Low Back Pain in Athletes

A Patient's Guide to Low Back Pain in Athletes

Introduction

About 80 percent of the population suffers from a bout of low back pain at some point in their life. However, some people are at higher risk for chronic and acute back injuries due to their lifestyle. For obvious reasons, athletes are at greater risk of sustaining a lumbar (lower) spine injury due to physical activity. Whether the sport is skiing, basketball, football, ice skating, soccer, running, golf, or tennis, the spine undergoes a lot of stress, absorption of pressure, twisting, turning, and even bodily impact. This strenuous activity puts a strain on the back that can cause injury to even the finest and most fit athletes. Though the entire spine is used when playing sports, it is estimated that 5-10 percent of all athletic injuries are related to the lumbar (lower) spine. Many cases of low back pain in athletes can be traced to a specific event or trauma; others are brought about by repetitive minor injuries that result in microtraumas.

Even though low back pain can often be treated without major disruption in a person's life, athletes are often reluctant to seek medical help. Many of them deny or minimize complaints in order to avoid consequences, such as: having to decrease activity in order to recover, losing a position or being removed from a team, missing a competition, or letting the team down. Others fear they might lose their worth to the team. Some athletes simply do not want to bother seeing a doctor for pain; they believe it will recover on its own.

Therefore, many athletes - from the weekend warrior to the elite professional athlete - buck up their strength, pop some over-the-counter pain medication, and tolerate the pain for the sake of the game and personal enjoyment. However, avoiding medical help can lead to further and more serious injury. In some cases, without medical help the anatomic damage could eventually lead to permanent exclusion from sporting activities.

The majority of low back pain can be treated with conservative means. All athletes who suffer from it should seek medical advice. The body's ability to be active is worth preserving!

This document will cover:

- General lumbar spine anatomy
- Causes of lumbar injuries
- Diagnosis
- Treatment
- General guidelines

Anatomy

To best understand lumbar spine injuries, it helps to know some anatomy of the overall spine, and more specifically, the lower spine.
Common Causes of Low Back Pain in Athletes

There are many causes of low back pain. Here we will discuss the most common causes in athletes: musculoligamentous strain, spondylolysis, spondylolisthesis, and herniated nucleus pulposus.

Musculoligamentous Strain

The term "musculoligamentous strain" is just the medical term for describing common "back strain". This term refers to all injuries of the lumbar spine's soft tissue. Soft tissues are the muscles, nerves, ligaments, tendons, and blood vessels around the spine. Musculoligamentous strains are probably the most common sports injury. These injuries are diagnosed by exclusion, which means the diagnosis is offered after all other causes of the pain are ruled out. These injuries are usually self-limiting. In other words, they do not continue to spread and get worse; they generally heal in time. Healing often happens even without getting specific treatment for the area. Treatment generally focuses on education and prevention of future strains, through proper conditioning, warm-up, and changes in the way an activity is carried out.

Spondylolysis and Spondylolisthesis

So far, there is no definitive cause of spondylolysis. Most physicians agree that the bone defect appears in children most likely due to a genetically weak "pars interarticularis" teamed with repeated stress to the spine from various physical activities during the major growth years. It is thought that spondylolysis appears in younger and older adults as the result of excessive stress to the spine and eventual stress fractures.

In athletes, spondylolysis is most commonly found in those who participate in sports that have frequent hyperextension of the lumbar spine, such as: gymnastics, pole-vaulting, and football. Weightlifters also have a higher incidence of the disorder due to excessive stress on the spine.

Spondylolysis does not always produce noticeable symptoms. When it does, chronic low back pain is the most common symptom. The pain can stem from mechanical (structural) or compressive (pressure on nerves) pain. Initially, conservative treatment is generally suggested.

Anti-inflammatory medications and stretching/strengthening exercises can reduce the pain. If your spine specialist feels you may have a true stress fracture from athletic activity, you may be placed in a back brace for 24 hours a day for several months to allow the fracture to heal. You will then be gradually weaned from the brace and allowed to return to full activity. Surgery is rarely considered in such cases.

Spondylolysis can also lead to a condition closely related called "spondylolisthesis". This condition occurs when the weakness caused by the spondylolysis causes one vertebra to slip.
forward over the one below it. Most cases of spondylolysis in athletes do not lead to vertebral slippage. However, if slippage does occur, it may continue. This situation would require treatment that is more aggressive, perhaps even surgery. The chance of progression is probably more worrisome in teenagers than adults.

Many cases are non-symptomatic and do not cause any nerve problems. However, sometimes the slipped vertebra can press into the space belonging to the spinal canal. This leaves less room for the nerve roots. The neural pressure can lead to low back, buttock, and leg pain, as well as numbness in the foot. If the problem is severe, surgery may be suggested.

If you would like to learn more about spondylolysis and spondylolisthesis, you may wish to review the document, entitled:

- [Spondylolysis and Spondylolisthesis](#)

**Herniated Nucleus Pulposus (HNP)**

Because of excessive weight bearing and stress, athletes sometimes damage an intervertebral disc. The intervertebral discs are flat, round "cushions" that act as shock absorbers between each vertebra in your spine. There is one disc between each vertebra. Each disc has a strong outer ring of fibers called the annulus, and a soft, jelly-like center called the nucleus pulposus. The mushy nucleus of the disc serves as the main shock absorber. The nucleus is made up of tissue that is very moist because it has high water content. The water content helps the disc act like a shock absorber - somewhat like a waterbed mattress.

