

# LOW BACK SPRAIN



## ■ ■ ■ Description

Low back sprain is an injury to the ligaments of the lower back or pelvis. These ligaments are very strong and require great force to be injured. The ligaments of the lower back and pelvis are important in maintaining the stability to the spinal column and thus the ability to stand upright while still being able to move, bend, and twist the back.

## ■ ■ ■ Common Signs and Symptoms

- Severe pain in the back, occasionally with a feeling of a pop, snap, or tear, at the time of injury
- Tenderness and occasionally swelling at the injury site
- Uncommonly, bruising after 24 to 48 hours
- Muscle spasms in the back

## ■ ■ ■ Causes

This injury is caused by stress on a ligament that temporarily forces the bony spine or pelvis out of its normal location. A sprain of the low back often occurs when a stressful act is performed while off-balance or during repeated stressful activity involving the muscles of the low back. It may also occur due to a direct blow. Sprains of the low back usually require a significant amount of force.

## ■ ■ ■ Risk Increases With

- Contact sports (football or wrestling); also common in major skiing accidents or other collisions
- Sports that require throwing or lifting (including weightlifting)
- Sports involving twisting of the spine (gymnastics, diving, tennis, golf)
- Poor physical conditioning (strength and flexibility)
- Inadequate protection
- Previous back injury or surgery (especially fusion)

## ■ ■ ■ Preventive Measures

- Wear proper protective equipment and ensure correct fit.
- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
  - Back and hamstring flexibility
  - Muscle strength and endurance
  - Cardiovascular fitness
  - Ideal body weight

## ■ ■ ■ Expected Outcome

This condition is usually curable with appropriate treatment, although healing may be prolonged, depending on the severity of injury.

## ■ ■ ■ Possible Complications

- Frequent recurrence of symptoms, resulting in a chronic problem; appropriately addressing the problem the first time decreases frequency of recurrence
- Chronic inflammation and pain in the low back
- Delayed healing or resolution of symptoms, particularly if activity is resumed too soon
- Prolonged disability
- Unstable or arthritic joints of the low back

## ■ ■ ■ General Treatment Considerations

The injury to the back results in pain and inflammation. The pain and inflammation result in muscle spasms of the back muscles, which in turn result in more pain. Thus the initial treatment consists of rest, medications, and ice to relieve pain, inflammation, and muscle spasms. As pain and spasms subside, exercises to improve strength and flexibility and proper back mechanics are started. Referral to a physical therapist or athletic trainer may be recommended for these exercises, education regarding back mechanics, and possibly other treatments, such as transcutaneous electronic nerve stimulation (TENS) or ultrasound. A corset or back brace may be recommended. Biofeedback and psychotherapy may be prescribed too. Prolonged bed rest is felt to be of more harm than good at this time. Occasionally an injection of cortisone, with or without local anesthetics, may be attempted to help relieve the pain and spasms. Bending your knees to pick things up off the ground (as opposed to bending at the waist), laying flat on your back on a firm mattress with a pillow under your knees, and using good posture when sitting are helpful. With severe sprains involving more than one ligament, resulting in the spinal column or pelvis being unstable, surgery may be required to stabilize the spine and pelvis.

## ■ ■ ■ Medication

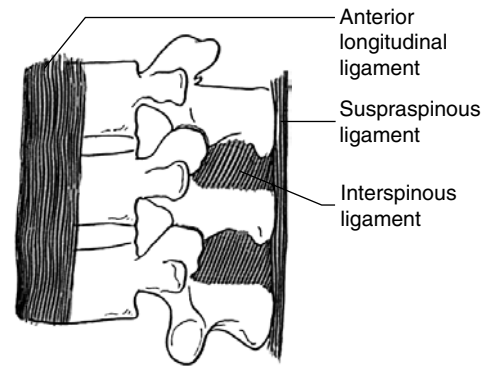
- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Topical ointments may be of benefit.
- Pain relievers and muscle relaxants may be prescribed as necessary by your physician. Use only as directed and only as much as you need. Do not use any heavy machinery or drive a car while taking these medications.
- Oral corticosteroids or injections of corticosteroids into the spot of the most muscle spasms or pain may be attempted.

