



NATIONAL
OSTEOPOROSIS
FOUNDATION

Protecting Your Fragile Spine





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Production of this resource was made possible through
an unrestricted educational grant from Orthovita®.

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Introduction

It's never too early or too late to take steps to protect your bones, especially the bones in your spine. Broken bones of the spine are common in people with osteoporosis and often go unnoticed until more serious problems occur. Learn how to recognize the signs and symptoms of spine fractures and take steps to prevent these fractures from happening in the first place. If you've already broken bones in your spine, learn what you can do to help manage bone and muscle pain and reduce your chance of breaking bones in the future.

Osteoporosis basics

Osteoporosis means “porous bone.” Under a microscope bone looks like a honeycomb. If you have osteoporosis, your bones have bigger holes and spaces than healthy bone. This means your bones have lost density or mass making them more likely to break. These breaks are also called fractures. You cannot feel your bones getting weaker. Osteoporosis does not usually have noticeable signs or symptoms until a broken bone occurs. A person with osteoporosis can break a bone from a minor fall or simply from a sneeze or bumping into furniture.

There are many reasons why you may be at risk of developing osteoporosis. Some common risk factors include:

- Being a woman
- Being age 50 or older
- Having low estrogen levels if you are a woman or low testosterone levels if you are a man
- Having a diet that is low in calcium and vitamin D
- Being inactive or bedridden
- Taking a medicine or having a medical condition that can cause bone loss

To learn more about risk factors, click the link below:

www.nof.org/aboutosteoporosis/bonebasics/riskfactors

Are you at risk?

Luckily, a bone density test can help predict your chance of breaking a bone before a fracture occurs. If you are a postmenopausal woman or man age 50 or older, be sure to ask your healthcare provider when you should have a bone density test. NOF recommends having a bone density test of the hip and spine using a central DXA machine to diagnose osteoporosis. DXA stands for dual X-ray absorptiometry. A bone density test can tell if you have normal bone density, low bone density (osteopenia) or osteoporosis. If you have low bone density, you are more likely to develop osteoporosis.

To learn more about bone density testing, click the link below:

www.nof.org/aboutosteoporosis/detectingosteoporosis/bmdtest

Broken bones in the spine

If not prevented or if left untreated, osteoporosis can progress with no pain or symptoms until a bone breaks. People with osteoporosis most often break bones in the hip, spine (backbone) and wrist. While people with osteoporosis have the greatest risk of fracture, people with low bone density or even normal bone density can break bones too. The most common fractures happen to the bones that make up your spine (backbone). These bones are known as vertebrae. When the vertebrae break, they are often called spine fractures, vertebral fractures or compression fractures. Each year, nearly 550,000 spine fractures occur as a result of osteoporosis in the U.S. This means that approximately once every minute, a spine fracture occurs. People who have spine fractures are at very high risk of breaking more bones in the spine as well as other bones in the body.

Many people with osteoporosis break a bone after a fall from standing height or less, an accident that seems minor or after no accident at all. These breaks are called fragility fractures or low trauma fractures. When a fracture occurs in the spine, some people feel a sharp pain that doesn't go away while others do not have any obvious pain at all. Some people only realize there is a problem after a noticeable amount of height is lost.

If you have osteoporosis, you can break a bone in your spine when too much pressure is placed on the bone from a fall, a twisting motion of the torso (trunk) or lifting or carrying a load that is too heavy. You can also break a bone in your spine from rounding your back with a forward curve when doing a toe touch, a curl sit-up or when picking something up from the floor with straight legs. This rounding of the back is called spine flexion. In some people, a simple movement such as rolling over in bed or coughing can cause a spine fracture.

Signs and symptoms of broken bones in the spine

Spine fractures can cause the spine or backbone to curve forward. This curve is called kyphosis. It causes a person's posture to look stooped or hunched. As more bones fracture in the spine, the spine becomes more curved. When kyphosis is severe, it is also sometimes called a dowager's hump. In addition to the possible pain at the time of the fracture, height loss and posture changes caused by these fractures, broken bones in the spine can lead to chronic back pain anxiety, depression or decreased self-esteem, problems sleeping, fear of future fractures, falls and even difficulty with eating and breathing.

