

YOUR COMPREHENSIVE GUIDE TO
LOWER BACK PAIN



BACK & BODY
M E D I C A L

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Lower back pain is an incredibly common condition. It is estimated that there are some 31 million Americans experiencing lower back pain at any given time. It is the second most common reason for trips to the doctor's office, outnumbered only by upper-respiratory infections. Believe it or not, lower back pain is the single leading cause of disability worldwide, and roughly half of all working Americans admit to having experienced lower back pain at one point or another. Experts estimate that four out of five Americans will experience lower back pain.

Why are we so prone to experiencing lower back pain? Well, one of the main reasons is our anatomical structure. As humans, we are two-legged creatures, which forces us to carry the majority of our weight above our waist. Consider this: an 180-pound man carries roughly 120 pounds above his waist. Put simply, the two-legged structure just isn't good for our backs. Research actually shows that our four-legged animal counterparts experience less deterioration and arthritis.

Lower back pain is a complex issue, and there is a lot to learn. But if you are experiencing lower back pain, it is critical that you understand what is causing this pain and why. Patient education is key. Let's take an in-depth look at lower back pain, including what causes lower back pain, who is at risk, treatment options, and how lower back pain can be prevented.

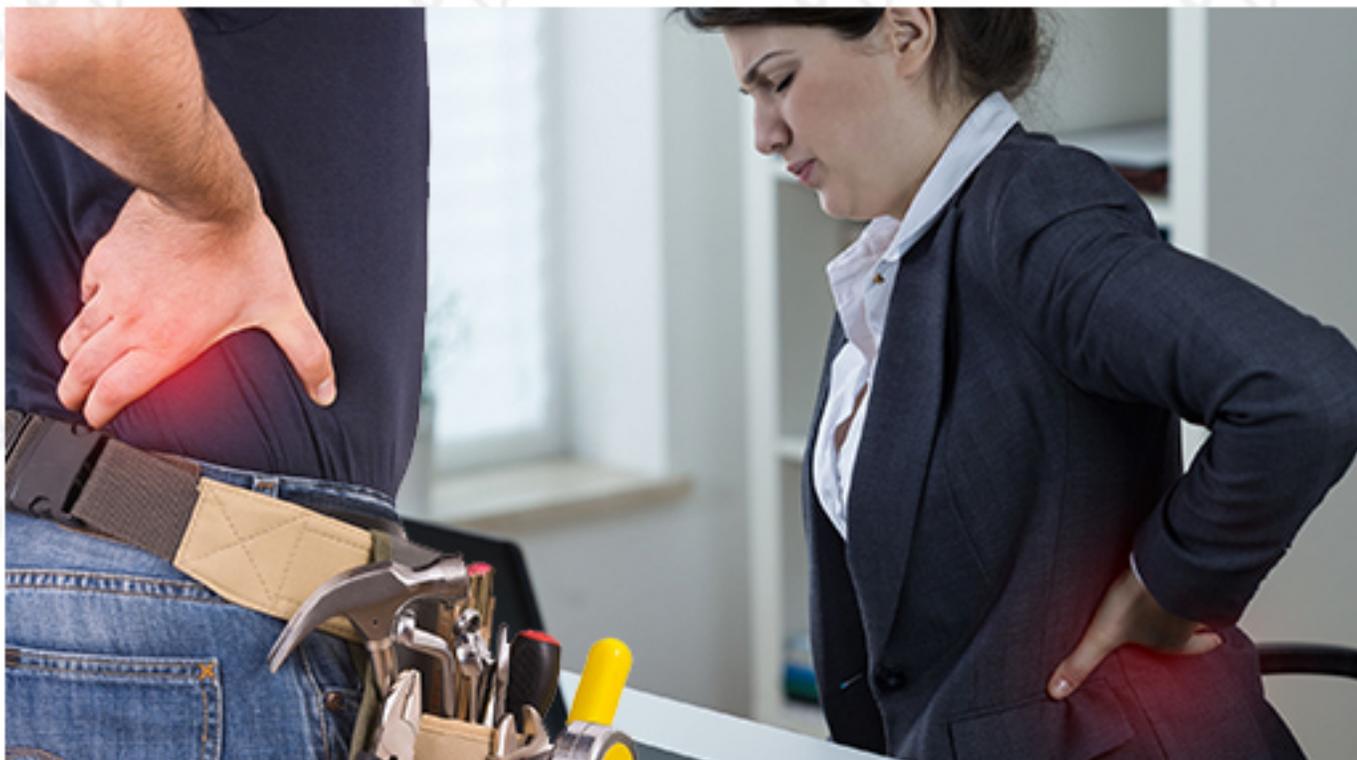
Who Experiences Lower Back Pain?

