

Herniated Disk

A common source of back or neck pain is a herniated disk. Sometimes called a "slipped" or "ruptured" disk, this condition most often occurs in the lower back, as well as the smaller disks in the neck.

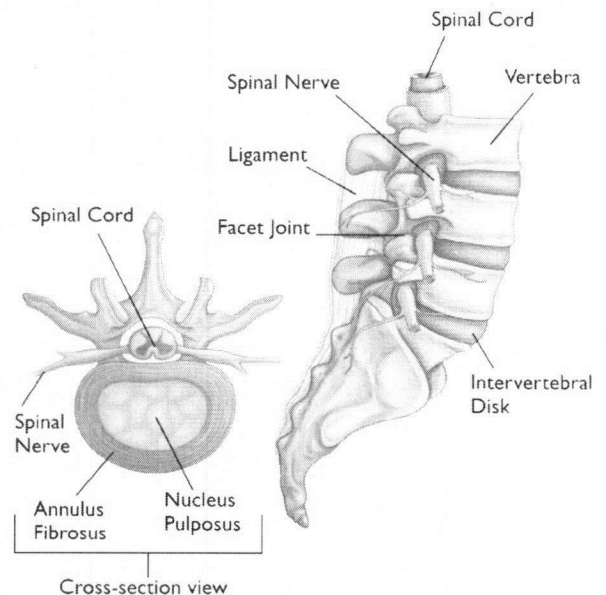
Although a herniated disk can sometimes be very painful, most people feel much better with just a few months of simple, nonsurgical treatments.

Anatomy

Disks are soft, rubbery pads found between the hard bones (vertebrae) that make up the spinal column. The disks between the vertebrae allow the back to flex or bend. Disks also act as shock absorbers.

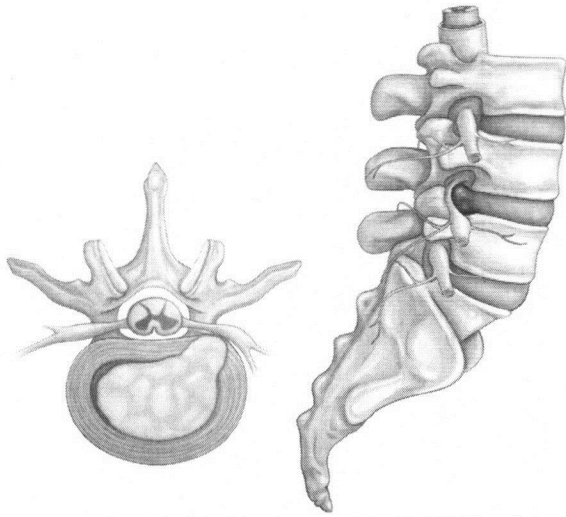
Disks in the lumbar spine (low back) are composed of a thick outer ring of cartilage (annulus) and an inner gel-like substance (nucleus). In the cervical spine (neck), the disks are similar but smaller in size.

The normal anatomy of the lower spine (side view). The close-up shows a cross-section view of a healthy intervertebral disk.



Cause

A disk herniates or ruptures when part of the center nucleus pushes through the outer edge of the disk and back toward the spinal canal. This puts pressure on the nerves. Spinal nerves are very sensitive to even slight amounts of pressure, which can result in pain, numbness, or weakness in one or both legs.



A disk begins to herniate when its jelly-like nucleus pushes against its outer ring due to wear and tear or a sudden injury.

Risk Factors

In children and young adults, disks have high water content. As people age, the water content in the disks decreases and the disks become less flexible. The disks begin to shrink and the spaces between the vertebrae get narrower. Conditions that can weaken the disk include:

- Improper lifting
- Smoking
- Excessive body weight that places added stress on the disks (in the lower back)
- Sudden pressure (which may be slight)
- Repetitive strenuous activities

Symptoms

Lower Back

Low back pain affects many people. Pain alone is not enough to recognize a herniated disk. See your doctor if back pain results from a fall or a blow to your back. The most common symptom of a herniated disk is sciatica—a sharp, often shooting pain that extends from the buttocks down the back of one leg. It is caused by pressure on the spinal nerve. Other symptoms include:

- Back pain
- Weakness in the leg and/or foot
- Tingling (a "pins-and-needles" sensation) or numbness in the leg and/or foot
- Loss of bladder or bowel control (This is rare and may indicate a more serious problem called cauda equina syndrome. This condition is caused by the spinal nerve roots being compressed. It requires

immediate medical attention.)

