

Low Back Pain Education

Low back pain is experienced by 80% of adults during their lifetime. Whether the pain is a constant dull ache or a sharp stabbing pain, low back pain affects men and women at equal rates.

When evaluating back pain, it is best to address the whole problem instead of only addressing the pain. Your body is one functional unit made of many different parts that are all interconnected. A whole-body approach will help identify the source of your pain and other contributing factors. This will allow your physician and their team to treat pain from the source and hopefully prevent the issue from reoccurring.



Structures of the Lumbar Spine

Images from Google Images

The lumbar spine, or low back, is made up of five vertebrae that are supported by fascia, muscles, tendons, ligaments and intervertebral discs. The lumbar spine is responsible for supporting the weight of the upper body and connected to the lower body to allow us to stand and walk.

Between each vertebra is a round, rubbery pad called an intervertebral disc. These discs act as shock absorbers throughout the spinal column and cushion the vertebrae as the body moves.

Ligaments, tendons, and muscles work together via fascial connections and communications to hold the vertebrae in place.

The spinal cord runs through the vertebrae in the vertebral foramen, an opening posterior to the vertebral body. Nerves branch off the spinal cord to help control the movements of the body and transmit signals from the body to the brain.

Causes of Low Back Pain

There are many potential root causes of low back pain. Whether acute or chronic, it is important to identify the cause of the pain to optimize treatment. Here are some common sources of low back pain:

- Tight Muscles (Muscle Spasm or Mechanical Low Back Pain): Everything is • connected. Muscles commonly associated with low back pain can originate in your low back but connect much lower at your pelvis or legs or go up and into the upper back and neck area. These muscles can become tight from poor body mechanics with sitting or lifting, head forward shoulders hunched posture (think about on electronic devices), and/or from compensating for other weak muscles. Many times, you may be told you have a muscle spasm in your back. This isn't a true muscle spasm like we see in neurological conditions. The muscles feel tight because the nerves going to them traveling through the fascia are not happy. The nerves can get tugged and pulled incorrectly or if the fascia is stiff from a sedentary lifestyle or poor posture, and it is these more superficial nerves getting irritated that cause most low back pain. Traditional treatments like RICE (rest, ice, compression, elevation), NSAIDs, muscle relaxers, and stronger pain medications do not work well for this type of pain. These treatments cover up a symptom and do not treat the root cause. These treatments, along with steroid or cortisone injections, can contribute to the development of chronic pain. They inhibit the body's initial healing response, inflammation. Blocking this in the acute stage blocks the other stages in healing. Stages that last 6 weeks to 6 months that we are not even aware our body is doing on the inside to heal us. Let your body heal. It is amazing at it.
- **Sprains and Strains:** Commonly referred to as a "pulled muscle," strains are often caused by overuse or stretching of the muscle or tendon. Sprains are caused by over stretching of the ligaments. Both occur from incorrect twisting or lifting. Inflammation or swelling of the muscle can cause superficial nerves to become compressed causing irritation and spasm. See above.
- **Traumatic Injury:** Injuries from falls, outdoor recreation, sports, or car accidents can result in low back pain. Traumatic injury can lead to many different sources of pain from soft tissue damage and on occasion a broken vertebra- or compression fracture- either acutely or in some cases months/years down the road. Treating correctly in the acute and subacute phases can help avoid this progression to chronic pain. Even if chronic there are treatments that can be done.
- Intervertebral Disc Degeneration, Herniation or Rupture: Disc degeneration happens during the normal process of aging, the disc loses water and integrity and becomes a less effective shock absorber (this is why we shrink as we get older). Herniation or rupture occurs when the disc becomes compressed, bulging outward. This can cause low back pain and/or radiating pain down the legs. Many people have these findings on their Lumbar (low back) MRI, though there is not a good correlation between what is seen on

MRI and the level of someone's pain. Treatments are often focused on these findings but they are not the only cause of someone's pain. They may be contributing factors or not the problem at all. See "muscle tightness". Staying strong and lifting weights has shown to keep people from losing height, decreases pain, and improves function. Seek help from an expert who knows how to examine you and not just treat pain based on an MRI. Structured lifting programs are safe and effective when done correctly.

- **Radiculopathy:** A condition caused by compression, tension, irritation, inflammation or injury to the spinal nerve root. This may result in pain, numbress or tingling that radiates to other areas of the body.
- **Spondylolisthesis:** Occurs when a vertebra of the lower spine slips forward, this can cause the nerves that exit the spinal column to be compressed.
- **Spinal Stenosis:** Commonly a result of age-related wear and tear, spinal stenosis is the narrowing of the spinal column that puts pressure on the spinal cord and nerves. This may cause pain or numbress in the legs that can progress to leg weakness and loss of sensation.
- A note on these last three: See the section on Intervertebral disc degeneration. Much of what I wrote pertains to these three. Radiculopathy is a symptom and Spondylolisthesis and Spinal Stenosis are findings seen on an MRI. A thorough history and exam are needed to help determine what may be causing or contributing factors to your pain and what appropriate treatments should be offered.