Talk to your healthcare provider if you are concerned that you may have a broken bone in your spine. These fractures do not always cause pain. Here are some reasons why you may need an x-ray of your spine to look for fractures:



- you have lost 1/2 inch or more in height in one year
- you have lost more than 1½ inches from your original height
- you have stooped or hunched posture
- you have developed back pain

Always see your healthcare provider if you have back pain that lasts longer than three to four days. Keep in mind that back pain is very common and can have many different causes. If a spine fracture is a possibility, an x-ray, MRI or vertebral fracture assessment (VFA) should be ordered to confirm the diagnosis. A VFA is performed on a DXA machine and uses less radiation than a standard x-ray.

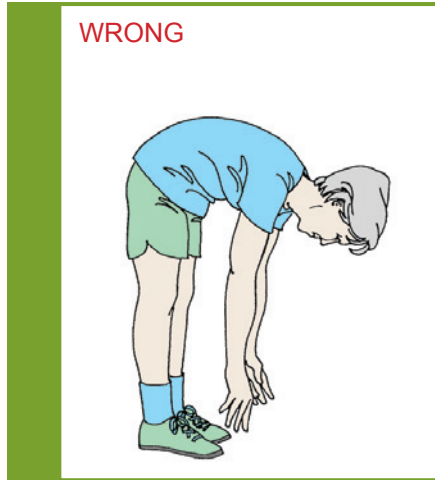
Protect your spine by moving safely

Fortunately, there are many steps people can take to protect the spine from fractures and kyphosis. These steps include avoiding or modifying certain activities and movements that can increase the risk of fracture. Below are some examples and suggested modifications:

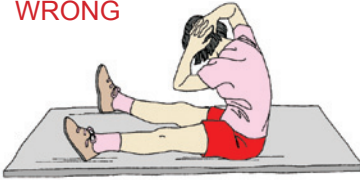
1. Avoid movements that require bending forward from the waist with straight legs. If you have osteoporosis, you should avoid any movements that involve rounding of the back or spine flexion. For example, avoid doing toe-touches.

When reaching forward or to the floor cannot be avoided, here are some tips:

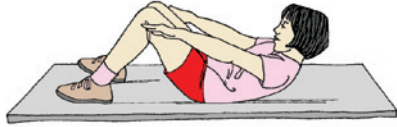
- Bend only at your knees and hips. Bending at the waist will put your back into a rounded position which can increase the risk of spine fractures.
- When bending, keep your back upright and straight with shoulder blades pinched together.
- Even when standing to brush your teeth or wash dishes, try not to bend at the waist, but rather bend at your knees and hips while keeping your back straight.



WRONG



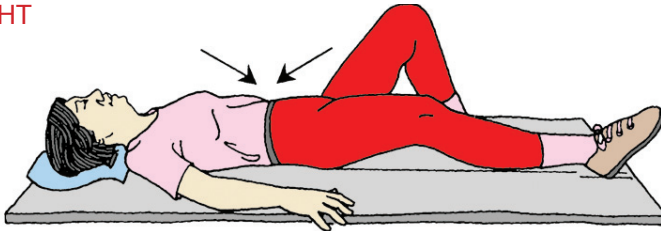
WRONG



2. Avoid sit-ups and abdominal crunches. Instead of doing sit-ups or abdominal crunches, try this basic abdominal exercise:

- Lie on your back with knees bent and feet flat on the floor with a small pillow under your head.
- You should have little space between the floor and the arch of your lower back.
- Tighten your abdominal muscles by pulling your abdomen in.
- Think about pulling your navel in toward your spine. Try to keep the space between the floor and the arch of your lower back.
- Hold for 2 seconds.
- Relax. Repeat 10 times, once each day.
- Once you can do this exercise without much effort, try to slide one leg out as far as you can while keeping your abdomen pulled in during the exercise. See illustration below.
- Repeat 5 times with each leg, once each day.

