

BACK HEALTH AND SAFETY

Adapted from the
Office of Research Services serving the
National Institutes of Health

Back Pain & Strain



In a 3-month period, about one-fourth of U.S. adults experience at least 1 day of back pain.

It is one of our society's most common medical problems.

Maintain Your Curves

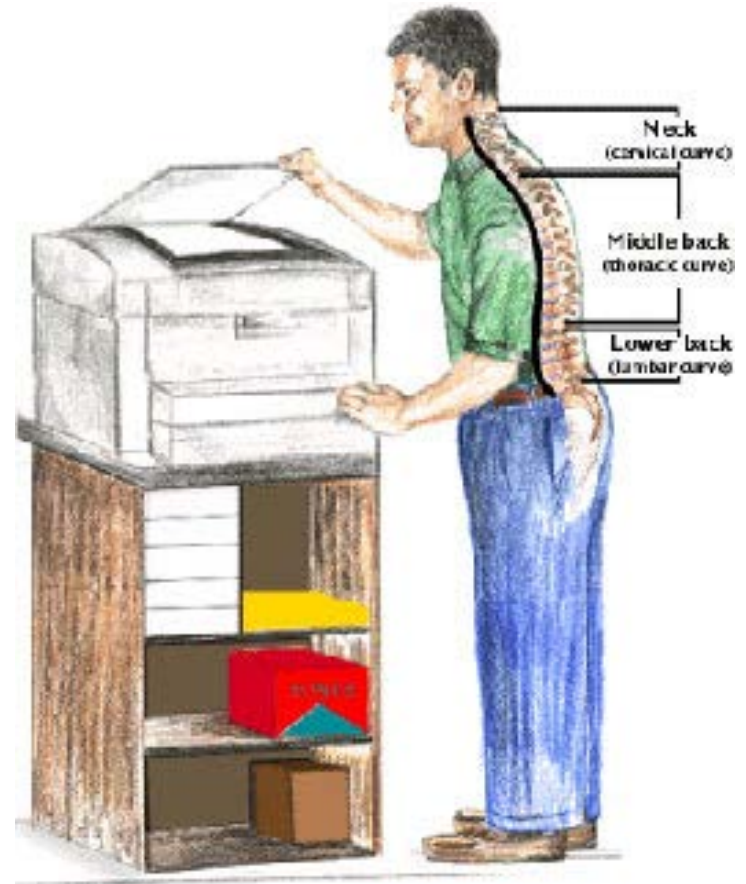
- The muscles in the back are unlike many other muscles in your body— they are almost always in use.
- They hold your torso in an upright position throughout your day. They assist you every time you pick something up, whether it's a pen or a concrete block.
- They support posture while you sit in your chair, and they even work at night when you sleep

Good Posture

- Three Curves of Your Back: Your back is composed of three natural curves that form an **S-shape**. When your three **natural curves** are properly aligned, your ears, shoulders, and hips are in a straight line.
- Without support from strong, flexible muscles, your back loses its three **natural curves (neutral position)**.
- Poor posture can lead to pain and serious injury.

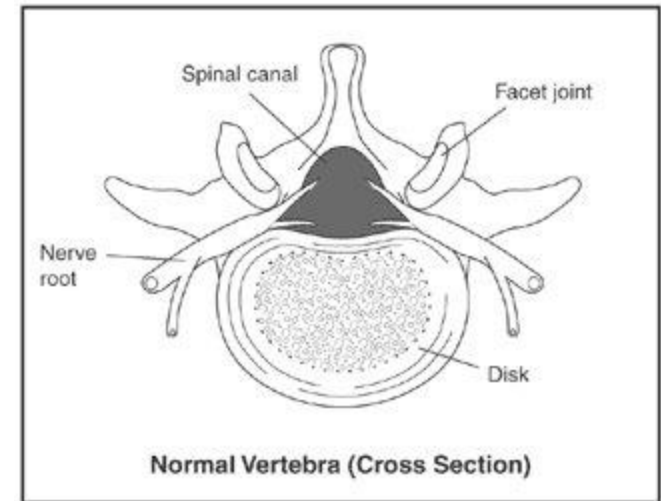
S-Curve

- When you use good posture, your back is aligned in three **natural curves** supported by strong, flexible muscles. Good posture helps prevent back strain and pain.



Disc

- ✓ A circular piece of cushioning tissue situated between each vertebrae of the spine.
- ✓ Each disk has a strong outer cover and a soft jelly-like filling.