Neck

As with pain in the lower back, neck pain is also common. When pressure is placed on a nerve in the neck, it causes pain in the muscles between your neck and shoulder (trapezius muscles). The pain may shoot down the arm. Other symptoms include:

- Weakness in one arm
- Tingling (a "pins-and-needles" sensation) or numbness in one arm
- Burning pain in the shoulders, neck, or arm

Doctor Examination

To determine whether you have a herniated disk, your doctor will ask you for a complete medical history and conduct a physical examination.

A physical examination will help determine which nerve roots are affected.

To help confirm a diagnosis of herniated disk, your doctor may recommend a magnetic resonance imaging (MRI) scan. This test can create clear images of soft tissues like intervertebral disks.

Treatment

Nonsurgical Treatment

Nonsurgical treatment is effective in treating the symptoms of herniated disks in the majority of patients. Most neck or back pain will resolve gradually with simple measures.

- Rest and over-the-counter pain relievers may be all that is needed.
- Muscle relaxers, analgesics, and anti-inflammatory medications are also helpful.
- Cold compresses or ice can also be applied several times a day for no more than 20 minutes at a time.
- After any spasms settle, gentle heat applications may be used.

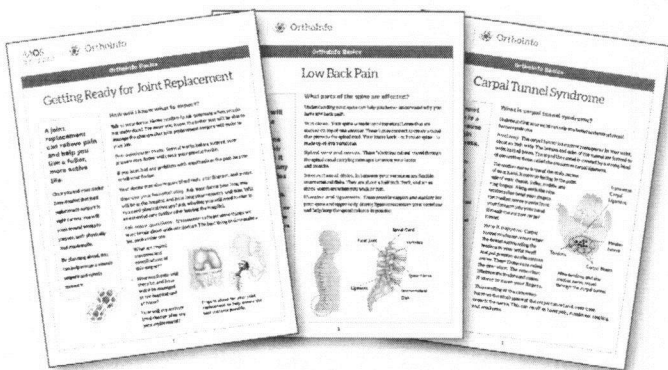
Any physical activity should be slow and controlled, especially bending forward and lifting. This can help ensure that symptoms do not return, as can taking short walks and avoiding sitting for long periods. For the lower back, exercises may also be helpful in strengthening the back and abdominal muscles. For the neck, exercises or traction may also be helpful. To help avoid future episodes of pain, it is essential that you learn how to properly stand, sit, and lift.

If these nonsurgical treatment measures fail, epidural injections of a cortisone-like drug may lessen nerve irritation and allow more effective participation in physical therapy. These injections are given on an outpatient basis over a period of weeks.

Surgical Treatment

Only a small percentage of patients with disk herniations require surgery. Spine surgery is typically recommended only after a period of nonsurgical treatment has not relieved painful symptoms.

- **Lumbar microdiscectomy.** This is the most common procedure for a herniated disk in the lower back. Microdiscectomy involves removing the herniated part of the disk and any fragments that are putting pressure on the spinal nerve.
- **Cervical discectomy and fusion.** Cervical discectomy is a procedure for the herniated disk in the neck. To relieve pressure, the entire herniated disk is removed. Bone is placed in the disk space and a metal plate may be used to help support the spine.



Information on this topic is also available as an OrthoInfo Basics PDF Handout.

For more information:

Basics Handouts

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Last Reviewed

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Prepared for: _____

Prepared by: _____

Spine Conditioning Program

Purpose of Program

After an injury or surgery, an exercise conditioning program will help you return to daily activities and enjoy a more active, healthy lifestyle. Following a well-structured conditioning program will also help you return to sports and other recreational activities.

This is a general conditioning program that provides a wide range of exercises. To ensure that the program is safe and effective for you, it should be performed under your doctor's supervision. Talk to your doctor or physical therapist about which exercises will best help you meet your rehabilitation goals.

Strength: Strengthening the muscles that support your spine will help keep your back and upper body stable. Keeping these muscles strong can relieve back pain and prevent further injury.

Flexibility: Stretching the muscles that you strengthen is important for restoring range of motion and preventing injury. Gently stretching after strengthening exercises can help reduce muscle soreness and keep your muscles long and flexible.

Target Muscles: The muscle groups targeted in this conditioning program include:

- Cervical spine (neck)
- Trapezius (neck and upper back)
- Latissimus dorsi (side and middle back)
- Back extensors and erector spinae (middle and lower back)
- Quadratus lumborum (lower back)
- Abdominals
- External oblique rotators (side and lower back)
- Internal oblique rotators (side and lower back)
- Piriformis (buttocks)
- Gluteus maximus (buttocks)
- Gluteus medius (buttocks)
- Hamstrings (back of thigh)

Length of program: This spine conditioning program should be continued for 4 to 6 weeks, unless otherwise specified by your doctor or physical therapist. After your recovery, these exercises can be continued as a maintenance program for lifelong protection and health of your shoulders. Performing the exercises two to three days a week will maintain strength and range of motion in your back.