Treatment Options

There is no "one-size-fits-all" approach to treating low back pain. The goal is to optimize function and prevent recurrence of injury or pain. Treatments may be combined to meet individual needs. Non-surgical treatments include but are not limited to:

- Avoid RICE, NSAIDS, Cortisone/Steroids, sedentary lifestyle, and narcotics-Although these medications are appropriate in some cases, they also have many negative side effects and can lead to downstream problems, chronic pain, and poor functioning. Seek out other treatment options first before you consider these. They should not be first line treatments.
- **Exercise:** Get your body moving. Some exercise is better than none, and more is better than some. Walking and moving your body everyday while building strength is great for your back. Due to the complexity of the low back and functional movement, especially after years of pain, referral to a physical therapist is generally recommended to help avoid further injury by improper body mechanics. Movement practices like yoga or tai chi can also be helpful.
- **Physical Therapy:** A physical therapist can help treat acute or chronic low back pain with stretching, exercises and other modalities. They will also be able to help you prevent future injury by teaching proper body mechanics and a good core strengthening program.
- Chiropractic, Massage Therapy, Acupuncture, and other CIH (complementary and integrative health) Services: These are additional treatment options that can be helpful adjuncts in treating low back pain.
- Lumbar Support Brace: A brace will help offload and support the structures that are injured or damaged allowing for some relief. These are support braces, you still need to do the work to get and stay strong.

- **Perineural Injection Therapy (PNI or PIT):** These injections utilize a solution of a low concentration of dextrose that acts on a channel on the nerve and helps decrease neurogenic inflammation (what happens when they get tugged and pulled incorrectly). Nerves can also leak a substance that can cause pain, abnormal nerve function, breakdown of surrounding tissues and changes in mood such as depression and anxiety. The nerves being treated have likely been misfiring for some time to produce these painful effects, and even after starting these nerve injections the nerve will continue to try to misfire until the nerve and fascial planes it runs in have been treated. Therefore, a series of injections is recommended.
- **"Sweet" Caudal Epidural:** An epidural is an injection into the space surrounding the spinal cord. Typically, fluoroscopic or ultrasound guidance is used to perform this type of injection of a low concentration of dextrose and anesthetic into your lower back. The dextrose helps with neurogenic inflammation and pain, while the steroid helps with inflammation and improve healing response without the harmful effects of higher dose steroids. This type of epidural allows for treatment of multiple nerves at one time and takes about 15 minutes.
- **Prolotherapy:** A series of injections of dextrose into ligaments, joints, and/or tendons using a specific technique. This technique allows the healing cascade to being. Prolotherapy is a great option because there is minimal recovery time, returning to work and activities the same day are expected for most patients.
- **Platelet Rich Plasma (PRP):** PRP is made from your blood and allows the physician to treat the support system, i.e.: functional spine unit, including ligaments, tendons, muscle, fascia and joints. Treating the structures surrounding the effected nerves can help release the pressure on the nerves that are resulting in pain.

In addition to these treatments other lifestyle changes can improve your pain levels and quality of life including:

- Adequate Sleep
- Nutrition: Packaged and processed foods, along with foods containing high amounts of sugar and fructose, refined grains, and vegetable oils are extremely inflammatory. Removing these products from your diet is a great steppingstone to healthier eating and decreasing pain.
- **Supplements:** Turmeric/Curcumin, magnesium, and omega-3 are a few that may help. Quality matters when choosing a supplement.

Traumeric (tumeric and Vit. C)

You can take the Traumeric (tumeric) in place of Alleve/Advil/Ibuprofen. Ok to continue with Tylenol staying below the max dose of 3500 mg/day.

Magnesium

Can help with muscle soreness and achiness.

There are many different kinds. Magnesium can be in place of the muscle relaxer.

Magnesium citrate is the best for constipation. It is not absorbed from the gut well. Think Milk of Magnesium, but it also comes in capsule forms.

Magnesium malate can help with muscle soreness or cramps.

Magnesium threonate can be used for help with the brain and sleep.

Magnesium glycinate can help the body with its own detoxification systems, sleep, brain, and muscle.

Starting at a lower dose, usually 1 capsule (dose can vary based on type and brand) and slowly titrate up until desired affect. If you get loose stools then titrate back down. We recommend glycinate which is better for muscle aches and the MagMind (magnesium threonate) can help with sleep and stress.

Magnesium: in general, you want 200-400 mg a day (of each kind), most take at nighttime. The 2 main kinds we recommend are list in the recommendations.

Omega-3- 1000 mg/day of EPA and DHA

Options: Eat 2-3 servings of fatty fish and foods high in omega-3s. A good quality supplement should not give you a fish aftertaste or burps or need to be kept in the fridge or freezer to keep from doing this. If you already have an omega-3 supplement be sure to check the dosing. Many will say "1000 mg" on the bottle but when you check the ingredients there is only 300-400 mg of the EPA/DHA, you need 1000 mg of the EPA/DHA which means you need to take 3-4 capsules to get the correct dose.

Vitamin D3 with K2- 2000-5000 IUs/day of Vit. D

Most of us who live in the northern US are deficient in Vit. D and you need K2 to help with absorption.

Sufficient Vit. D is also needed for healing.

Vitamin D needs to be taken with K2 to help with absorption.

Typically more is needed in the winter and less in the summer depending on your sun exposure. To know for sure you should have your Vit. D checked and monitored.

Exposure to sunlight gradually over time without burning is the best way to get Vitamin D.

Creatine- 5 grams/day

This has always been thought of as a supplement for weight lifters. But it has many benefits for most of us as we age and are trying to stay strong and independent. 5 grams/day is adequate. A loading dose is no longer needed.