### ■ ■ ■ Heat and Cold

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

### ■ ■ ■ Notify Our Office If

- Symptoms get worse or do not improve in 2 to 4 weeks despite treatment
- You develop numbness or weakness in either leg
- You lose bowel or bladder function
- Any of the following occur after surgery: fever, increased pain, swelling, redness, drainage, or bleeding in the surgical area
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)



**Figure 1**

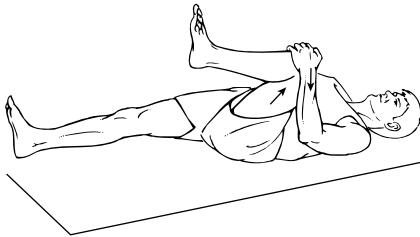
From Jenkins DB: Hollinshead's Functional Anatomy of the Limbs and Back, 6th ed. Philadelphia, WB Saunders, 1991, p. 191.

➤ **RANGE OF MOTION AND STRETCHING EXERCISES** • Low Back Sprain

The exact range of motion and stretching exercises appropriate for you *usually* need to be determined on an individual basis. Some individuals respond better to flexion (pulling your knees to your chest), whereas others respond better to extension (placing an arch in your back). *The key point to remember is that if any exercise (range of motion, stretching, or strengthening) causes pain to radiate away from your back and toward your buttocks or legs, stop immediately. The purpose of these exercises is to begin to decrease the intensity and the size of the area of your pain.*

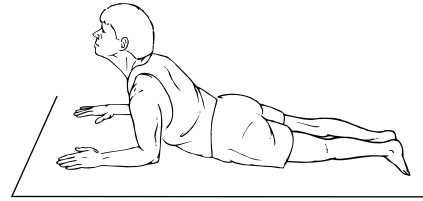
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Flexion and extension exercises are presented. *The specific exercises that are appropriate for you must be specified by your physician, physical therapist, or athletic trainer before you start them.* Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.
- If pain or other symptoms radiate away from the back toward the buttocks or legs, stop the exercises immediately.



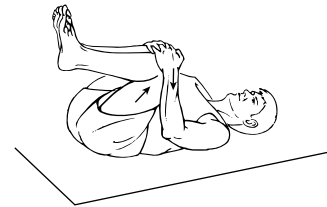
**LUMBAR FLEXION** • Single Knee to Chest

1. Lie on your back with both legs flat on the floor.
2. Bend one hip and knee up toward your chest.
3. Grasp knee with your hand(s) and pull it gently toward your chest.
4. Keep the other leg flat on the floor while doing this exercise.
5. Repeat with the opposite side.
6. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day. Hold each repetition 5 to 10 seconds.



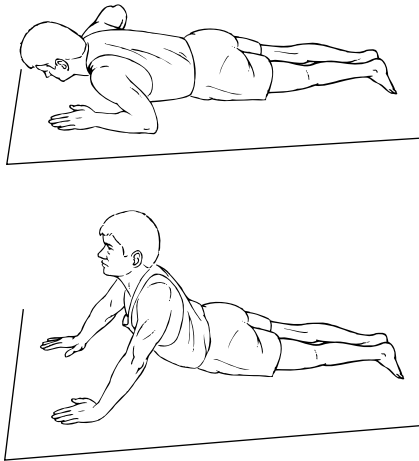
**LUMBAR EXTENSION** • Prone on Elbows

1. Lie on your stomach on the floor.
2. Place your arms underneath you and “prop” up on your elbows as shown.
3. Allow your back to relax and sag. Hold this position for 30 to 45 seconds.
4. Return to your starting position, lying on your stomach, flat on the floor.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



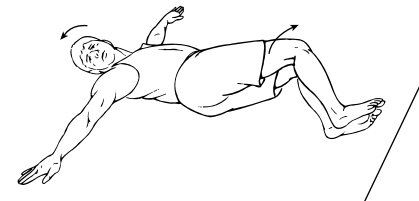
**LUMBAR FLEXION** • Double Knee to Chest

1. Lie on your back with both legs flat on the floor.
2. Bend one hip and knee up toward your chest and then the other.
3. Grasp your knees with your hands and pull them gently toward your chest.
4. Hold this stretch position for 5 to 10 seconds.
5. Release one knee, allowing the leg to return to the floor, then release the other.
6. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



