

# THRITIS advi

Advice and information from a world leader in bone and joint care

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## Anyone Can Get a Stress Fracture

Start an intense exercise program without preparation and you might get a stress fracture.

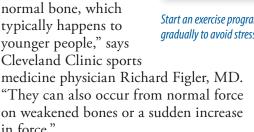
tress fractures occur most commonly in physically active younger people. But middle- and older-age adults get them as well, and possibly for different reasons. Regardless of a person's age,

the earlier a stress fracture is identified and treated the better.

A stress fracture is a small crack in a bone. It's often caused by repetitive force. People who put excess pressure on their legs and feet, such as runners and other athletes, can develop stress fractures. Stress fractures can also result from having weakened bones and muscles.

"Stress fractures can occur when there is abnormal force on normal bone, which typically happens to younger people," says

medicine physician Richard Figler, MD. "They can also occur from normal force on weakened bones or a sudden increase in force."



#### Who Is at Risk?

One group of middle- and older-age people who are prone to stress fractures are those who are not very fit and jump too quickly into a heavy exercise program.

"They start the activity without their muscles being ready to accommodate the increased force," says Dr. Figler.

With any type of weight-bearing activity the muscles take the majority of the

> force. "When muscles are weak, the energy has to be transferred somewhere, and it is going to go either to the joints or the bone," says Dr. Figler. This can make people susceptible to developing stress fractures.

Another group of people who can get stress fractures are those with osteopenia or osteoporosis. These people, who have overly-thin bones, can develop stress fractures from normal activities, such as a walking program. This is especially likely if the person hasn't eased into the activity.

Yet another group of people who may be susceptible to stress fractures are those who have had a joint

replacement, although this is less common. "People who have a joint replaced may start a more aggressive exercise program than before the surgery because their new hip or knee has given them the ability to do more with less discomfort," says Dr. Figler.

If people aren't careful to increase activity gradually, their bones and muscles may

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© PredragImages | Getty Images Start an exercise program slowly and increase gradually to avoid stress fractures.



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Advisor (ISSN #15423425) is published monthly for \$39 per year by Belvoir Belvoir Media Group, LLC, 535 Connecticut Avenue, Norwalk, CT 06854-1713. Robert Englander, Chairman and CEO; Timothy H. Cole, Executive Vice President, Editorial Director; Philip L. Penny, Chief Operating Officer; Greg King, Executive Vice President, Marketing Director; Ron Goldberg, Chief Financial Officer; Tom Canfield, Vice President, Circulation. @2020

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Belvoir Media Group, LLC.

Postmaster: Send address cor-

rections to Arthritis Advisor,

75755-8535

#### Many Adults in U.S. Do Not Get Enough Exercise

Engaging in regular physical activity is important for overall health. It reduces your risk for obesity, heart disease and type 2 diabetes, and it also helps maintain bone and joint health. According to a report published by the Centers

for Disease Control and Prevention (CDC) in January 2020, too many adults in the United States are physically inactive, meaning they don't engage in any leisure-time physical activities such as running, walking for exercise or gardening. The data come from an ongoing telephone survey conducted by the CDC and state health departments from 2015 to 2018. The rates of inactivity varied among the states and territories, ranging from 17.3% in Colorado to 47.7% in Puerto Rico. The South had the highest rate of inactivity (28%), followed by the Northeast (25.6%), the Midwest (25%), and the West (20.5%).



#### **Timing Is Crucial for Knee Replacement Surgery**

When osteoarthritis in the knee becomes severe and nonsurgical measures are no longer adequate to relieve symptoms, total knee replacement surgery becomes an option. A study published in The Journal of Bone and Joint Surgery

(January 2020) found that many people wait too long to have this surgery, while some others are getting it too soon. The researchers combined data from two studies of people with knee osteoarthritis who were followed for eight years. They classified 3,417 of them into three categories based on criteria indicating the appropriateness of knee replacement surgery. They found that 83% of them would benefit from the procedure but had not had it, and 9% of them had it prematurely. Among those for whom it was deemed appropriate but not done, 42.5% had severe symptoms. Delaying surgery too long can result in a poorer outcome.