Nobody is immune to lower back pain. The vast majority of us, at one point or another, will experience it. With that being said, there are several factors that can put you at an increased risk of lower back pain. Let's take a look.

- **Women are at a greater risk of experiencing lower back pain than men.** A 2012 study examining incidences of lower back pain among active duty U.S. military service members found that women are 45 percent more likely to experience lower back pain.
- **Individuals over the age of 40 are more likely to experience lower back pain.** That same 2012 study found that individuals over the age of 40 were 1.28 times more likely to experience back pain than those who were between 25 and 29 years old.
- **Smokers have higher incidences of lower back pain than non-smokers.** Several studies have found a positive correlation between smoking and incidences of lower back pain. Researchers aren't quite sure why smokers are more prone to lower back pain than non-smokers. However, it has been theorized that the nicotine in cigarettes could affect the way in which the brain transmits pain signals. Research also shows that smoking restricts the flow of nutrient-containing blood to spinal discs, which could put smokers at a greater risk of herniated discs or other disc-related back issues.
- **Certain types of employment can increase your risk of lower back pain.** Individuals with jobs that involve heavy lifting, such as concrete-reinforcement workers, carpenters, etc., can be at an increased risk of experiencing lower back pain. However, while many people associate employment-related back pain with manual labor, it should also be noted that individuals with sedentary office jobs can also be at a heightened risk of

experiencing lower back pain, as sitting for prolonged periods of time can actually do serious damage to the spine, as it causes the muscles in the back to become quite weak (remember, the spine is designed for activity). Furthermore, sitting also places increased pressure on the lumbar discs. If you have a sedentary job, it is a wise idea to regularly take walks.

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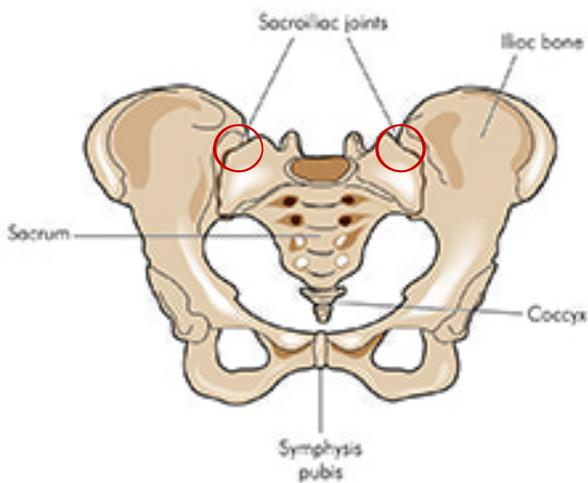
“ If you have a sedentary job, it is a wise idea to regularly take walks. ”

What Are the Causes of Lower Back Pain?

The causes of lower back pain can be roughly divided into three different categories: mechanical lower back pain, nerve root pain, and red flag lower back pain. Let's take an in-depth look at the specifics of each of these three categories.

MECHANICAL PAIN

With mechanical pain, the pain pattern is typically localized to the lower back. It may spread into the buttocks, hips, and thighs but rarely extends past the knee. However, with mechanical pain, there is NO numbness or weakness in the leg or foot, as this symptom suggests a spinal nerve pinch. Causes of mechanical back pain include:



- **Sacroiliac (SI) sprains:** The sacroiliac joint is the joint in the pelvis, situated between the sacrum and the ilium of the pelvis. The human body has two sacroiliac joints, one on the left and one on the right, which are responsible for supporting the spine. There are five major ligaments in the sacroiliac joint (the anterior sacroiliac ligament, the interosseous sacroiliac ligament, the posterior sacroiliac ligament, the sacrotuberous ligament, and the sacrospinous ligament). Damage to these ligaments (sprains) can cause lower back pain. Keep in mind that lower back pain caused by a sprain typically tends to be achy and dull.