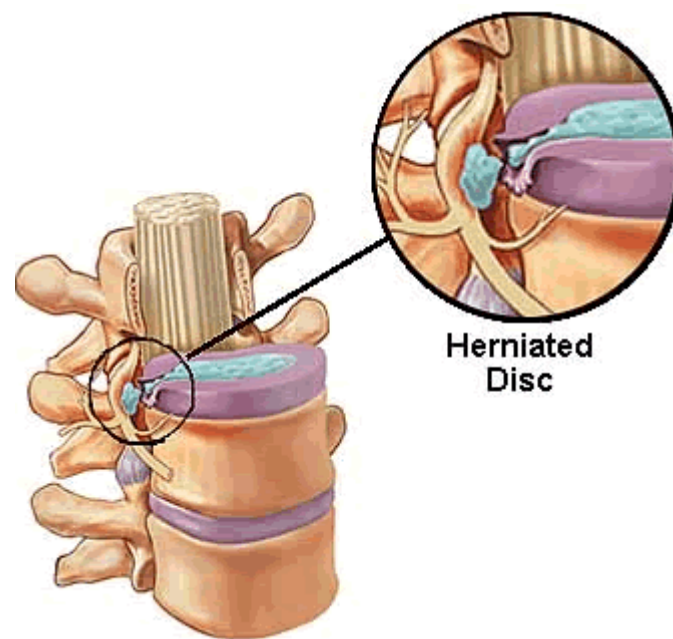
Disc

- ✓ Act as shock-absorbers
- ✓ Compress when you move: bending, and twisting impact your discs
- ✓ Primarily made of water and can dehydrate over time creating the potential for injury
- ✓ Cannot repair themselves

Disc

Damage to a disc can be from

- Too much pressure (can pinch a nerve)
- Poor lifting technique
- Twisting or overstressing



Potential for injury

Although anyone can have back pain, a number of factors increase your risk. They include:

- **Age:** The first attack of low back pain typically occurs between the ages of 30 and 40. Back pain becomes more common with age.
- **Fitness level:** Back pain is more common among people who are not physically fit. Weak back and abdominal muscles may not properly support the spine.

Potential for injury

- **Diet:** A diet high in calories and fat, combined with an inactive lifestyle, can lead to obesity, which can put stress on the back.
- **Heredity:** Some causes of back pain, such as ankylosing spondylitis, a form of arthritis that affects the spine, have a genetic component.

Potential for injury

Occupational risk factors:

- Having a job that requires heavy lifting, pushing, or pulling, particularly when this involves twisting or vibrating the spine, can lead to injury and back pain.
- An inactive job or a desk job may also lead to or contribute to pain, especially if you have poor posture or sit all day in an uncomfortable chair.

Potential for injury

- **Race:** Race can be a factor in back problems. African American women, for example, are two to three times more likely than white women to develop spondylolisthesis, a condition in which a vertebra of the lower spine—also called the lumbar spine—slips out of place.
- The presence of other **diseases:** Many diseases can cause or contribute to back pain. These include various forms of arthritis, such as osteoarthritis and rheumatoid arthritis, and cancers elsewhere in the body that may spread to the spine.

Tobacco Use

Although smoking may not directly cause back pain, it increases your risk of developing low back pain and low back pain with sciatica. (Sciatica is back pain that radiates to the hip and/or leg due to pressure on a nerve.)



- Smoking may lead to pain by blocking your body's ability to deliver nutrients to the disks of the lower back.
- Or repeated coughing due to heavy smoking may cause back pain.
- It is also possible that smokers are just less physically fit or less healthy than nonsmokers, which increases the likelihood that they will develop back pain.
- Smoking also increases the risk of osteoporosis, a condition that causes weak, porous bones, which can lead to painful fractures of the vertebrae.
- Furthermore, smoking can slow healing, prolonging pain for people who have had back injuries, back surgery, or broken bones.

Causes of Back Pain

It is important to understand that back pain is a symptom of a medical condition, not a diagnosis itself. Medical problems that can cause back pain include the following:

- **Mechanical problems:** A mechanical problem is a problem with the way your spine moves or the way you feel when you move your spine in certain ways.
 - Perhaps the most common mechanical cause of back pain is a condition called intervertebral disk degeneration, which simply means that the disks located between the vertebrae of the spine are breaking down with age. As they deteriorate, they lose their cushioning ability. This problem can lead to pain if the back is stressed.
 - Other mechanical causes of back pain include spasms, muscle tension, and ruptured disks, which are also called herniated disks.

Causes of Back Pain

Injuries: Spine injuries such as sprains and fractures can cause either short-lived or chronic pain. Sprains are tears in the ligaments that support the spine, and they can occur from twisting or lifting improperly. Fractured vertebrae are often the result of osteoporosis.