#### **Newer Diabetes Drugs May Lower Risk for Gout**

People with type 2 diabetes often have high uric acid levels. When blood levels of uric acid get too high, this naturally occurring substance can settle in joints, causing gout. Newer medications for type 2 diabetes, called SGLT2 inhibitors

(canagliflozin [Invokana®], dapagliflozin [Farxiga®], empagliflozin [Jardiance®]), reduce blood sugar levels. They also lower uric acid levels. A study published in Annals of Internal Medicine (January 2020) found that taking these drugs may reduce risk for gout. Using an insurance database, researchers identified close to 300,000 adults with type 2 diabetes who were prescribed an SGLT2 inhibitor or another class of diabetes drugs called GLP1 agonists, which do not decrease uric acid levels. There was a 36% lower chance of gout with SGLT2 inhibitors. Gout developed in 636 of close to 152,000 people taking the SGLT2 inhibitor drugs, compared with 836 of about 144,000 people taking GLP1 agonists.



#### Distance Running Can Be Good for Your Knees

Running marathons has become increasingly popular. Middle- and older-age adults who aspire to take up long-distance running may be concerned that it could raise their risk for developing osteoarthritis. Research, including a study

published in BMI Open Sport & Exercise Medicine (October 2019), has shown that running can actually be good for your knees. The recent study included 83 adults, ages 25 to 73, who were running their first marathon. They all had magnetic resonance imaging scans of their knees two months before training for the race and again two weeks after the race. The researchers found that many of the pre-training knees showed some damage to the bone and cartilage. Scans done after the race showed some of the bone and cartilage lesions had shrunk. The main weight-bearing knee compartments benefited from running. Some participants did develop new damage to the cartilage around the kneecap.

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### How to Ease Hip Pain

Choose the right exercises to relieve pain from hip osteoarthritis.

ain in the groin, stiffness at the hip and increased pain while walking are all signs you may have hip osteoarthritis. If this is the case, you may be tempted to rest to avoid aggravating the joint.

But movement and exercise are good for arthritis. And too much rest can make it worse. Cleveland Clinic physical therapist Dawn Lorring, PT, MEd, has some advice. She starts by telling people to use pain and other symptoms as a guide.

"Some people with pain and stiffness find that certain activities make it worse," she says. Be aware of which activities increase symptoms, and then modify the activity.

#### **Exercise Is Important**

"We know that general exercise is important," says Lorring. She recommends walking, bicycling and pool exercises. The advantage of exercising in a pool is that the buoyancy of water reduces the force through the hip joint. In water up to your chest, you are bearing only about 25% of your weight.

Just walking in water can be beneficial. "Walk forwards, backwards and sideways to work different muscles in the hip," says Lorring.

Bicycling is a good exercise because it helps to maintain range of motion in the hip. Always use an upright bicycle, where your feet are below you, rather than a recumbent bike, where your feet are in front of you. A recumbent bicycle causes your hips to move in ways that can be painful for people with hip osteoarthritis.

#### **Strengthening and Stretching**

For strengthening, Lorring recommends exercises that strengthen the muscles on the outside and back of the hip and the inner thigh. This includes walking sideways, which you can do in a pool or while standing in front of a countertop. "Wrap a resistance band around your legs at or above the knees for more of a challenge," says Lorring.

You can also do leg lifts while lying on your side. "Think of the Jane Fonda exercise tapes," says Lorring. That can be a great exercise. Just don't lift your leg as far as Jane Fonda did. "That's too extreme," says Lorring.

To strengthen the inner thigh, squeeze a ball between your knees while sitting or lying down on your back. If you go to the gym, use a hip abduction machine.

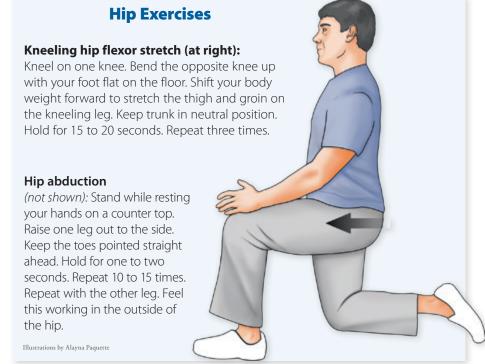
Lorring also suggests stretching your hamstring (a muscle between the hip and knee on the back of the thigh) and hip flexors (a group of muscles near the top of the thigh).

With all of these exercises, technique is very important. Lorring suggests seeing a physical therapist who can teach you the correct form. "Once you know what meets your needs, you can use that information to continue on a lifelong exercise program," she says. She also recommends going to classes or modifying your routine to keep it interesting.