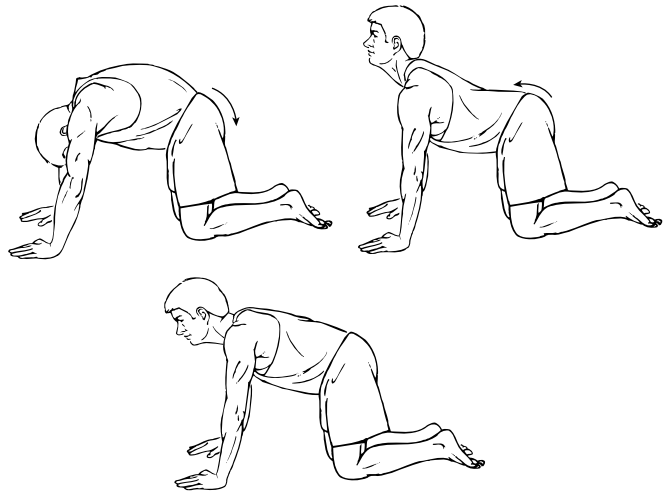
### LUMBAR EXTENSION • Prone Press Ups

1. Lie on your stomach on the floor as shown in the picture.
2. Place your palms flat on the floor. Push down on your hands, straightening out your arms and putting an arch in your back. Straighten your elbows fully, while keeping your hips on the floor.
3. Return to your starting position.
4. If you are unable to fully straighten your elbows while keeping your back relaxed, place your hands farther in front of you and try again.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day. Hold each repetition 5 to 10 seconds.



### LUMBAR ROTATION

1. Lie on your back with your hips and knees bent, feet flat on the floor.
2. Keep your arms out at your sides and your shoulders flat on floor.
3. Rotate hips and knees to one side as far as you can while keeping arms and shoulders flat on floor. Hold this position for \_\_\_\_\_ seconds.
4. Reverse position and rotate your hips and knees to the opposite side. Hold this position for \_\_\_\_\_ seconds.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



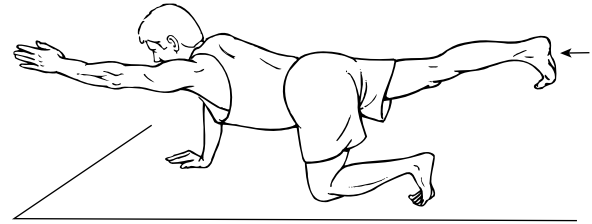
### LUMBAR NEUTRAL POSITION

1. Position yourself on your hands and knees as shown.
2. Tighten your stomach muscles and tuck your pelvis/hips under, arching your back as shown in the diagram. Hold this position for \_\_\_\_\_ seconds.
3. Tighten your back muscles, rotating your buttocks up and allowing your back to arch/sag as shown. Hold this position for \_\_\_\_\_ seconds.
4. Find a middle/neutral position. Tighten your stomach and back muscles. Hold this position for \_\_\_\_\_ seconds.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

**> STRENGTHENING EXERCISES • Low Back Sprain**

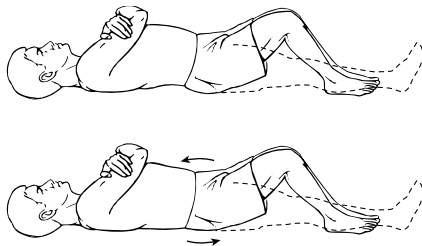
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.
- If pain or other symptoms radiate away from the back toward the buttocks or legs stop the exercises immediately.



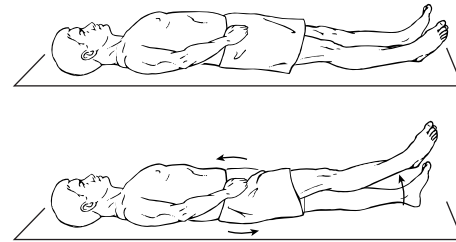
**QUADRIPED • Opposite UE/LE Lift**

1. Position yourself on your hands and knees.
2. Keep your back flat and parallel to the floor. **Do not allow it to arch or move during this exercise.**
3. Lift your *left* arm up to shoulder height. Hold this position and lift your *right* leg to the same height.
4. Balance and hold this position for 15 to 30 seconds.
5. Return to starting position and repeat with the opposite arm and leg.
6. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day. Do not hold your breath. Count out loud.