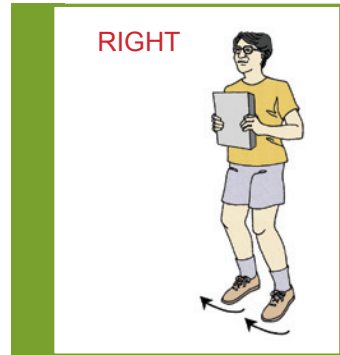
RIGHT



3. Avoid twisting or bending at the torso (trunk) to an extreme.

Avoid movements that involve twisting to the point where there's a strain in the muscles. Examples include the twisting motion of a full golf swing or swinging a tennis racquet. Here are some tips for safely rotating the body or changing direction:

- Move your feet and the rest of your body at the same time.
- Do not twist the spine.
- Pivot on the heels or toes with knees slightly bent.
- Keep nose, knees and toes pointing in the same direction.



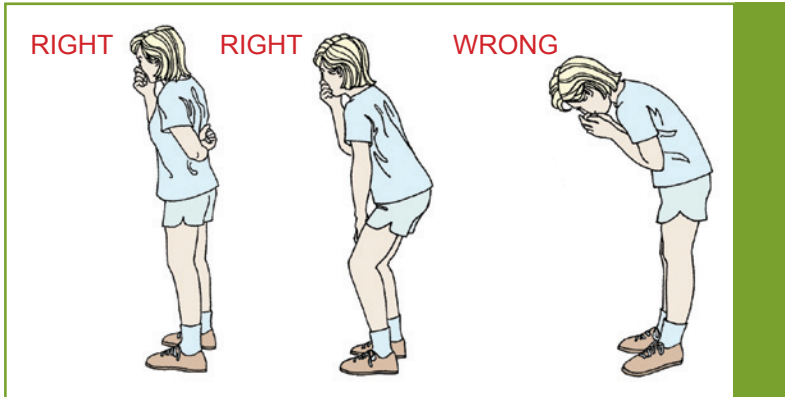
4. Avoid carrying packages that are too heavy. If you have a fragile spine you should avoid lifting or carrying objects, packages or babies weighing more than 10 pounds. Certain individuals may be able to lift more weight with permission from a healthcare provider. Here are some tips for safely lifting an object off the floor:

- First kneel on one knee.
- Place one hand on a table or stable chair for support if needed.
- Bring the object close to the body at waist level.
- Gently pull the abdomen in to support the back and breathe out while lifting the object or straightening up. Do not hold your breath. Stand using your leg and thigh muscles.



5. Avoid lifting heavy objects overhead. Lifting heavy objects overhead can place too much downward pressure on the spine. This can cause a fracture. If you are straining to lift something overhead, it is likely too heavy.

6. Avoid bending forward when coughing and sneezing. Develop the habit of supporting your back with one hand while coughing or sneezing.



- Place a hand behind your back or on your thigh. This helps protect the spine from damage caused by a sudden bend forward.

7. Avoid reaching too far, such as reaching for objects on a high shelf. Reaching too far overhead can cause a loss of balance, increasing the risk of a fall onto your back or buttocks.

8. Be cautious doing activities that increase the likelihood of a fall. Examples are rollerblading, downhill skiing and walking on icy or wet surfaces.

Working with a healthcare professional

Physiatrists, physical therapists (PTs) and occupational therapists (OTs) with training and experience working with people who have osteoporosis are excellent resources. A physiatrist or PT can design a safe and

appropriate exercise program that is tailored to your individual needs. Psychiatrists or PTs can help you improve your posture, balance, muscle strength and ability to move safely throughout the day. They can also help you reduce your risk of spine fractures, limit kyphosis and lessen your chance of falling. People with spine fractures may also have trouble doing their regular activities such as cooking, bathing and other activities in their daily routine. An OT can help you learn ways to perform your daily activities more easily.