- Less commonly, back pain may be caused by more severe injuries that result from accidents or falls.



Causes of Back Pain

- **Acquired conditions and diseases:** Many medical problems can cause or contribute to back pain. They include scoliosis, a curvature of the spine that does not usually cause pain until middle age; and spinal stenosis, a narrowing of the spinal column that puts pressure on the spinal cord and nerves.
- Although **osteoporosis** itself is not painful, it can lead to painful fractures of the vertebrae.
- **Infections** and tumors: Although they are not common causes of back pain, infections can cause pain when they involve the vertebrae, or when they involve the disks that cushion the vertebrae, which is called diskitis. Tumors also are relatively rare causes of back pain.
- Although the causes of back pain are usually physical, **emotional stress** can play a role in how severe pain is and how long it lasts. Stress can affect the body in many ways, including causing back muscles to become tense and painful.

Early signs of potential back injury



- Decreased range of motion
- Numbness
- Tingling
- Pain is severe and doesn't improve with medication and rest
- Pain after a fall or an injury.

Keeping your back healthy!

- Proper lifting
- Push don't Pull
- Back exercises & physical activity
- General overall healthy lifestyle
 - Diet
 - Exercise
 - Sleep

Proper Lifting

Lifting is strenuous— it requires proper training and technique.

By lifting with your large, strong leg muscles instead of the small muscles of the back, you can prevent back injuries and reduce low back pain.

There are **five steps** to follow when lifting an object:

Proper Lifting

- 1. GET CLOSE TO THE LOAD:** Get as close to the load as possible— as if you're hugging the object. Having the object close to your body put less force on your low back.
- 2. MAINTAIN YOUR CURVES:** Keep yourself in an upright position while squatting to pick up
- 3. TIGHTEN YOUR STOMACH MUSCLES:** Tightening the stomach helps support the spine. Don't hold your breath while tightening the muscles.
- 4. LIFT WITH YOUR LEGS:** Your legs are the strongest muscles in your body— so use them.
- 5. PIVOT DON'T TWIST:** Turn with your feet, not your back. It isn't built for twisting from side to side.

Proper Lifting

- **Large or Heavy Loads.** If a load is too heavy to lift alone, ask for help. Pick one person to coach the lift — this way you lift and lower at the same time.
- **Overhead Loads.** If a load is above your shoulders, use a step stool to elevate yourself until the load is at least chest level— preferably waist height. Pull the object close to your body and then lift. Remember to maintain your curves — use your arms and legs to do the work.

Proper Lifting

- Lift with your legs
- Never lean and lift
- Try to avoid using stairs with a heavy load or one that requires both hands



Proper Lifting

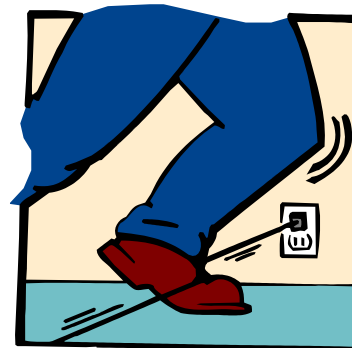
Twisting while carrying a load is one of the most frequent causes of back injury

Twist on the dance floor, not while lifting!



Proper Lifting

And of course, if you need to move the load to another area, make sure you have checked your path **BEFORE** picking it up.



Push or Pull?



PUSH



PULL

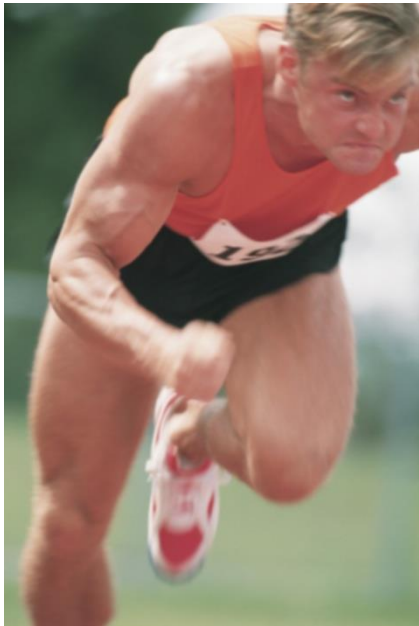
Don't pull when you can push something.

Pushing lets you use larger muscles and you're less likely to strain your back or slip and fall!

Prevention of Back Pain or Injury

- One of the best things you can do to prevent back pain is to exercise regularly and keep your back muscles strong.
- Back exercises may help you avoid injury and pain.
- Exercises that increase balance and strength can decrease your risk of falling and injuring your back or breaking bones.

