven't figured it out by now, core training is important; in fact, it should always be a part of your exercise routine. Don't be afraid of core training, even if you're a beginner. Actually, if you're just starting an exercise regimen, core training is the place to start, because it will make everything easier. Your doctor can answer any questions you may have regarding the value of core exercises and how to properly perform the exercises mentioned in this article. Now get out there and start training your core!

A Sample Routine to Tone and Tighten Your CORE

(see step-by-step descriptions throughout this article)

Exercise	Repetitions Per Set	Total Sets
Curl-Ups	12-15	1
Bent-Leg Knee Raises	12-15	1
Planks (toes/forearms)	60 seconds	2
Stability Ball Planks (elbows on ball)	20 seconds	3
Stability Ball Push-Ups	10-12	1
Side Bridge	60 seconds	2 per side
Arch-Ups	12-15	1
Glute Bridges (back on ball)	15-20	1
Birddogs (opposite-arm leg raise)	15-20	1 per side
Up Chop Kneels	10-12	2-3 per side
Down-Chop Kneels	10-12	2-3 per side
Lunges	10-12	1 per side
Medicine Ball Slams	10	1

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