### **Don't Sit Too Long**

Sitting can feel good because you're taking pressure off the joint. However, it can also result in muscle tightness. "Tightness in front of your hip can limit normal movement, which can cause pain and discomfort and put pressure on your back and knee," says Lorring.

Don't sit for more than 30 to 45 minutes at a time. On a long car ride, stop at least every hour to walk around. Maintain good posture while sitting. Slouching causes you to overflex your hip joint.



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### Is There an Arthritis Diet?

While there's no official anti-inflammatory diet, consider a traditional Mediterranean diet.

any people with osteoarthritis, rheumatoid arthritis or other types of arthritis want to know whether there is a special anti-inflammatory diet that will help to relieve their symptoms. While numerous studies have examined this question, there's still no definitive answer. However, there are some general guidelines.

The lack of conclusive evidence relates to the inherent complexity in conducting diet studies. "It's challenging to study diet because there are so many variables," says Cleveland Clinic dietitian Mira

Ilic, RD, LD. It's difficult to single out the effects of one particular food among everything in the diet, and to study it over the long term.

You may have heard that casein (a protein in milk), lactose (a sugar in milk), gluten (a protein in wheat and other grains) or nightshade vegetables (such as tomatoes, peppers and eggplant) promote inflammation. Some people may have sensitivities to some of these and other foods, which may contribute to arthritis symptoms. But they don't affect everyone.

#### **Mediterranean Way**

"There is no single or official antiinflammatory diet that the scientific community can agree on," says Ilic. But research continues, and there is evidence both for the anti-inflammatory properties of some foods and pro-inflammatory effects of others.

"When you are looking for a way of eating that has many of the



various components associated with the potential for anti-inflammatory effects, it points to the traditional Mediterranean diet," says Ilic.

This way of eating is mostly plant-based, meaning it emphasizes vegetables and fruits, which are loaded with antioxidants and phytonutrients. Research has shown these to be anti-inflammatory. Eat a variety to ensure you get all essential vitamins and nutrients.

A Mediterranean diet also emphasizes whole grains, beans, nuts and seeds, and healthy fats, such as olive oil and avocado. "Go for good quality protein sources, such as fish, chicken, lentils and beans," says Ilic. Cold-water fish, such as salmon, tuna, mackerel and sardines, are rich sources of inflammation-reducing omega-3 fatty acids.

#### **Foods to Avoid or Limit**

Some foods should be avoided or

eaten in only small quantities because of their potential to stimulate more inflammation. They include processed foods, foods with saturated or trans fats and sugar. The Mediter-

> ranean diet allows only small amounts of red meat (which contains saturated fat) and sweets.

"If you get rid of all the processed food and replace it with a variety of real food, and make it plant-based, you will be eating a healthy diet with the potential to lower inflammation," says Ilic.

#### **Food Sensitivities**

If you do notice that your pain or other symptoms increase when you eat certain foods, you may want to consider an elimination diet. "Work with a dietitian to eliminate and then reintroduce foods in a way that

you can really see whether there are benefits to avoiding them," says Ilic.

Ilic also emphasizes that foods you might eliminate probably supply important nutrients, so you need to replace these with other sources. For example, if you stop eating dairy, you need to get calcium elsewhere. A dietitian can help with this.

#### **Medications**

Another consideration for people with arthritis is medications you may be taking. Many people with rheumatoid arthritis take the drug methotrexate, which can cause a folic acid deficiency. A supplement may be needed.

Some medications may irritate the gastrointestinal tract, which can impact what you eat and don't eat. And there may be interactions between food and medications. This should be discussed with a dietitian or your doctor.

### Could It Be Pseudogout?

Be aware of a condition that can mimic other types of arthritis.

he sudden appearance of a painful, warm, swollen joint often signals an attack of gout. The symptoms are also typical of a condition called calcium pyrophosphate deposition disease (CPDD). Because of the similarity, CPDD is commonly called pseudogout.

Gout is not the only condition CPDD can mimic. It can also cause symptoms similar to osteoarthritis or rheumatoid arthritis.

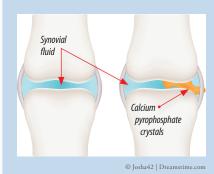
#### What Is CPDD?