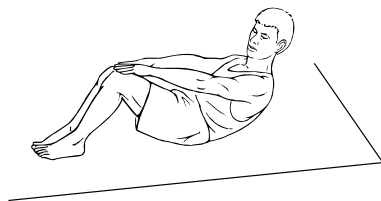
**PELVIC TILT**

1. Lie on the floor as shown. You may do this exercise with your knee bent or straight. It is harder with the knees straight.
2. Tighten your stomach and buttock muscles and push back flat onto floor. If you do this properly your pelvis will rotate in the direction shown in the diagram. Hold each repetition 15 to 20 seconds.
3. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day. Do not hold your breath. Count out loud.



**PELVIC TILT AND SLR**

1. Lie on the floor as shown. You may do this exercise with your knee bent or straight. It is harder with the knees straight.
2. Tighten your stomach and buttock muscles and push back flat onto floor. If you do this properly your pelvis will rotate in the direction shown in the diagram.
3. While keeping your back flat on floor, slowly lift one leg off the floor 6 inches while keeping your knee straight. **Do not let your back arch. Count out loud to 15.**
4. Repeat with the opposite leg.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



**PARTIAL SIT UPS**

1. Lie flat on your back with your hands resting on your thighs.
2. Tuck your chin to your chest.
3. Slowly sit up until you touch the top of your knees.
4. Hold this position for a count of 15. **Count out loud. Do not hold your breath!**
5. Return to the starting position.
6. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

### ➤ POSTURE AND BODY MECHANICS CONSIDERATIONS • Low Back Sprain

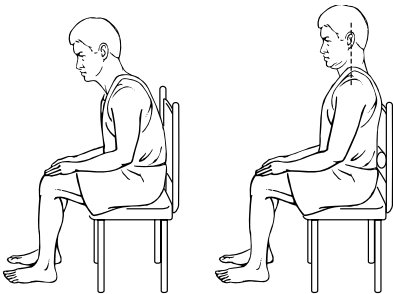
Maintaining the most appropriate posture and using correct body mechanics can have a significant effect on back pain. The following are basic suggestions regarding proper posture and body mechanics. These should be specifically discussed with your physician, physical therapist, or athletic trainer. Please remember:

- Good posture minimizes the stress and strain on any portion of your spine.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer.
- Incorporate these exercises and posture principles into all of your daily and recreational activities.



### RESTING POSITIONS

Sleep or rest on a firm surface. Find a position of comfort. The most commonly suggested positions are sidelying with a pillow between your knees or on your back with a pillow under your knees.



### PROPER SITTING POSTURE

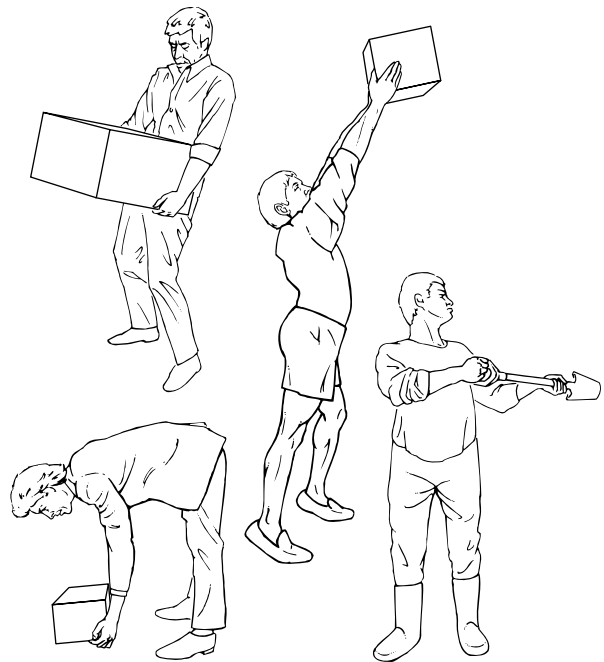
Do not slouch sit! Sit with a small rolled-up towel, foam cushion, or pillow in your low-back area, just above your belt. Sit with your buttocks all the way back in the chair.



### CORRECT LIFTING TECHNIQUES

#### DO:

- Lift with your legs, keeping your back straight.
- Use a footstool for objects that need to be placed or retrieved from high locations.
- Use two people for heavy or awkward objects.