Getting Started

Warm up: Before doing the following exercises, warm up with 5 to 10 minutes of low impact activity, like walking or riding a stationary bicycle.

Stretch: After the warm-up, do the stretching exercises shown on Page 1 before moving on to the strengthening exercises. When you have completed the strengthening exercises, repeat the stretching exercises to end the program.

Do not ignore pain: You should not feel pain during an exercise. Talk to your doctor or physical therapist if you have any pain while exercising.

Ask questions: If you are not sure how to do an exercise, or how often to do it, contact your doctor or physical therapist.



Spine Conditioning Program STRETCHING EXERCISES

1. Head Rolls

Repetitions

3 sets of 3

Days per week

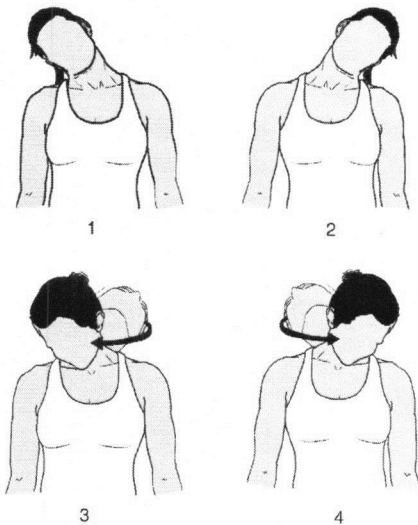
Daily

Main muscles worked: Cervical spine muscles, trapezius
You should feel this stretch all around your neck and into your upper back

Equipment needed: None

Step-by-step directions

- Sit in a chair or stand with your weight evenly distributed on both feet.
- Gently bring your chin toward your chest.
- Roll your head to the right and turn so that your ear is over your shoulder (1). Hold for 5 seconds.
- Gently roll your head back toward your chest and to the left. Turn your head so that your ear is over your left shoulder (2). Hold for 5 seconds.
- Slowly roll your head back and in a clockwise circle three times (3).
- Reverse directions and slow roll your head in a counterclockwise circle three times (4).



Tip Do not shrug your shoulders up during this exercise.

2. Kneeling Back Extension

Repetitions

10

Days per week

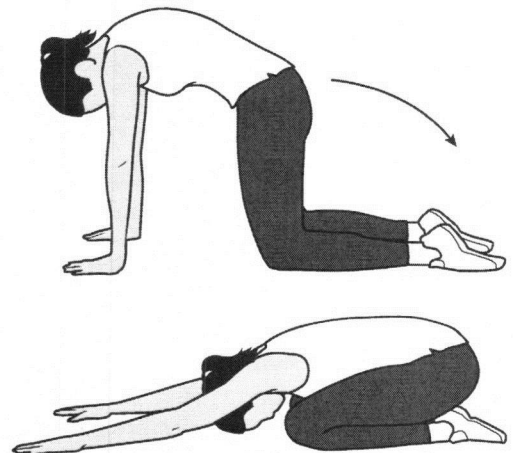
Daily

Main muscles worked: Quadratus lumborum, erector spinae
You should feel this stretch in your lower back and your abdominals

Equipment needed: None

Step-by-step directions

- Begin on your hands and knees with your shoulders positioned over your hands.
- Rock forward onto your arms, round your shoulders and allow your low back to drop toward the floor. Hold for 5 seconds.
- Rock backward and sit your buttocks as close to your heels as possible. Extend your arms and hold for 5 seconds.



Tip Look down on the floor to keep your neck in alignment with your spine.



Spine Conditioning Program STRETCHING EXERCISES

3. *Sitting Rotation Stretch*

Repetitions

2 sets of 4

Days per week

Daily

Main muscles worked: Piriformis, external oblique rotators, internal oblique rotators
You should feel this stretch in your buttocks, as well as at your sides

Equipment needed: None



Step-by-step directions

- Sit on the floor with both legs straight out in front of you. Cross one leg over the other.
- Slowly twist toward your bent leg, putting your hand behind you for support.
- Place your opposite arm on the side of your bent thigh and use it to help you twist further.
- Look over your shoulder and hold the stretch for 30 seconds. Slowly come back to center.
- Repeat on the other side. Repeat the entire sequence 4 times.

Tip Sit up tall and keep your sit bones pressed into the floor throughout the stretch.