Both gout and CPDD involve a build-up of crystals in joints. With CPDD, the crystals are made of calcium pyrophosphate dihydrate. "Calcium and pyrophosphate are normal chemicals that everyone has," says Cleveland Clinic rheumatologist Brian Mandell, MD, PhD. The reason they form crystals that collect in joints in some people is not well understood.

The deposits become more common with age, but they don't always cause symptoms. People with an injury to cartilage (the cushioning material that covers the ends of bones in joints) or osteoarthritis, which is caused by deterioration of cartilage, tend to have more of the deposits.

"Osteoarthritic cartilage tends to hold onto more calcium pyrophosphate," says Dr. Mandell.

People with an overactive parathyroid gland have high levels of calcium, which can increase their risk for CPDD. And low magnesium levels can prevent pyrophosphate from breaking down as quickly as it should, which also raises risk for the condition.



Normal knee (left) and pseudogout knee (right)

#### Which Joints?

"When calcium pyrophosphate crystals break loose from deposits, you get attacks of arthritis symptoms," says Dr. Mandell. The joints affected by gout and CPDD tend to differ. Gout attacks are most common in the big toe, while CPDD affects mostly the knee and wrist. However, any joint can be involved in both conditions.

"There is no way of just looking at a joint and making a distinction between gout and CPDD," says Dr. Mandell. He notes that the onset of the symptoms may also not be that dramatic. It might look like osteoarthritis that is getting worse at a little faster pace than normal.

CPDD may also cause a low level of chronic inflammation. When that occurs in several joints, mostly the wrists or large knuckles of the hand, it might appear to be rheumatoid arthritis.

#### **Making the Diagnosis**

Because of the difficulty making a diagnosis simply from the appearance of symptoms, further testing is needed. Imaging studies, such as ultrasound, CT scan or x-rays, can provide a hint.

#### **What You Need to Know**

- Like gout, calcium pyrophosphate deposition disease (CPDD) is caused by a build-up of crystals in joints.
- With gout, crystals are made of uric acid. With CPDD, crystals are made of calcium pyrophosphate.
- Symptoms of CPDD can mimic gout, osteoarthritis or rheumatoid arthritis.
- CPDD is diagnosed by examining fluid from the joint for the presence of crystals.
- CPDD is treated with medications to reduce inflammation.

The definitive test requires removing some fluid from the joint and examining it under a microscope to look for the presence of crystals. Crystals made of uric acid mean the diagnosis is gout, and calcium pyrophosphate crystals make the diagnosis CPDD.

#### **How Is It Treated?**

Unlike with gout, there is no treatment that will remove the deposits for people with CPDD. "We can treat the inflammation and try to prevent further inflammation, but we can't cure it," says Dr. Mandell.

Medications to take for an attack include nonsteroidal anti-inflammatory drugs (NSAIDs), corticosteroid drugs, and a drug used for gout attacks called colchicine. For quick relief of pain and swelling, some fluid can be removed with a needle. A corticosteroid shot may also help.

If CPDD attacks recur or low level inflammation persists, your doctor may prescribe a medication to take long term to lower the frequency of attacks. This might be a lower dose of an NSAID or colchicine.

### Alternative to Spinal Fusion

For selected patients, cervical disk replacement is an option.

everal joints in the body, such as the knee, hip, shoulder and ankle, can be replaced with artificial implants. There's also an implant procedure for the spine, although it's less commonly performed than knee and hip replacement.

The surgery is artificial disk replacement. One of the cushioning disks between two vertebrae (the small bones that make up the spine) is removed and replaced with a mechanical implant, which duplicates the normal function of the disk.

#### **Preserving Motion**

Artificial disk replacement was first developed over 10 years ago as an alternative to spinal fusion, which permanently joins two vertebrae together. Fusion can relieve pain and other symptoms, but it eliminates motion.

#### **What You Need to Know**

- Disk replacement starts with removing the disk. The surgeon then measures the disk space and chooses the correct-sized implant.
- The artificial disk restores the normal anatomy, relieving pressure on nerves.
- People go home the same or the next day.
- Normal activities can usually be resumed several days later.
- Possible complications are the same as with any surgery, including infection. These are uncommon.