- **Lumbar sprains or muscle strains:** The lumbar refers to the various abdominal segments of the torso and is sometimes also called the lower spine. There are five different vertebrae in the lumbar region of the back, as well as several muscles that assist with rotation, flexibility, and strength. Damaging or tearing these lumbar muscles can cause lower back pain. Damaging or tearing these muscles is often caused by sudden movement or lifting a heavy object.
- **Facet syndrome:** Facet syndrome refers to pain caused by the zygapophysial joints, which prevent the spine's vertebrae from bending or twisting excessively. Facet syndrome most often manifests as a kind of dull ache across the back.
- **Osteoarthritis:** Osteoarthritis causes the degradation of joints, including articular cartilage and subchondral bone, causing lower back pain.

DISK DEGENERATION



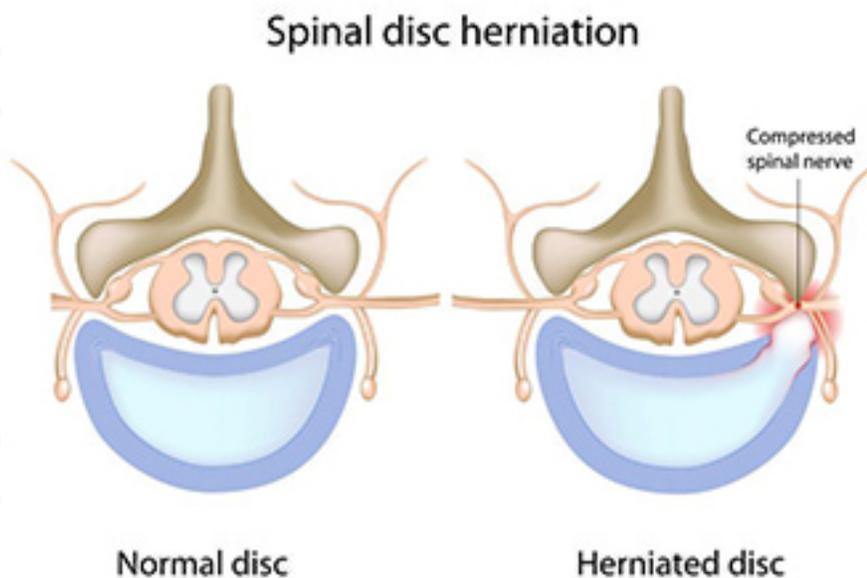
(figure 1)

- **Disc injury or degenerative disc disease (DDD):** Spinal discs are situated between the spinal vertebrae and are held in place by ligaments connecting the spinal bones and surrounding sheaths of muscle (see figure 1). These discs consist of a tough, fibrous, outer membrane, known as the annulus fibrosus, and an elastic core, called the nucleus pulposus. There are five of these discs in the lumbar region of the back, as well as 12 in the thoracic spine/mid-back region and six in the cervical spine/neck region. Most of us will experience degenerative disc disease, or DDD, at one point or another. In that sense, it isn't really a disease, but more of a term used to refer

changes that occur in your spine as you age. Essentially, DDD causes the narrowing of disc spaces as well as the loss of fluid in your discs. It can also cause tiny tears in the outer layer of the discs. All in all, DDD causes your spine to become less stable, prompting the body to produce bone spurs (osteophytes).

- **Spinal instability:** Spinal instability describes abnormal movement between one vertebrae and another. It is often the result of disc degeneration, which causes the disc to lose its tension, or “turgor.” This in turn causes disc bulging and causes increasing spinal movements between the vertebrae. This unusual movement often occurs with lifting or extending and can cause significant pain across the lower back.

- **Spondylolysis:** Spondylolysis refers to a defect in the spine’s vertebrae, and it occurs when one vertebrae slides over another. Spondylolysis tends to occur in the lumbar region of the back, and experts estimate that it affects somewhere between 3 percent and 6 percent of the population.



(figure 2)

NERVE ROOT PAIN (see figure 2)

Nerve root pain will often be accompanied by numbness and muscle weakness. It is often the result of a herniated disc pressing on a nerve, DDD, arthritis, and/or calcification of ligaments near the nerve. Oftentimes, nerve root pain is caused by several different factors working in conjunction. Nerve root pain often feels like a sharp, shooting pain and is therefore different from mechanical pain, which is characterized by a dull kind of ache.

