

Low Back Basics

Most low back injuries occur when in a bent over position. In this position, our spine functions like a giant crane. When you bend over to lift something, tie your shoes or pick something off of the ground, your back muscles in coordination with your leg muscles must support you and whatever you are lifting or holding. The major muscles must be balanced and equally strong to properly support the spine and pelvis so that you do not strain the muscles and ligaments of your back.

Our body is designed as a series of triangles. Our muscles support our legs, spine and head with various length triangles of muscles. **Our stability and strength depends on the even development and maintenance** of these triangles. If one of the supports is either weak or changes its length from normal, the structure must compensate for this by making other muscles weaker or stronger. Basically, we change the relative strengths of our muscles to maintain our balance.

Low back pain should be broken down into **two major areas of injury**. The **first is the pelvis**, which consists of the two large hip bones, a small triangle shaped bone in the back called the sacrum and a very small bone at the base of the sacrum called the coccyx. **The other area is the lumbar spine**. These are the spinal bones that are just above your pelvis. There are five of these bones and they are separated by discs and supported by muscles and ligaments. In the spinal bones, vertebrae, there are two areas of potential pain and injury. One area comprises the small joints that act as hinges that control motion. This area is greatly affected by injuries to the small muscles and ligaments that hold the spine together and lie just below the skin. The second area is the disc structure and the large ligaments that lie deeper inside us. These are infamous for their potential need for surgery when torn or severely damaged, as in cases of intractable sciatica (severe debilitating pain running down the back of the leg making it almost impossible to stand or walk).

Injuries to the lumbar spine can be divided into different categories. The **simplest injury is a strain or mild injury to the ligaments and muscles that hold the vertebrae together**. Think of this like a strained ankle. It will swell a bit and cause you to limp. In your low back, the same thing occurs. You get swelling and you will tip to the side or forward to get your weight off of the injury. Just as in a strained ankle, you should use ice treatment to prevent any additional swelling. The examination of the spine in these cases is designed to rule out any other damaged structures. Treatment is then instituted to reestablish normal mechanical motions in the spine, and to treat any muscle or ligament injuries. Untreated, the spine may fail to move properly causing slow degenerative changes and long-term disc damage.

A more severe injury causes extensive damage to the supporting structures, the ligaments and muscles. These in turn cause spasm and weakening of other muscles as you adapt to the injured area. In these cases, treatment is designed to not only speed the healing of the injured structures but to prevent adhesions from occurring around the structures that have been damaged. Local inflammation that is necessary to start this healing process can

cause excessive fibrous tissue to be formed, causing decreased motion between the bones.

Worse injury or repeated minor injuries can damage the ligaments that hold the discs. These stresses can allow **the disc to protrude or even cause tearing of the discs.** The disc is best described as a circular sponge that is filled with a gel type material. It functions as a shock absorber when we walk and move. It is held in position by strong ligaments that act to hold the disc between the bones of the spine. Trauma usually injures these ligaments, and in severe cases can cause tearing of the disc itself. These types of injuries require time to heal and extensive rehabilitation of the surrounding structures. **Many chronic disc problems are caused by long term, low-grade problems that cause improper spinal mechanics as they alter normal blood flow around the spine.** These problems can include local muscle contractions that lock the vertebrae together so they don't move properly, or fibrous type changes in the supporting structures that also effect mobility. These are the types of problems that we are uniquely trained to detect and correct.

One of the questions that a patient frequently asks is "why does back pain become chronic?" The answer to this question is not as simple as it may seem. The simple answer is that inappropriate or inadequate care was given in the past. While this lays the blame on another practitioner, it doesn't answer the question.

Studies that have examined regular care have shown that complete recovery from a simple back injury occurs in only 27% of patients after three months of care. This study showed that 28% were improved, 30% reported no change in their symptoms and 14% were markedly worse. These disappointing findings were reported at the 23rd Annual Meeting of the International Society for the Study of the Lumbar Spine, which was held in Burlington, Vermont in June 1996. One of the important findings presented at this convention was that chronic disc changes occur because of changes in the vascular supply to the spine. Because the disc structure in the spine does not have direct blood vessels supplying the area, this supply of vascular components is caused by spinal motion. Consequently, failure of normal motion in the spine is a direct cause of degenerative changes that leads to chronic pain. Good spinal mechanics are at the base of preventing these types of changes.

To support healing, special nutritional changes may need to be made to your diet to help limit inflammation or to increase your ability to make anti-inflammatory compounds. Other nutrients can speed the healing or make the healing process more complete. These factors may be added to your treatment program. Finally, you may have to take an active role in strengthening or increasing your flexibility to help prevent future injuries.

Basic Rules following an injury

1. Apply ice at the first sign of injury.
Applying heat may make the injury much worse
2. Help control inflammation and swelling.
Don't eat anything with salt or eat any foods containing animal fats.
3. Call the office and describe how the injury occurred and your symptoms.
4. Early treatment allows the fastest and most complete healing with little to no complications.

How you can help prevent low back injuries

1. Always stretch before doing any lifting. A good habit is to do some stretching every morning.
2. Engage in an activity that causes spinal motion and moderate stress. This can range from activities like power walking, ballroom dancing, tennis, swimming and the list goes on.
3. Check your posture frequently. When you are out of alignment you cause the small muscles of your back to contract restricting motion. This leads to slow degenerative changes.