The spine is designed to move. "Every time you look to the left or right or up and down, the segments in the neck move to a certain degree," says Thomas E. Mroz, MD, Chairman of the Orthopaedic and Rheumatologic

Institute and Director of Spine Research at Cleveland Clinic. When you fuse vertebrae together, the spine segments above and below carry more load. "This can cause them to degenerate at a faster rate than they would normally," he says.

Disk replacement sounds like good news for anyone facing spinal fusion surgery. But it's not an option for everyone, and there are some caveats. For example, disk replacement in the lower spine has fallen out of favor because the long-term results were disappointing. Disk replacement in the upper spine (called the cervical spine), meaning the neck, has better outcomes.

#### What Does It Treat?

The spine is susceptible to a variety of conditions, including degeneration of disks, spinal stenosis (narrowing of the spinal canal), osteoarthritis and others. Not all of them can be treated with fusion or disk replacement.

"What we're treating with disk replacement is disk herniation that is pushing on a nerve and/or symptoms from compression of the spinal cord," says Dr. Mroz. Disk herniation occurs when the soft inner portion of a disk bulges out, which can press on a nerve. When

this happens in the cervical spine, it can cause pain, numbness or weakness in the arm.

Disk herniation is treated with nonsurgical measures first. When surgery is needed, the choices are fusion, disk replacement, or a procedure called foraminotomy. This involves surgical removal of small pieces of bone around the openings where nerve roots emerge from the spine (foramen), allowing more room for a nerve.

#### Who Is It For?

Disk replacement is most effective for relieving pain, numbness and weakness down the arm. If the only symptom is pain in the neck, disk replacement is unlikely to help.

Some factors will disqualify a person from having the procedure. Anyone with moderate or advanced degeneration of the disk or bone spurs would not be a candidate. Because disk degeneration naturally occurs with age and bone spurs become more common over time, the ideal candidates often are in their 30s, 40s or 50s.

#### **Equally Effective**

Disk replacement has been demonstrated to be equivalent to fusion and foraminotomy for relief of pain, numbness and weakeness in the arm. "Some, but not all, studies have also found a lower rate of degeneration in adjacent disks," says Dr. Mroz.

There are several implants on the market, with different designs and materials. Some have been in use longer and therefore have more of a track record. Dr. Mroz suggests choosing a surgeon who has a lot of experience with the procedure. He would also research the implant your surgeon plans to use. "I would choose an implant that has studies showing longterm favorable outcomes," he says.

#### Stress fractures ... from page 1

not have a chance to accommodate to the more intense activity. Then they can develop stress fractures.

Proper footwear is important for everyone, and wearing the wrong shoes can increase risk for stress fractures. "Whether people have a flat foot or high-arched foot, they need to wear shoes that match their foot type," says Dr. Figler. If you wear shoes that don't provide enough cushioning to absorb force, the pressure can be transmitted to the bone.

#### **How Does It Feel?**

Most stress fractures occur in the bones of the foot. They can also happen in the shinbone (tibia), hip and the triangular bone at the base of the spine (sacrum).

There's usually a gradual onset and progressive increase in discomfort. "Initially, there will be mild soreness after a walk or run, and then soreness more towards the end of the activity, and then soreness throughout the entire activity, and then soreness all the time," says Dr. Figler. Sometimes the area over the stress fracture will be tender to the touch.

Dr. Figler emphasizes that symptoms such as these should not be ignored. They may indicate a stress fracture. Or they may be a sign of something more serious, such as a complete bone fracture or a tumor.

If it is a stress fracture, the earlier it is identified the easier it will be to treat. And if it's something else, that too needs to be found and treated early. "Bone pain that doesn't go away should be listened to and evaluated appropriately," says Dr. Figler.

#### **How Is It Diagnosed?**

To diagnose a stress fracture, the doctor will start by asking questions

about symptoms and any changes in activity. For example, a stress fracture might be suspected in someone who started an aggressive exercise program or who had any sudden significant change in their exercise regimen.

"Someone might decide to do a half marathon because it's on their bucket list, and they go from doing nothing to training hard," says Dr. Figler. This kind of information will help to make the diagnosis.

Imaging studies can also help, and that usually starts with an x-ray. But a stress fracture may not show up right away on an x-ray. "Findings on an x-ray can lag behind symptoms," says Dr. Figler. If symptoms don't improve and an x-ray is not conclusive, a magnetic resonance imaging (MRI) scan may be done to confirm the diagnosis.

