Core Stabilization for a Healthy Lower Back

Specific programs of spinal rehabilitation and stabilization are difficult to learn from articles, videos or booklets, but these methods of communication are valuable to enforce the learning of concepts. Everyone is unique in their design and history of spinal stressors, so it is unlikely that an "off the shelf" program of exercise will fit everyone. There are some concepts that can be generalized to everyone. Several of these concepts will be addressed in this article.

Toe touching can cause damage to the discs of the lower back and should be avoided.

Universal Concepts

More is not necessarily better. Any exercise may be performed to excess. This is true in regards to the number of exercises, the duration of exercise, and the rigor of exercise.

Excessive spinal flexibility reduces stability. In bodily movement there is always a trade-off of flexibility for stability. The more flexible a joint is the less stable it is. For decades people have been told to perform forward flexion exercises such as toe-touching to increase spinal flexibility. For most people forward stressing of the spine is ill advised. Some studies have demonstrated that participants with stiffer spines actually had less pain than those with flexible spines.

Avoid bending forward at the waist for the first hour and a half after rising. The spinal discs are cartilage pads between the vertebral bones. The discs dehydrate during the day while under the load of being upright. At night they expand in size by absorbing fluid. In the morning the discs are filled with fluid and more prone to injury. Accordingly, avoid aggressively stressing your spine or bending at the waist when you first arise.

Do not lift weights while sitting. Picking up dumbbells or barbells while in a seated posture can be one of the most deleterious activities in the gym. You may however perform pull-downs or certain machine-based exercises while sitting. Always be careful to maintain a moderate arch in your lower back when lifting.

Lifting while sitting can increase the risk for spinal injury.

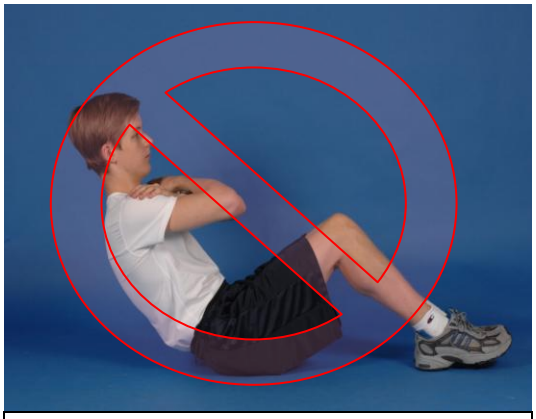
Core endurance is more important than strength. Avoid focusing on sets and reps, a remnant of body building lore, and do not attempt heavy exertions when training the core. Current research points more to the importance of developing endurance, rather than having explosive power for developing a healthy core

Avoid rotational exercises. Rotational exercise machines or twisting with a broomstick on your shoulders may cause torsional spinal damage. Avoid these exercises unless you participate in a sport that requires this type of motion. The benefit should justify the risk. If you do not participate in a sport or activity (wrestling, karate, jujitsu, baseball, racquetball, shot put, discus...) that requires great rotational strength, then these exercises would pose an unnecessary risk.

Twisting and torsion motions are capable of damaging the lumbar disc and other spinal structures.

Do not base your core exercise program on sit-ups or crunches. Repeated spinal flexion has been identified as a risk factor in spinal injuries. Sit-ups and crunches reproduce these injurious motions.

Protect the natural curves of the spine. Forward bending of the spine increases the pressure within the discs, and has been indicated in spinal injuries. It is safer to maintain a natural neutral lumbar (lower back arch) curve during most postures of work and exercise, than flexing or bending the spine forward.



Repeated spinal flexion contributes strongly to disc injuries. Sit-ups and crunches should be avoided for this reason.

Do not bend at the waist while lifting. Forward bending of your back is dangerous and increases the likelihood of disc injuries. Repeatedly bending forward can cause serious disc injury months and years before the presence of pain.

Specific exercise programs are only appropriate for specific populations. There is no such thing as a one size fits all program. What is very appropriate for one person may be deleterious to another. A program designed for a young athlete is not the same program that should be used for an elderly back pain sufferer.

The core stabilizers respond better to a little exercise everyday than to performing exercises aggressively two or three times per week. Core stabilization exercises are more effective if performed for five to ten minutes every day.