RED FLAG PAIN

The most common causes of back pain by far fall into the previous two aforementioned categories. However, in some cases back pain may be a warning sign of a very serious or even life-threatening condition. For example, in some cases back pain can be an indication of a virus or bacterial infection. Though it is far less common than other causes, viruses and bacteria can cause lower back pain. For example, Lyme disease can be a cause of lower back pain. This infectious bacterial disease is transmitted to humans via tick bites and can cause joint pain, back pain, constant fatigue, and memory problems. In other cases, lower back pain can be a red flag that could indicate a range of serious conditions, including cancer, infections, fracture, and cauda equina syndrome (spinal cord pinch creating bladder and/or bowel weakness). The bottom line? It is never a wise idea to ignore lower back pain, as it could be a red flag for a very serious issue.

Remember, to diagnose the cause of your lower back pain, it is always a good idea to seek out advice from a qualified medical professional. In order to effectively treat back pain, the problem causing the pain needs to be correctly identified by a medical professional. A complete examination is necessary to determine the cause. This examination should include moving your spine around in different planes to identify the location of the problem; poking and pressing on different tissues of the spine to identify

swelling, inflammation, or tenderness; and x-rays to evaluate the alignment and posture of your spine.

Treatment Advice: What Should You Do to Address Lower Back Pain?

When your back starts acting up, your first instinct might be to pop a few Tylenols. But ultimately, this isn't really the most effective way to treat your pain. Remember, back pain isn't in itself a problem — it is the symptom of a problem. This difference might seem trivial, but it is crucial. The goal of effective treatment isn't just to treat the pain. It is to treat the underlying problem while also alleviating pain. If you are experiencing lower back pain, be sure to consider the following treatment advice.

- **Apply ice to reduce swelling and inflammation.** Individuals who are experiencing lower back pain often wonder whether they should ice their backs or apply heat. Generally, it is a far better idea to apply ice. It might be far more comfortable to throw a heating pad on a sore back than a pack of ice, but ice facilitates vasoconstriction and pushes out inflammation and swelling. This helps to manage pain and leaves you feeling better. Heat, on the other hand, does the opposite — it causes vasodilation, which draws blood to the injured area, adding more fluid and only exacerbating inflammation and swelling. Basically, this is like throwing gas on a fire!
- **Use heat to alleviate tension.** There is an important caveat to this ice over heat rule. When dealing with chronic lower back pain (in other words, lower back pain that is not new or acute), heat can be great to relax muscles and reduce tension. However, many people make the unfortunate mistake of applying heat to the back for too

long, which can actually be detrimental. The golden rule is to never apply heat for more than 20 minutes of one hour. When dealing with a chronic injury, contrast therapy tends to be ideal: ICE 10 minutes / HEAT 5 minutes / ICE 10 minutes / HEAT 5 minutes / ICE 10 minutes. This essentially creates a push-pull action that uses ice to push out fluids/inflammation followed by pulling in fluids with heat.

- **Be cognizant of physical activity and monitor pain levels.** Dealing with lower back pain can definitely be a frustrating experience, especially if it is affecting your ability to complete routine activities. You don't want to totally cut out all activity when dealing with lower back pain. Research shows that exercise can actually help to facilitate a speedy recovery by reducing tension and lessening inflammation. But, at the same time, you don't want to push yourself, as that could actually be detrimental to your recovery. If you ever feel a sharp, dagger-like pain in your lower back, you need to immediately stop what you are doing!
- **Try an herbal supplement.** Herbs, such as ginger, turmeric, and boswellia, can reduce inflammation, swelling, and pain.
- **See a chiropractor.** A chiropractor is a trained medical professional who specializes in the diagnosis, treatment, and prevention of disorders of the neuromusculoskeletal system. Chiropractors can be an excellent option when it comes to lower back pain. Not only do they help you alleviate back pain, they can also work with you to help you fix the underlying problem causing your pain. A 2009 health care report commissioned by the Foundation for Chiropractic Progress found that adding chiropractic care to the treatment of neck and lower back pain can "increase value-for-dollar in US employer-sponsored health benefit plans." The bottom line? Chiropractic care achieves higher satisfaction

and superior outcomes for both neck and lower back pain in a way that is incredibly cost-effective.



Figure : “Not only do they help you alleviate back pain, they can also work with you to help you fix the underlying problem causing your pain.”