4. *Modified Seat Side Straddle*

Repetitions

10 each side

Days per week

Daily

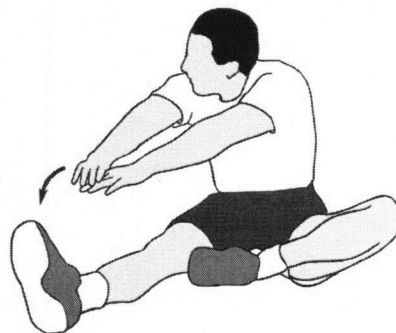
Main muscles worked: Hamstrings, extensor muscles, erector spinae
You should feel this stretch in the back of your thighs and into your lower and middle back

Equipment needed: None

Step-by-step directions

- Sit on the floor with one leg extended to the side and the other leg bent.
- Keep your back straight and bend from your hips toward the foot of your straight leg. Reach your hands toward your toes and hold for 5 seconds.
- Slowly round your spine and bring your hands to your shin or ankle. Bring your head down as close to your knee as possible.
- Hold for 30 seconds and then relax for 30 seconds.
- Repeat on the other side. Repeat the sequence 10 times.

Tip Keep your extended leg straight as you bring your head down.





Spine Conditioning Program STRETCHING EXERCISES

5. *Knee to Chest*

Repetitions

3 sets of 10

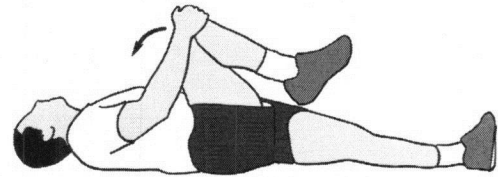
Days per week

Daily

Main muscles worked: Quadratus lumborum

You should feel this stretch in your lower back, as well as in the front of your hip and inner thigh

Equipment needed: None



Step-by-step directions

- Lie on your back on the floor.
- Lift one leg and bring your knee toward your chest. Grasp your knee or shin and pull your leg in as far as it will go.
- Tighten your abdominals and press your spine to the floor. Hold for 5 seconds.
- Repeat on the other side, then pull both legs in together. Repeat the sequence 10 times.

Tip Keep your spine aligned to the floor throughout the sequence.



Spine Conditioning Program STRENGTHENING EXERCISES

6. Bird Dog

Repetitions

5

Days per week

Daily

Main muscles worked: Back extensors, erector spinae, gluteal muscles
You should feel this exercise in your lower back and into your buttocks

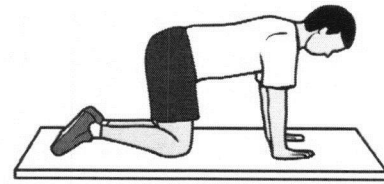
Equipment needed: None

Step-by-step directions

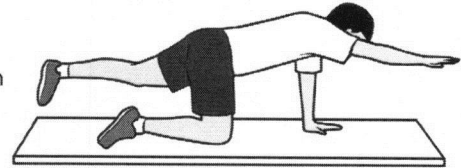
- Begin on your hands and knees with your shoulders positioned over your hands and your hips directly over your knees.
- Tighten your abdominal muscles and raise one arm straight out to shoulder-height and level with your body. Hold until you feel balanced.
- Slowly lift and extend the opposite leg straight out from your hip.
- Tighten the muscles in your buttocks and thigh, and hold this position for 15 seconds.
- Slowly return to the start position and repeat with the opposite arm and leg.

Tip Keep your stomach muscles tight and your back flat to stay balanced.

Start



Finish



7. Plank

Repetitions

5

Days per week

Daily

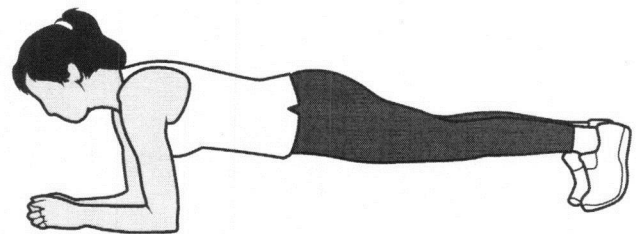
Main muscles worked: Back extensors, erector spinae, quadratus lumborum, abdominals
You should feel this exercise in your middle to lower back, abdominals, and gluteal muscles

Equipment needed: None

Step-by-step directions

- Lie on your stomach with your forearms on the floor and your elbows directly below your shoulders.
- Tighten your abdominal muscles and lift your hips off of the floor.
- Squeeze your gluteal muscles and lift your knees off of the floor.
- Keep your body straight and hold for 30 seconds. If you cannot hold this position, bring your knees back to the floor and hold with just your hips lifted.
- Slowly return to the start position and rest 30 seconds. Repeat.

