

Lower Back Pain

Quincy Medical Center

Massachusetts General Hospital

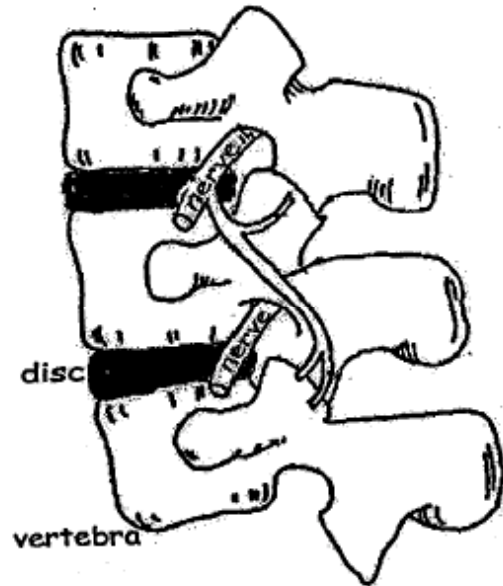
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Your lower back is a complex structure of vertebrae, disks, spinal cord, and nerves.

There are:

- Five bones called lumbar vertebrae - stacked one upon the other, connecting the upper spine to the pelvis
- Six shock absorbers called disks - acting both as cushion and stabilizer to protect the lumbar vertebrae
- Spinal cord and nerves - the "electric cables" which travel through a central canal in the lumbar vertebrae, connecting your brain to the muscles of your legs
- Small joints - allowing functional movement and providing stability
- Muscles and ligaments - providing strength and power and at the same time support and stability



Causes of Low Back Pain

Low Back Sprain and Strain - The muscles of the low back provide power and strength for activities such as standing, walking and lifting. A strain of the muscle can occur when the muscle is poorly conditioned or overworked. The ligaments of the low back act to interconnect the five vertebral bones and provide support or stability for the low back. A sprain of the low back can **occur** when a sudden, forceful movement injures a ligament that has become stiff or weak through poor conditioning or overuse.

Arthritis - "Wear and tear" and inherited factors will cause degenerative changes in the disks, called degenerative disk disease, and arthritic changes in the small joints. These changes occur to some degree in everyone. When severe, they can cause low back stiffness and pain. Arthritic bone spurs and inflamed joints can cause nerve irritation and leg pain. Almost everyone develops "wear and tear" changes in their low back as they age, although for most people it causes little pain or loss of function.

Osteoporosis and Fractures - All bones lose bone strength over time. The lumbar vertebrae, particularly in postmenopausal women, can be fractured or compressed from a fall or even from the stress of lifting or everyday activities.

Protruding Disk - The disk is composed of a soft center or nucleus, which, in children and young adults, is jelly-like and functions as a 'cushion' between the vertebrae. A tougher outer portion called the annulus surrounds the nucleus. With normal aging, the nucleus begins to lose its ability to absorb forces on the spine. During middle age, fissures or cracks may occur in the disk. These may be the source of back pain. If the crack extends out of the disk, material from the disk may push out or rupture. This often is referred to as a herniated or slipped disk. If the protruded disk presses a nerve, it may cause pain in the leg.

Preventing Back Pain at Work and at Home

Plan ahead what you want to do and don't be in a hurry. Position yourself close to the object you want to lift. Separate your feet shoulder-width apart to give yourself a solid base of support. Bend at the knees and keep the lower back straight. Tighten your stomach muscles. Lift with your leg muscles as you stand up. Don't try to lift by yourself an object that is too heavy or an awkward shape. Get help.

- To lift a very light object from the floor, such as a piece of paper, lean over the object, slightly bend one knee and extend the other leg behind you. Hold on to a nearby chair or table for support as you reach down to the object.
- Whether you're lifting a heavy laundry basket or a heavy box in your garage, remember to get close to the object, bend at the knees and lift with your leg muscles. Do not bend at your waist. When lifting luggage, stand along side of the luggage, bend at your knees, grasp the handle and straighten up.
- While you are holding the object, keep your knees slightly bent to maintain your balance. If you have to move the object to one side, avoid twisting your body. Point your toes in the direction you want to move and pivot in that direction. Keep the object close to you when moving.
- If you must place an object on a shelf, move as close as possible to the shelf. Spread your feet in a wide stance, positioning one foot in front of the other, to give you a solid base of support. Do not lean forward and do not fully extend your arms while holding the object in your hands.
- If the shelf is chest high, move close to the shelf and place your feet apart and one foot forward. Lift the object chest high, keep your elbows at your side and position your hands so you can push the object up and on to the shelf. Remember to tighten your stomach muscles before lifting.
- Once an hour, if possible, stand and stretch. Place your hands on your lower back and gently arch backward.

What is the best treatment?

Most low back pain can be safely and effectively treated following an examination by your orthopedic surgeon and a prescribed period of activity modification. Anti-inflammatory medication is sometimes helpful. Although a brief period of rest may be helpful, most studies show that light activity speeds healing and recovery. It may not be necessary for you to discontinue all activities, including work. Instead, you may adjust your activity under your orthopedist's guidance.