Older adults with a stress fracture should have a bone density test if they haven't already had one. Those with osteoporosis and a stress fracture should be on an osteoporosis medication.

#### **Treating Stress Fractures**

Treatment for a stress fracture almost always starts with conservative measures, including decreasing the load on the area of the fracture. "This can be done with anything from a hard-soled shoe to crutches to a walker," says Dr. Figler.

The best choice will depend on the severity and location of the stress fracture. Some stress fractures need to be managed more aggressively. This may mean more restricted weight bearing or possibly surgery.

Stress fractures typically take at least two to three months to heal. Some may take four to six months. "Most of the time, the earlier the diagnosis the shorter the duration of treatment," says Dr. Figler.

#### **Ease into Exercise**

- When starting a new exercise program—whether walking, running, or something else—start where you are comfortable and make gradual increases.
- Remember: The body doesn't recover as well in middle and older age.
- Increase the duration or intensity by 10% per week. Don't increase them both at the same time.
- Exercising for more than 12 hours a week increases risk for stress fractures.

#### **Nutrition**

Another important part of treatment involves proper nutrition, which includes getting enough calcium and vitamin D. These are essential for bone health. Some studies have shown that people who don't get enough of them are at increased risk for stress fractures.

"It's not just calcium and vitamin D that are necessary," says Dr. Figler. "People on very calorie-restrictive diets may not be getting the nutrients they need to support bones, muscles and overall health."

#### **Advance Gradually**

The risk for stress fractures should not stop you from exercising. In fact, physical activity, including weightbearing activity, is essential for good health. Just be sure to start slowly and increase the time and intensity gradually (see box, above).

"People who make gradual increases tend to stick with the program," says Dr. Figler. "People who do too much too soon can end up with an injury, such as a muscle strain or stress fracture, which sets them back."



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## IN COMING ISSUES

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#### The best walking surface.....Back strains

# When I'm walking or running for exercise, does it matter if it's on pavement, a running track or a treadmill?

Where you choose to walk or run is a personal decision. Some people prefer being outdoors, while others like to exercise indoors on a treadmill. The best choice is the one you enjoy and will stick with. In either case, the surface you walk or run on does make a difference, especially if you have arthritis or other musculoskeletal problems. A softer surface provides more cushioning and is preferred.

If you walk or run outside, an asphalt surface is better than concrete. On concrete, there is more force through your joints when you are moving. Many communities and parks have paved walking trails, which often have asphalt or a packed dirt surface. These provide more cushion. If it's a newer paved trail, there will likely be fewer variations in the surface, which is safer for people with balance problems. If you have access to a running track, that is also a good option. They tend to have a rubberized or cinder surface, which will be softer than concrete.

If you do walk outside, be aware that some roads have a slightly sloped surface to allow water to run into sewers. So you'll be walking on an angle. If you always take the same route, you'll be walking at the same angle, which can cause problems. If you notice that the surface you're walking on has a slope, try to vary your route.

When it comes to walking on a treadmill, look for one that has a cushioned surface. Older treadmills tend to have a hard walking surface, which is more like walking on concrete. For people with balance issues, an advantage of walking on a treadmill is the ability to hold onto the railings.

### I was working out in the yard and I threw my back out. I could barely move for a few days. What happens when you throw your back out?

Periodic back pain is very common, and it can come on suddenly. People may describe it in different ways, such as throwing my back out, wrenching my back, straining my back, and others. The pain can be severe, and it can take time to recover. Significant exertion preceded by a long period of inactivity can set you up for this kind of problem. Some people are less physically active in the winter and then in the springtime they go out and overdo it, stressing out their muscular system.

When you feel like you've pulled something in your back and it's painful to move, this may involve a muscle (called a strain) or a ligament (called a sprain). It could also be something else. You may have a herniated disk. The small bones (vertebrae) that make up the spine are separated by shock-absorbing pads called intervertebral disks. The soft center can bulge out, creating a herniated (also called a slipped) disk. If you have osteoarthritis in the spine, you may have aggravated it. The only way to know what is happening for sure is to get an evaluation.

The best way to manage this is to prevent it from happening. If you have a strong back, this is less likely to happen. Try an exercise regimen that works on strengthening the core muscles, which support the spine, and increasing the flexibility of the spine. A physical therapist can help you design an exercise routine.

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