- **Consider Traction.** (see Figure 4) Traction involves pulling body parts (arm, leg, finger, toe, etc.) in order to separate and increase the space between joints and stretch the surrounding soft tissues, including ligaments, joint capsules, muscles, and tendons. In the case of spinal injuries and lower back pain, traction has been

improve circulation, reduce inflammation, and reduce the nerve's excitability, all of which translates into pain reduction. The Cochrane Report found that traction is most effective for cases of sciatica or nerve root pressure creating leg pain, and it is best when used in conjunction with other treatment approaches, such as spinal manipulation, muscle massage, myofascial release techniques, and exercise training.



(figure 4)

Ultimately, effective treatment of lower back pain is typically a multifaceted strategy. There is no single magical treatment.

A Word of Warning: NSAIDs Are Not a Long-Term Solution

Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used to treat lower back pain. NSAIDs specifically reduce the body's production of prostaglandins, chemicals produced by the body's cells that cause pain, inflammation, and fever in the aftermath of an injury. NSAIDs do this by blocking COX enzymes, the enzymes responsible for the production of prostaglandins. Examples of NSAIDs include aspirin, Motrin, Advil, and Aleve.

These medications can help manage back pain in the short term. However, it should be noted that NSAIDs are not a long-term solution to lower back pain. First and foremost, it is important to note that NSAIDs don't do anything to address the underlying cause of back pain. As previously explained, the majority of back pain is caused by problems in the spinal joints, with joints either moving too little (fixation dysfunction), or too much (instability). NSAIDs do nothing to fix this — that requires chiropractic intervention, lifestyle changes, and, in some cases, surgery.

Furthermore, in some cases, NSAIDs can actually be detrimental to patient recovery. The problem is that NSAIDs reduce the body's production of prostaglandins. While this helps reduce swelling and subsequently works to alleviate pain, these prostaglandins are absolutely vital when it comes to repairing damaged tissue. Because lower back pain is commonly caused by sprains (ligament injuries), strains (muscle/tendon injuries), and cartilage injury, blocking these prostaglandins by taking NSAIDs can actually be detrimental to the recovery process. In fact, research consistently shows that use of NSAIDs can delay the healing of these types of injuries. It can even accelerate osteoarthritis and joint deterioration, especially in elderly patients.

Consider a 1995 study conducted by the North Carolina School of Medicine. The researchers divided patients who had sustained soft tissue injuries into four different groups. The first group received no treatment, the second group was treated with exercise, the third group was treated with exercise and Indomethacin (a NSAID), and the fourth group was treated only with Indomethacin. 72 hours after injury, only patients in the second group had their prostaglandins, helping to facilitate a speedy recovery. The bottom line is that when it comes to lower back pain recovery, it is best to limit the use of NSAIDs.

Treating Lower Back Pain: Is Surgery Right for You?

Sometimes surgery is necessary to treat the underlying problem of lower back pain. However, surgery may simply not be the best solution for you. In some cases, surgery simply isn't the most effective option. For example, a literature review recently published by the Journal of the American Academy of Orthopaedic Surgeons showed that in most cases of degenerative disc disease (DDD), nonsurgical approaches prove to be the most effective treatment choices. The review reported that the success rate of spinal fusions for DDD was only 50 percent to 60 percent. Even artificial disc surgery has its drawbacks. A study reported that 10 years after artificial disc surgery (used to replace a herniated or degenerating disc), treatment had failed in 40 percent of the patients, and they had had a second surgery within three years of the first. Those numbers just aren't good. Let's also consider a large-scale study conducted in the UK in 2008 evaluating the risks and benefits of spinal manipulation in patients with low back pain. The study examined 200 patients, all with herniated discs and sciatic pain. The study actually found higher patient satisfaction and better care outcomes with the patients who didn't receive surgery.