If there is an acute strain or injury, ice packs applied to the back for 15-20 minutes can help ease pain and spasm for the first 48-72 hours. After that, heat, applied as warm packs, tub soaks, or in the shower can help to relax the back muscles and increase circulation.

Once the initial pain has eased, a rehabilitation program may be suggested to increase your muscle strength in your low back and abdominal muscles as well as some stretching exercises to increase your flexibility. Weight loss if you are overweight will decrease the chances of a recurrence of your low back pain. The best long-term treatment is an active prevention program of maintaining your physical condition and observing proper lifting and postural activities to prevent further injuries.

When is surgery needed?

Most low back pain, whether acute or chronic, almost always can be treated without surgery.

The most common reason for surgery on the lower back is to remove the pressure from a "slipped disk" when it causes nerve and leg pain and has not responded to other treatments. Some arthritic conditions of the spine, when severe, also can cause pressure and nerve irritation, and often can be improved with surgical treatment.

In most cases, low back pain is temporary and will resolve over several weeks when following the instructions given in this handout. However, if your pain is worsening or has not resolved after 6 weeks, contact your doctor promptly.

Exercises to minimize problems with back pain

You can minimize problems with back pain with exercises that make the muscles in your back, stomach, hips and thighs strong and flexible. Some people keep in good physical condition by being active in recreational activities like running, walking, bike riding, and swimming. In addition to these conditioning activities, there are specific exercises that are directed toward strengthening and stretching your back, stomach, hip and thigh muscles. Before beginning any exercise program, you should discuss the program with your doctor and follow the doctor's advice. It is important to exercise regularly, every other day.

Starting the Exercise Program

The exercises for the back are described and illustrated in the back of this handout. When beginning the back exercise routine, start with exercises 1 to 3 for the first week. If there are no new symptoms in your back, add exercises 4 to 6 the second week. If you are doing well at the third week, add exercises 7 to 9. Do the exercises regularly; every other day should be adequate. Do exercises 1,2,5,6 and 7 before and after sports and recreational exercise. If any particular exercise(s) causes pain, stop doing that exercise and contact:

Aerobic Exercise

The best aerobic exercises for people who have low-back pain are walking, swimming, and biking (perhaps on a stationary exercise bicycle). These allow you to work out without subjecting your back to the repeated impact produced by jogging or aerobic dance. To keep your back and whole body in top condition, build up to a regular schedule of 20 to 40 minutes of exercise 3 to 5 days a week. If you aren't used to exercise, start slowly. If you walk, stand comfortably straight without slouching. Preserve a slight arch in your lower back, and keep your stomach muscles slightly tensed. If you bike, adjust the pedals and handlebars so you can sit up straight, without leaning forward.

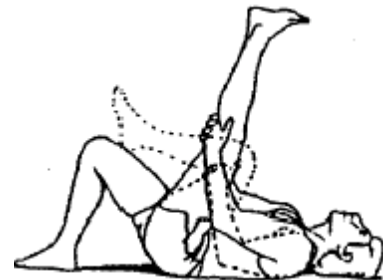
Do not attempt the following exercises if they cause any pain.

1. Starting with the knees **bent**, pull knee to chest and hold the stretched position for 5 to 10 seconds. Alternate sides, repeat 5 to 10 times each.



2. Starting with the knees bent as illustrated, flatten the lower back into the bed or floor. This motion is done by rotation of the pelvis or hip bones. Hold the back flat for 5 to 10 seconds. Repeat 10 times.

3. Starting with both knees bent, grasp **the** leg behind - the knee and pull toward you until the knee points vertically. While holding the leg in this position, slowly straighten your knee until a stretch is felt in the back of your thigh. Hold 5 to 10 seconds and repeat 5 times on each side.

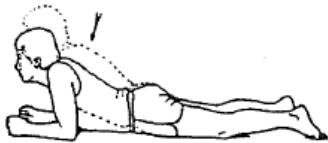


4. Starting with the knees bent, pull both knees to chest and hold the stretched position for 5 to 10 seconds. Repeat 5 to 10 times each.



5. Starting with the knees bent, reach toward the knees and lift the head and shoulders off of the floor or bed until the finger tips touch the knees. Hold this position for 5 seconds and repeat 10 times.

6. Lie on your back. Rotate **the right** hip externally as shown while bringing the knee and thigh toward **the** chest. Maintain the hip in external rotation while continuing to stretch the thigh toward the chest. Hold 5 to 10 seconds and repeat 5 times on each side.



7. Lie face down on the bed or floor. Gently prop up onto your forearms as shown. Allow your back to gently arch without pain. Hold 10 seconds. Repeat 6 to 10 times.

8. Starting on your hands and knees, alternatively lift your leg as shown. Hold the straight position for 5 seconds. Avoid arching your back. **DO NOT DO THIS EXERCISE IF IT CAUSES PAIN.** Repeat 6 to 10 times each leg.