What to expect if you break a bone in your spine

Immediately following a spine fracture, your healthcare provider may suggest over-the-counter or prescription medicines to help you manage your pain. It is important to avoid medications that cause confusion, constipation, sleepiness or other side effects that could increase the risk of falls. You may be able to use lightweight back support for a few weeks or less. For some individuals, partial bed rest may also be recommended. Bed rest should be limited to four days or less and should include time each day devoted to sitting upright and walking around. If you become too reliant on a back brace or you are inactive for too long, you may lose muscle and bone. This can lead to more spine fractures in the future. That is why it is important to work with a physical therapist or other rehabilitation professional to help you stay as active and strong as possible.

If you are 50 or older and break a bone in your spine, you will most likely need to take an osteoporosis medication. NOF recommends that everyone age 50 and older with osteoporosis consider taking a medicine to reduce the risk of breaking a bone. Your healthcare provider and pharmacist can help you learn about the most appropriate treatment options available to meet your needs. NOF encourages you to look at both the risks and benefits of taking or not taking a medicine.

To learn more about osteoporosis medicines, click link below:

[www.nof.org/aboutosteoporosis/managingandtreatment/
medicinesneedtoknow](http://www.nof.org/aboutosteoporosis/managingandtreatment/medicinesneedtoknow)

Managing your pain

For some people, recovering from broken bones can be a long and painful process. Sometimes the pain continues even after the fracture heals, usually within six to eight weeks. Ongoing chronic pain can make it hard to sleep, it can make you irritable or depressed. This, in turn, can make the pain feel worse. If you have ongoing pain, talk to your healthcare provider about what you can do to control your pain. You may benefit from one or more of the following:

- **Muscle relaxants.** Muscle relaxant medications may be prescribed to help reduce spasms in the muscles around the broken bone. When muscles have spasms, the tightness can cause more pain.
- **Taking an over-the-counter (OTC) medicine for pain.** OTC medications such as acetaminophen (Tylenol®), ibuprofen (Advil®, Motrin®) or naproxen (Aleve®), may help you to manage your pain. These medications can have side effects, especially if you take them at high doses or for a long period of time. Work with your healthcare provider and pharmacist to choose the right pain medicine for you based on your individual medical history and needs.
- **Applying heat or cold.** A cold compress or a bag of frozen peas can be applied to the injured area. Warm towels and heating pads can also provide some relief. Do not use either of these for more than 15 - 20 minutes at a time.
- **Transcutaneous electric nerve stimulation (TENS).** This is a method to reduce pain with electrical impulses. A TENS unit sends a mild current traveling through electrodes into your body. You may feel tingling or warmth. A treatment lasts from 5 - 15 minutes. You can ask your physical therapist or healthcare provider about getting a prescription for TENS.
- **Acupuncture.** This involves inserting special needles at specific places in the skin. According to ancient Chinese belief, this alters the body's flow of energy into healthier patterns. Acupuncture is gaining acceptance in this country as a way to reduce pain. Your

healthcare provider or health insurance company may be able to tell you about acupuncturists in your area. Some health insurance companies offer coverage or discounts for acupuncture.

- **Biofeedback.** This type of therapy uses electronic instruments to measure body functions and then feed that information back to you. A biofeedback specialist uses this information to teach you to control involuntary body responses, such as blood pressure or heart rate. It can also be helpful for managing pain. Your healthcare provider may be able to help you find a biofeedback specialist.
- **Behavior modification.** This is a technique to change habits, behaviors and feelings that can result from ongoing pain. It may include rewards for increasing your physical activity, improving your eating habits or making other changes in your life.
- **Massage.** Broken bones can cause pain and tension in the muscles surrounding the fracture. Gentle massage of these muscles may help to decrease the pain in these muscles. Before you get a massage it's important to get permission from your healthcare provider. Work with a qualified massage therapist who understands your medical history.
- **Physical activity.** Being active is a natural way to reduce pain. When you exercise, your body releases substances called endorphins that can relieve pain and boost your mood. Exercise also has many other health benefits. If you have osteoporosis, you should speak with your healthcare provider before you start a new exercise program. Ask about whether you would benefit from working with a physiatrist or physical therapist.
- **Relaxation techniques.** There are several different relaxation techniques that can help people release muscle tension and shift their attention away from pain. Some examples include deep breathing, progressive muscle relaxation and guided imagery. People can learn and practice these and other relaxation techniques from CDs, videos, books and classes, as well as trained professionals.
- **Medication to treat your osteoporosis.** If you have a spine fracture from osteoporosis, you should be treated with medicine to reduce your chance of future fractures of the spine or elsewhere. These medicines may also help reduce the pain from the broken bone.