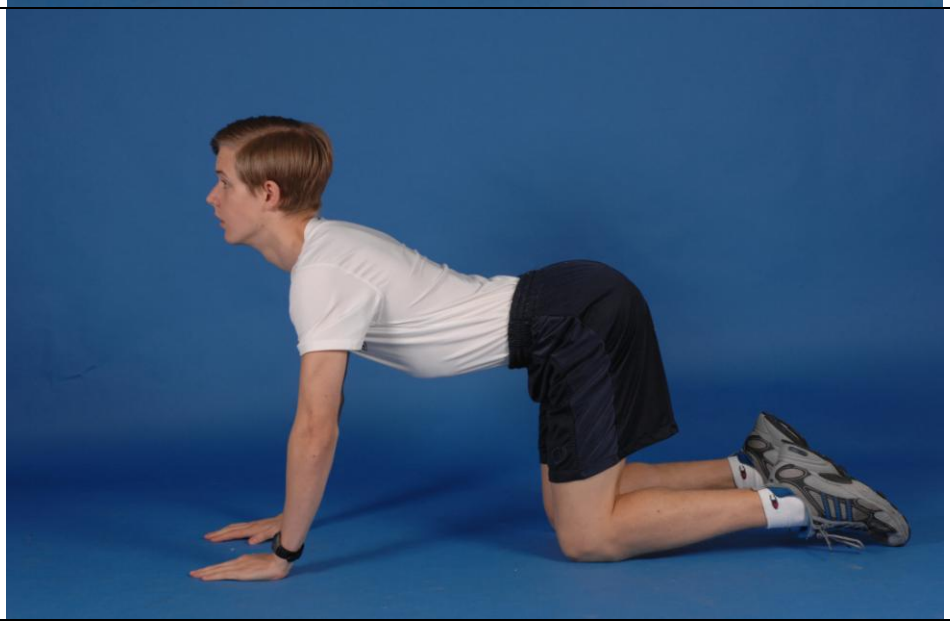
Bending and lifting is one of the most risky actions that can be done in regards to the lower back. Curling the spine in this manner places a tremendous amount of pressure on the discs of the lower back.

A Model Program: The McGill Exercises

The following sample program is based on the work of the renowned spinal mechanist Stuart McGill, PhD. and has gained popularity do to its protection of the spine and its basis in science. While this program is not appropriate for everyone, most young healthy people should be able to perform this program. Do not attempt to perform this program if you are advanced in age or have health problems.

The Arch and Curl Exercise

This program starts with this gentle motion exercise. It is not considered a stretch, but rather a motion enhancer. The intent is not to stretch to end range, but rather to enhance spinal motion. It begins in the *quad stance* (kneeling on your hands and knees) curl your spine up and then arch your spine down. Perform this exercise 5-8 times. Those with herniated discs or sciatica should limit the curling portion of this exercise. If pain is produced, do not work through the pain.



Curl-up

This exercise is intended to work the abdominal muscles of the front of the torso, while protecting the lumbar discs. The key to this exercise is the isolation of the abdominal muscles while avoiding spinal flexion. Lay on your back with your arm or a towel under your lower back. This is intended to maintain the normal curve of the lumbar spine. Remember that flexion (bending at the waist) increases the pressure within the lumbar disc. One knee is bent, the other is straight, alternate legs at the midpoint of repetitions. The exercise is performed by curling the upper back up while maintaining the neutral spinal curve. Avoid jetting the neck or head forward while performing this exercise. Concentrate on maintaining good form. As fitness improves you may increase abdominal involvement by concentrating on the purposeful contraction of the abdominal muscles. Hold contractions for up to 8 seconds. Build muscular endurance by gradually increasing the number of repetitions.

Alternating Arm and Leg Raising (Birddog)

From the quad stance and while contracting the core muscles tense (tightening them in a comfortable contraction, stiffening these muscles while maintaining a "neutral spine") lift one leg and the opposite arm to parallel with the ground. Hold the arm and leg in this position for eight seconds. As strength and fitness improves it is preferred to ad more repetitions of this exercise rather than holding the arm and leg up for longer periods of time.

The Side Bridge

This exercise utilizes the same core muscle tensing techniques that were mentioned previously. Form a bridge with your body with your elbow supporting your upper body and your feet supporting your lower body. The top foot should be in front of the bottom foot. Stiffen your stomach and back muscles and strive to keep your spine straight. This exercise should be performed on both sides.

A lower level of intensity for this exercise can be obtained by bridging from the elbow to the knees.

Hold contractions for up to 8 seconds. Build muscular endurance by gradually increasing the number of repetitions.

A beginner's variation of the exercise

The advanced position for the side bridge exercise

Planking

Planking involves stiffening your body into a plank while supporting yourself on the balls of your feet and your elbows. Concentrate on stiffing the back and abdominal muscles while maintaining a stiff posture. This exercise can be combined with the side bridge to transition from one side to the other.
An advanced version of this exercise would include placing the elbows or the feet on an exercise ball.
Hold contractions for up to 8 seconds. Build muscular endurance by gradually increasing the number of repetitions.

Aerobic Exercise

In addition to specific core stabilizing exercises, aerobic fitness has been shown to be beneficial in preventing lower back pain. Brisk walking has been shown to be especially effective in reducing lower back pain. Select one or two aerobic exercises that you enjoy that do not provoke back pain. Perform them for 45 minutes four days per week. Selecting two different types of aerobic exercises provides diversity and varies the stress on muscles and joints. You may choose walking, swimming, cycling (though cycling may flex the spine), deep water running, elliptical machines, stair climbers, or dancing. Mix up your two exercises so that you perform each exercise one to three times per week for a total of four aerobic sessions per week.

A Complete Program of Back Fitness

A comprehensive program of spinal fitness will include specific core exercises and strength training, motion exercises, aerobic fitness and ergonomic training. The science of spinal care is still in its early stages and will continue to evolve over the foreseeable future. Exercise programs will be refined and specific exercises will be developed for specific conditions and for specific spines. There is no one cure for the many causes of back pain and instability. Therefore, the generalizations presented here should not be interpreted as the solution for every type of back pain or dysfunction.

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