Back Exercises



Just as an athlete prepares before playing a sport, you too should prepare before work to help prevent back injuries.

The stretches on the following page help prevent back injuries and make your muscles more flexible.

Prepare for Work

Hold each position for 20 seconds and repeat 3 times before work.

Try this



&

this!



Back Exercises

It doesn't take much time to improve the strength and flexibility of your back. In just 10 minutes a day, you can perform a few exercises, which can prevent a lifetime of low back pain!

Try some of the exercises on the following slides.

Partial Sit-up

Partial Sit-up: This exercise strengthens your stomach muscles:

- Lie on your back with both knees bent and your feet flat on the floor. Slowly raise your head and shoulders off the floor, keeping your hands across your chest.
- Work up to 30 repetitions.



The Bridge

Bridge: This exercise strengthens your low back:

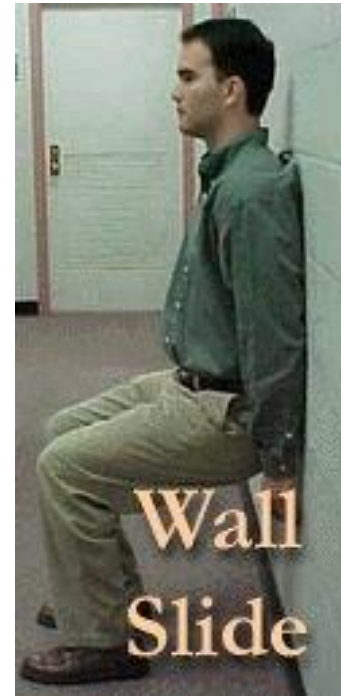
- Lie on your back with both knees bent and your feet flat on the floor.
- With arms lying at your sides, tighten stomach muscles, squeeze buttocks, and slowly raise your hips into the air. Hold for 5 seconds and then slowly bring the buttocks back to the floor.
- Repeat 20 times.



Wall Slide

Wall Slide: This strengthens your back and leg muscles:

- Stand with your back against a wall and your feet slightly apart.
- Slide into a half-sit. Hold as long as you can; slide back up.
- Repeat 5 times.



Overall Healthy Lifestyle

Diet

- Eating a healthy diet also is important. For one thing, eating to maintain a healthy weight—or to lose weight, if you are overweight—helps you avoid putting unnecessary and injury-causing stress and strain on your back.
- To keep your spine strong, as with all bones, you need to get enough calcium and vitamin D every day. These nutrients help prevent osteoporosis, which is responsible for a lot of the bone fractures that lead to back pain.

Diet

- Calcium is found in dairy products; green, leafy vegetables; and fortified products, like orange juice. Your skin makes vitamin D when you are in the sun. If you are not outside much, you can obtain vitamin D from your diet: nearly all milk and some other foods are fortified with this nutrient.
- Many adults don't get enough calcium and vitamin D, so talk to your doctor about how much you need per day, and consider taking a nutritional supplement or a multivitamin.

Diet

And don't forget the importance of staying hydrated all year long.

Discs are primarily fluid, and staying hydrated as you age can help maintain healthy discs

Water is the best beverage to drink:

- ✓ **Zero calories**
- ✓ **No caffeine**

Overall Healthy Lifestyle

Physical Activity

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Physical Activity

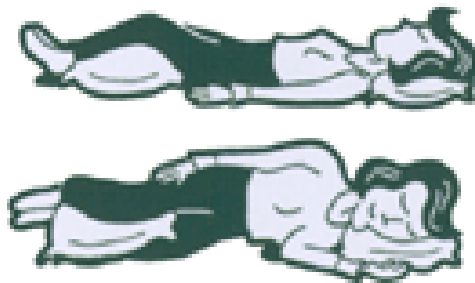
- Exercises such as tai chi and yoga—or any weight-bearing exercise that challenges your balance—are good ones to try.



Overall Healthy Lifestyle

Sleep

- Adults need 7-8 hours of sleep each night
- Prevent back pain or injury when you sleep by
 - Using a firm mattress
 - Maintaining your curve: Sleep on your back with your legs elevated or on your side with your knees bent



Back Health in Your Hands

Be pro-active to avoid injury & support health:

- Lift with your legs, keeping the item close to you
- Push don't pull
- Use good posture: maintain a 'neutral' position, ('S' Curve)
- Avoid repetitive motions, or change positions when possible
- Build core strength through physical activity
- Eat to support overall health
- Sleep on a firm mattress with proper positioning

Be Well!



be_well@ehhd.org

www.ehhd.org/be_well