### INCORRECT LIFTING TECHNIQUES

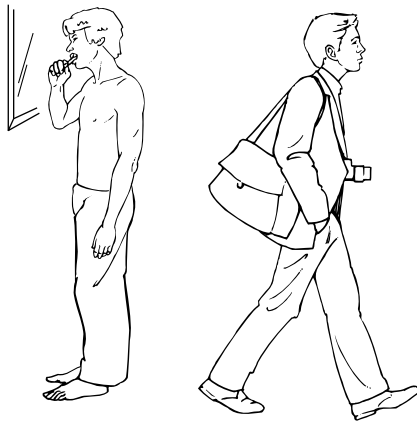
#### DO NOT:

- Lift with your legs straight and your back flexed/bent.
- Lift objects that are too heavy over your head.
- Ever lift and twist at the same time.
- Lift an object that is too heavy or awkwardly shaped without help.



**PROLONGED STANDING IN SLIGHT FLEXION**

When you must stand in a position that requires a prolonged period of time and slight flexion, consider finding a foot stool or other object to place one foot on. This will assist in minimizing the load on your back.



**CORRECT STANDING POSTURES**

Stand upright and erect whenever possible.



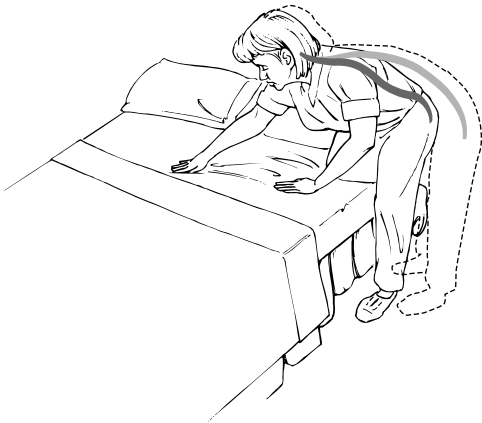
**LIFTING**

Do not round out your back when lifting any object. You should make sure that you bend your knees and attempt to maintain a normal curve in your spine.



**INCORRECT STANDING POSTURES**

Do not slouch or maintain flexed standing postures for prolonged periods of time.



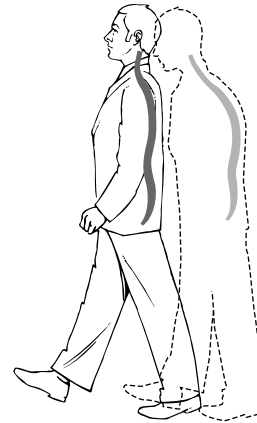
### PROLONGED ACTIVITY IN A FLEXED POSITION

Try to avoid doing any activity in a flexed position for a prolonged period of time. Put one leg up if possible, which will minimize stress on your back. You should also attempt to keep a normal spinal posture when doing any activity.



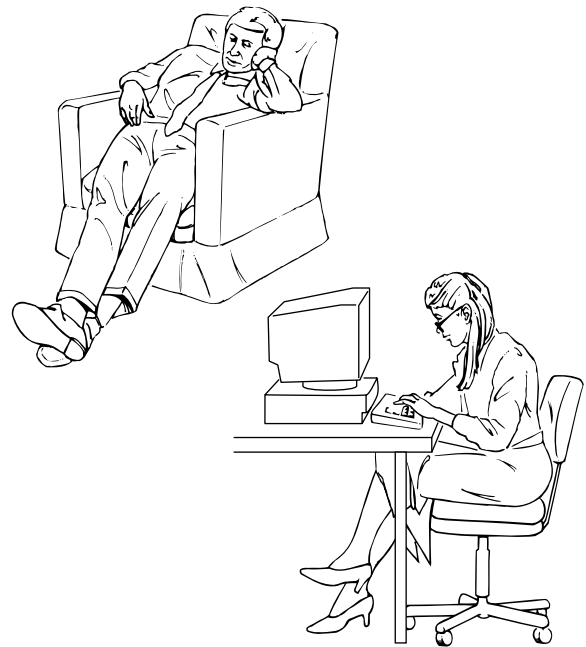
### CORRECT SITTING POSTURES

Sit Erect. Use a lumbar roll, cushion, or pillow. Use a chair that has a high enough back to support your back up to your shoulder blades.



### SLOUCHING

Avoid slouching when you walk or stand. Stand up straight. Walk erect and tall.



### INCORRECT SITTING POSTURES

Do not slouch or slump. Maintain a proper position in the chair.



Notes:

(Up to 4400 characters only)

Notes and suggestions