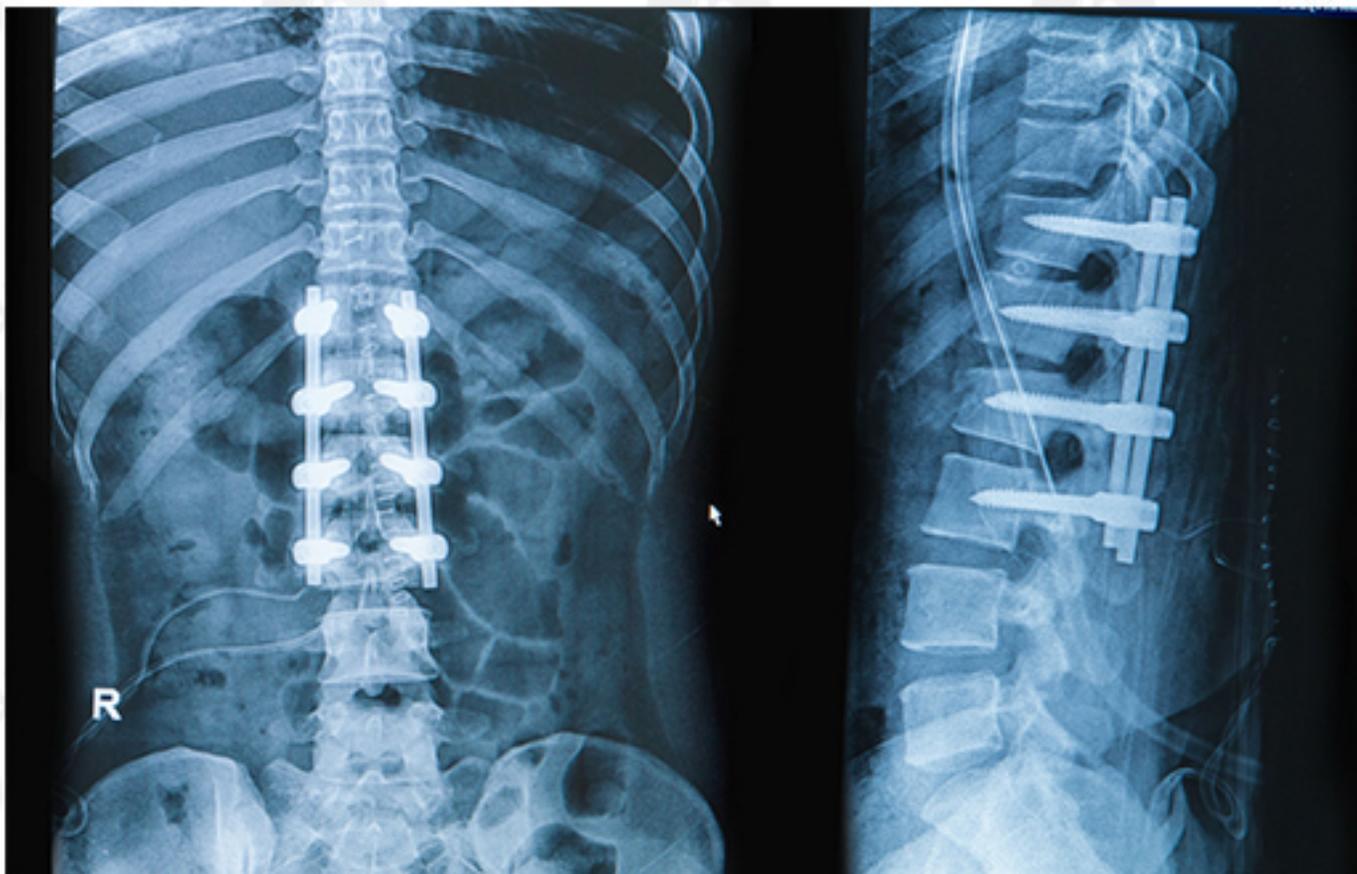


Figure 5: In some cases, surgery simply isn't the most effective option

Even if you are considering surgery, if you are experiencing lower back pain, it is probably in your best interest to see a chiropractor before you see a surgeon. A recent study found that 43 percent of patients who first saw a surgeon had surgery, compared to a mere 1.5 percent of those who first saw a chiropractor — a truly staggering difference. This is concerning, as research clearly shows that if you don't have to have spinal surgery, you shouldn't. A University of British Columbia study evaluating the safety of spinal surgery in 942 lower back pain patients reported: 1) 87% had at least one documented complication; 2) 39% of the 87% had to stay longer in the hospital as a result; 3) 10.5% had a complication during the surgery;

4) 73.5% had a post-surgical complication (which included: 8% delirium, 7% pneumonia, 5% nerve pain, 4.5% difficulty swallowing, 3% nerve deterioration, 13.5% wound complication). The bottom line is that surgery can be a risky endeavor, and it can be advantageous to explore other treatment options.