Procedures that may reduce pain from spine fractures

If you continue to have ongoing pain, your healthcare provider may suggest one of two procedures to stabilize the fracture. These procedures may also help certain individuals prevent disability and further curvature of the spine. The two options that are currently available include:

- **Vertebroplasty** – This procedure involves injecting bone cement into the fractured vertebral area of the spine.
- **Kyphoplasty** – This procedure is similar to vertebroplasty. A small inflatable balloon is inserted into the vertebral area to create a space. The space is then filled with bone cement.

Both vertebroplasty and kyphoplasty are performed with special tools used to make a small opening in the skin near the broken bone. The physician inserts a needle into this opening using x-ray image guidance technology to help guide the procedure. Once the needle is in the right location, cement is injected into the broken bone. With a kyphoplasty procedure, an inflatable balloon is used to create a space before inserting the cement.

Both vertebroplasty and kyphoplasty procedures are considered minimally invasive. This means that with either procedure you will not have a large incision or a long recovery time. Vertebroplasty can be done as an outpatient procedure under local anesthesia. Kyphoplasty is usually done as an inpatient procedure under general anesthesia and often requires an overnight stay in the hospital.

Possible complications

Although complications are rare, there is a chance of the cement leaking outside of the spinal area and potentially causing problems such as infection, bleeding, numbness and other problems. This technology may also be used to stabilize spine bones affected by cancer and problems are seen more frequently in these patients. Also, because the repaired bone is heavier, it may put more pressure on nearby weakened bones causing them to break. Of the two procedures, kyphoplasty is usually more expensive, due to the overnight hospital stay.

Many people who experience pain from spine fractures respond well to conservative treatments such as pain medicine, back braces and other pain management techniques. Individuals who have severe pain that is not relieved by these measures may be helped by a vertebroplasty or kyphoplasty procedure to stabilize the fracture. When used in the right patients and performed by qualified healthcare providers, these procedures can help individuals with spine fractures relieve pain and improve overall quality of life. But, these procedures are not appropriate for everyone with spine fractures.

The best results are seen in patients who have the procedure within three to six months of the spine fracture(s). Patients who have long term back pain due to old fractures which happened many months or years before are not likely to benefit from one of these procedures. An MRI (a special type of X-ray procedure) is often used to tell if the broken bone occurred recently or long ago.

If you are considering a procedure to stabilize your spine, talk to your primary care provider or other healthcare provider about the appropriate options for you based on your individual needs and medical history. If your healthcare provider believes that one of these procedures may help relieve your pain, he or she can refer you to a doctor that performs one of these procedures. Some orthopedic doctors, spine surgeons and interventional radiologists perform vertebroplasty and kyphoplasty procedures.

Always talk to your healthcare provider about the benefits and risks of the options available to you.

Things to think about before your next appointment

- Beginning at age 50, you should have your height measured each year.
- Review all of the medicines and supplements you take with your healthcare provider.
- Ask whether you should have a blood test to check your vitamin D level.
- Discuss when to schedule your next bone density test.
- Report any health problems or concerns to your healthcare provider.



Conclusion

If you haven't talked to your doctor about your risk of spine fractures and other broken bones, now is the time to bring it up. Together you can develop a plan to protect your bones and reduce your chance of breaking a bone. If you break a bone in your spine, it is important that you treat the underlying cause of your fracture in order to reduce your risk of future fractures. This includes getting enough calcium and vitamin D, exercising, not smoking or drinking too much alcohol and taking an osteoporosis medicine.

You can request additional information from NOF by clicking the link below:

[NOF information request form: www.nof.org/request-information](http://www.nof.org/request-information)

Call toll-free to 1 (800) 231-9994