Tip Do not let your pelvis sag toward the floor. Keep your stomach muscles tight.





Spine Conditioning Program STRENGTHENING EXERCISES

8. Modified Side Plank

Repetitions

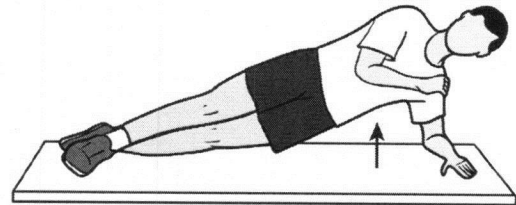
5

Main muscles worked: Quadratus lumborum, external oblique rotators, internal oblique rotators
You should feel this exercise in your lower back, waist, and abdominals

Days per week

Daily

Equipment needed: None



Step-by-step directions

- Lie on your side on the floor with your bottom leg slightly bent and top leg straight. Your elbow should be directly under your shoulder with your forearm extended on the floor in front of you.
- Tighten your abdominal muscles and raise your hip off of the floor.
- If you can, straighten your bottom leg and lift your knee off of the floor as shown.
- Keep your body straight and hold this position for 15 seconds.
- Slowly return to the start position and repeat on the other side.

Tip Keep neck in alignment with your spine and do not shrug your shoulder up to your ear.

9. Hip Bridge

Repetitions

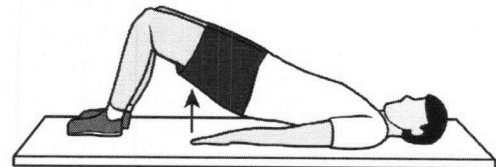
5

Main muscles worked: Lower back extensor, erector spinae, gluteal muscles, hamstrings
You should feel this exercise in your lower back, buttocks, and back of your thigh

Days per week

Daily

Equipment needed: None



Step-by-step directions

- Lie on your back on the floor with your arms at your sides, your knees bent, and your feet flat on the floor.
- Tighten your abdominal and gluteal muscles and lift your pelvis so that your body is in a straight line from your shoulders to your knees.
- Hold this position for 15 seconds.
- Slowly return to the start position and repeat.

Tip Center your weight over your shoulder blades. Do not tense up in your neck.



Spine Conditioning Program STRENGTHENING EXERCISES

10. Abdominal Bracing

Repetitions

5

Main muscles worked: Abdominals

You should feel this exercise in your stomach muscles

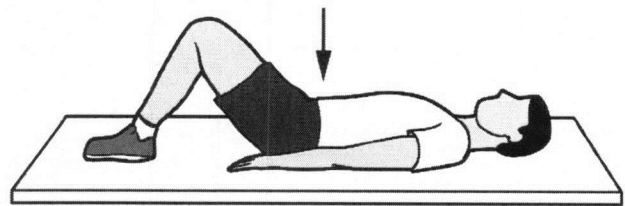
Days per week

Daily

Equipment needed: None

Step-by-step directions

- Lie on your back on the floor with your knees bent and arms at your sides.
- Tighten your abdominal muscles so that your stomach pulls away from your waistband.
- Hold this position for 15 seconds.



Tip

Flatten your lower back into the floor.

11. Abdominal Crunch

Repetitions

2 sets of 10

Main muscles worked: Abdominals

You should feel this exercise in your stomach muscles

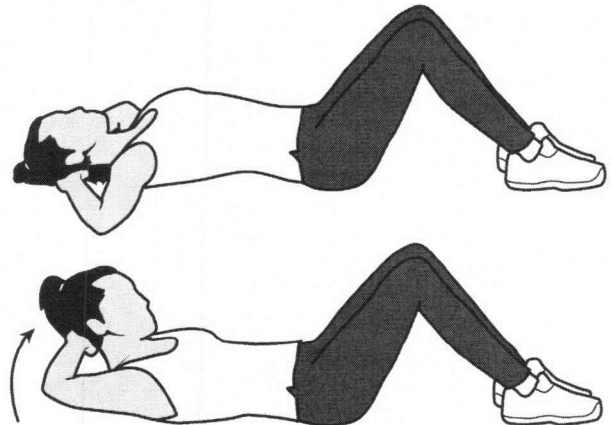
Days per week

Daily

Equipment needed: None

Step-by-step directions

- Lie on your back on the floor with your knees bent and hands at the back of your head with your elbows open wide.
- Tighten your abdominal muscles and lift your head and shoulder blades off of the floor.
- Keep your back flat to the floor and hold for 2 seconds.
- Slowly lower and repeat.



Tip

Relax your neck and do not pull on your head with your hands.