Remember, even if you do decide to opt for surgery, it should still be combined with other treatment options, including lifestyle changes to promote weight loss, exercise if appropriate, and chiropractic treatment.

Prevention Is Key: 6 Ways to Prevent Lower Back Pain

Back pain is multifactorial, meaning that it is typically caused by a number of different factors in conjunction. Several lifestyle choices can work to maintain a healthy back and subsequently reduce your risk of lower back pain.



Figure 6

1. Watch your weight. Even just a few extra pounds can significantly exacerbate any lower back pain, especially if you are carrying extra weight in your mid-section. This is because extra weight in the center of your body shifts your center of gravity, putting increased strain on your lower back. A 2010 study examining 60,000 men and women in Norway found a direct relationship between a high BMI and an increased prevalence of lower back pain. To reduce your risk of lower back pain, it is advisable to stay within 10 pounds of your ideal weight.

2. Hit the gym. Research shows that regular exercise can actually help to reduce your risk of lower back

pain. Remember, the spine is designed for activity. As mentioned earlier, a sedentary lifestyle will weaken the muscles in your back and make you more prone to experiencing back pain. Even if you are already experiencing mild to moderate lower back pain, moderate exercise can help ease inflammation and reduce tension. In order to prevent or reduce lower back pain, be sure to make stretching a part of your regular exercise routine. By stretching the muscles that move the bones and joints, we work to make them more flexible. This can make you more resilient and less prone to injury when lifting heavy or awkward loads. Remember, the key to effective stretching is good form. Hold the stretch for at least 40 seconds so that the muscles have a chance to respond and elongate, and never bounce.



Figure 7: Even if you are already experiencing mild to moderate lower back pain, moderate exercise can help ease inflammation and reduce tension.

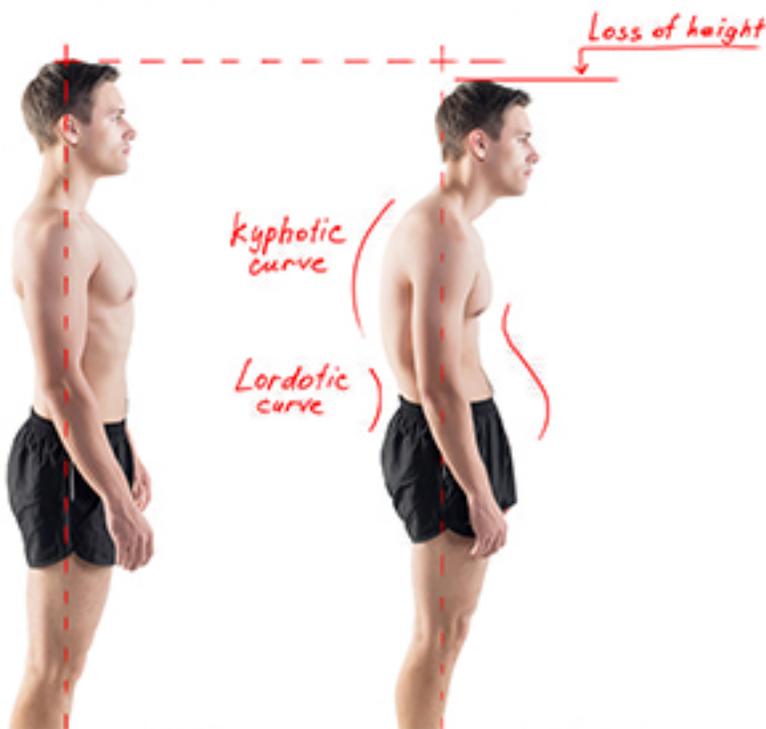
3. Quit smoking. As previously explained, smokers are more prone to lower back pain than non-smokers, as nicotine in cigarettes can affect the way in which the brain transmits pain signals and smoking restricts the flow of nutrient-containing blood to spinal discs. To reduce your risk of lower back pain, it is a wise idea to quit smoking. And if you are already experiencing lower back pain, it is a wise idea to ditch the cigarettes sooner rather than later.



Figure 8: And if you are already experiencing lower back pain, it is a wise idea to ditch the cigarettes sooner rather than later.