The process of degeneration of the intervertebral disc causes many problems in the spine. Everything you do during the day - once you stand upright - begins to test the spine's ability to support your body weight. Athletes place more pressure on the spine than the average person. Over time, repeated daily stresses and minor injuries can add up and begin to affect the discs in the spine.

A herniated disc occurs when pressure to a disc's outer fibers (annulus) is so great that it rips, and the nucleus ruptures out of its normal space. If it rips near the spinal canal, the bulging disc can push out of its space and into the spinal canal, placing inappropriate pressure on the spinal cord and nerve roots. If a disc bulges a lot, or fragments into pieces that lie in the canal, then irritation of the nerves can be severe.

The compression to the nerves caused by herniation can lead to feelings of: numbness, pain, a change in reflexes, and/or tingling in the arms or legs. In addition, if a disc ruptures, it releases chemicals that can irritate and inflame the nerve roots, which leads to strong discomfort. Sometimes a herniated disc is referred to as "slipped disc", though the disc does not actually slip.

Herniated discs are most common in the lumbar (lower) spine because it supports more pressure than the thoracic (middle) or cervical (upper) parts of the spine. In fact, a herniated lumbar disc often produces sciatica (the sciatic nerve in the lumbar spine region connects with your legs). With sciatica, you will feel numbness and pain down the back of the leg, side of the calf, and
possibly into the side of the foot, but not necessarily much back pain. The exact area where you will feel numbness depends on the nerve root that is affected; the numbness could be in the inner ankle, big toe, heel, outer ankle, outer leg, or a combination of them. When the nerve roots' motor function is damaged by disc herniation, you may also experience weakness in certain parts of the leg and foot.

Herniated discs can usually be treated without surgery. However, in rare cases a herniated disc can be so large that it fills the entire spinal canal. When the canal fills with disc material, it places enormous pressure on the nerves. This can lead to paralysis of the muscles that control your bowels and bladder. If you lose control over your bowels or bladder, contact your health care provider immediately. The treatment of a herniated disc depends upon the symptoms and degree of nerve irritation or dysfunction.

If you would like to learn more about herniated discs, you may wish to review the document, entitled:

- **Herniated Nucleus Pulposus in the Thoracic Spine**

**Other causes**

The adolescent athlete may also suffer from low back pain that is caused by growth-related problems such as scoliosis and Scheuermann's kyphosis. These problems may or may not be related to athletic activity, but they can affect an athlete's ability to perform up to his or her standards.

Scheuermann's kyphosis is a developmental type of kyphosis. The vertebrae are normally rectangular-shaped and stacked on top of one another like building blocks with a soft cushion (disc) in between each one. If they wedge closer together in a triangular shape, as with Scheuermann's kyphosis, it causes the spine to curve more than normal. Sometimes this deformity is described as "round-back posture" or "hunch-back".

For more information on Scheuermann's kyphosis, please review the document, entitled:

- **Scheuermanns Kyphosis**

Scoliosis is a condition that is also related to growth. It appears usually just as the teenage growth spurt of puberty begins and may progress through the growth phase. In girls, this occurs earlier than in boys - about age 11 in girls and age 13 in boys. It is usually painless, but may cause back discomfort with activity. The condition is genetic, which means it runs in families. It is more common in girls than boys. If the condition progresses, it can be serious. It may require treatment with a brace, or even surgery.

For more information on scoliosis, please review the document, entitled:

- **Adolescent Idiopathic Scoliosis**
Athletes are not immune to the same problems that occur in the rest of the population. This includes every type of back problem. It is sometimes hard for an aggressive athlete to consider changing training schedules, or the fact that a serious disease may exist. It is important to stay in tune with your body and seek attention when symptoms do not go away in a timely fashion. Athletes should be aware that such situations might require reducing or ceasing of athletic activity until the problem is resolved.

**Diagnosis**

In evaluating low back pain in athletes, your doctor will start by gathering information about the current problem and a complete history of any additional medical problems. Athletes tend to live with a certain amount of constant pain of one type or another. This can cause them to ignore or minimize the severity of their low back pain. They may also be used to dealing with more pain than the average patient, so it may be harder to adequately assess their symptoms. For these reasons, a thorough history of the athlete is needed.

Before developing a treatment plan, your physician will need to know:

- Your age
- Type of sport(s) and level of competition
- All past and current medical problems
- Location of the pain and where it spreads
- When the pain began, and the pain's relation to any specific trauma
- What brings on or relieves the pain
- Drug and medication use

**Physical Exam**

Your health care provider will examine the entire spine. He or she will look for: signs of unusual curves of the spine, a rib hump, a tilted pelvis, and tilting of the shoulders. Your muscle strength will be tested, as well as reflexes, sensation, and ability to perform specific movements. Finally, you may need to undergo some tests if your provider feels there is need for more information.

For a complete discussion on how back problems are diagnosed and the tests available, review the document, entitled:

- Diagnostic Tests for Spine Problems

**Treatment**

Treatment for low back pain in athletes is usually conservative, which refers to non-surgical methods. These might include: anti-inflammatory medication, physical therapy, and exercise. Athletes will understand that exercise is very important in order to strengthen the abdominal, paraspinal, and pelvic musculature. When muscles in these areas are stronger, they can take pressure off the spine and help prevent back injuries. A physical therapist can help the patient
develop a beneficial routine of conditioning and rehabilitation that includes proper warm-ups (such as back stretching exercises) and aerobic exercise.

For a discussion on the rationale behind many of the conservative treatment recommendations made by spine specialists, please review the document, entitled:

- Back Pain

Treatment for specific conditions can be found in the documents relating to those problems. Feel free to search the site for additional information on specific diagnoses.