4. Improve your posture. Poor posture is one of the most common causes of lower back pain. When we have poor posture (which includes stooping or slouching while sitting or standing), our muscles and ligaments have to work extra hard to keep us balanced, which can cause overwork and straining — and lower back pain. A healthy back has three natural curves: an inward, forward curve at the neck (the cervical curve), an outward or backward curve at the upper back (the thoracic curve), and an inward curve at the lower back (the lumbar curve). Good posture works to maintain these natural curves and protect your muscles and ligaments.

Bad posture does not maintain these natural curves, and it can actually cause serious problems down the line. For example, researchers examined



the lumbar curve in 50 patients experiencing chronic lower back pain and DDD, as well a group of 50 patients experiencing chronic lower back pain without DDD. The researchers measured the amount of lumbar curve and found that the lumbar curve was significantly less arched in the group with DDD than in the group without DDD. They concluded that the patients with DDD had a straighter or more flat curve (less sway back) when compared to those without DDD. While it isn't quite clear whether DDD caused the lesser lumbar curve or whether the lesser lumbar curve caused the DDD

Figure 9:our muscles and ligaments have to work extra hard to keep us balanced, which can cause overwork and straining — and over back pain.

this research does suggest that when our backs' natural curves aren't maintained, we put ourselves at greater risk for back problems. The bottom line? Sit up straight! You could save yourself a good many problems and a lot of lower back pain down the line.

5. Adjust your sleeping position. Certain sleeping positions can actually make you more prone to lower back pain while others can reduce your risk of back pain. What's the key? Try lying on your side with your legs supported. This helps keep your spine's curves in their natural position. Be sure to keep your hips stacked in alignment, as allowing your top hip to roll forward will rotate your lumbar spine. If needed, place a firm pillow between your knees to ensure your hips stay aligned. This might feel funny at first, but give it some practice. You will likely get used to it after a few nights, and it can help



Figure 10:this damage is caused by improperly lifting heavy objects.

reduce your risk of back pain substantially.

6. Watch how you lift certain objects. Lifting heavy objects the wrong way can do serious damage to your lower back. In fact, individuals between the ages of 30 and 60 are much more likely to likely to experience lower back pain caused from a ligament sprain, muscle strain, or disc "derangement," such as a herniated disc, than older patients. Very often, this damage is caused by improperly lifting heavy objects. To reduce your risk of

back pain, always be cognizant of how you lift certain heavy objects. Never, ever bend over from the waist. Instead, bend your knees, squat, and pull in your stomach muscles. Make sure to hold the object close to your body as you stand up, and don't twist your body while lifting the object. Try to push the object rather than pulling it, as pushing is much easier on the back.

The bottom line? By maintaining a healthy, active lifestyle, you can help reduce your risk of lower back pain.

When to Call for Help

As you just read, there are many causes of low back pain. A reasonable first step for minor back pain is to try conservative treatments. For example, selective rest combined alternating ice and heat may be all it takes to relieve your lower back pain. On the other hand, if your low back pain is not relieved with conservative, at-home treatments, it may indicate something more serious. A back pain specialist can provide you with a specific diagnosis, rule out more severe causes of pain, and select a targeted therapeutic regimen based on your condition and preferences.

It is important to see a back pain specialist if:

- ❑ At-home treatments (e.g., ice, NSAIDs) have not helped after 1-2 weeks
- ❑ You have less than full range of motion
- ❑ You feel tingling, numbness, weakness in your arms or legs
- ❑ Your back pain was caused by trauma (e.g., a fall, car accident)
- ❑ If you are over the age of 70
- ❑ You have lost control of your bowel or bladder
- ❑ You have new back pain and fever

David Perna, DC, CCSP, CCEP is a back pain specialist who wants to help. If you are ready to discover the cause of your low back pain or finally receive definitive treatment, call **Back & Body Medical today!**



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BIO

OUR DOCTORS



David Perna DC, CCSP, CCEP

Dr. Perna uses an integrated approach to help his patients. He has focused his post-graduate studies on soft tissue techniques as well as exercise rehabilitation. This experience is why he treats professional athletes as well as weekend warriors with great success.

Dr Shan Sivendra MD

Dr. Shan Sivendra is the Director of Medicine for the Back and Body Medical group in Midtown Manhattan and has been practicing in the New York Metro Area since 1995. He is the Director of House Physicians at St. Barnabas Medical Center in Livingston, New Jersey and is working towards a certification in acupuncture.



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