



GUIDELINES FOR PEDIATRICIANS

Lower Back Pain in Athletes

Issue 10

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

Back pain should always be a symptom of concern in the young athlete. Back pain can be caused by acute injuries but is more commonly due to chronic stress from the mechanics of a specific sports activity. Rapid diagnosis and prompt treatment is essential to return to sports.

Common Problems

- 1) Spondylolysis/spondylolisthesis (spinal overload syndrome) – the most common cause of skeletally related back pain in the young athlete is spondylolysis, a chronic stress injury of the posterior elements of the vertebrae (the pars complex). It is caused by repetitive hyperextension of the lower back, usually involving the L4 or L5 vertebrae. Without treatment, it can lead to spondylolisthesis, which is a slippage of one vertebra over the underlying vertebrae (most commonly L5 over S1). *A history of repetitive hyperextension should be explored in all athletes with back pain.* Dancing, gymnastics, and weight training are common culprits, but all sports can be at fault. On exam, paraspinal tenderness is often seen and is made worse with hyperextension of the spine, especially if done with the patient standing on 1 leg (stork test). A positive stork test should always be considered evidence of spondylolysis until proven otherwise.
- 2) Discogenic pain – pain from intervertebral disc abnormality does occasionally happen in children. However, the history and physical exam are often unreliable; therefore, the diagnosis is usually made radiologically when back pain or chronic “hamstring” problems do not improve with conservative measures.
- 3) Muscle strains/contusions – extremely common. Usually heal within 3 to 4 weeks with rest and pain relief. Often associated with tight hamstrings.
- 4) Sacroiliac joint pain – should be considered in any athlete with paraspinal tenderness when the history does not suggest chronic hyperextension, trauma, or overuse.
- 5) Scoliosis – can be a cause of back stiffness but rarely causes pain. Stretching exercises will help the stiffness but will not affect the underlying curve.

Evaluation

- 1) History – onset of the pain, location, duration, severity, and exacerbating activities should be documented. Any associated symptoms (fever, numbness, weakness, etc) should also be sought. Pain associated with fever should always prompt urgent evaluation for possible infection or diskitis.
- 2) Physical examination – inspection and palpation of the entire spine and paraspinal muscles is very important. Range of motion of the back as well as movements that exacerbate pain (especially hyperextension) are very helpful. Straight leg raises and neurologic function of the lower extremities should be documented (including walking on toes, deep tendon reflexes, and sensation in both lower extremities). Hamstring tightness should also be assessed.
- 3) Radiology – plain radiographic films of the spine (anteroposterior, lateral, obliques) occasionally show abnormalities of the pars complex, such as sclerosis or fracture (the “Scotty dog” sign) but are frequently normal. A bone scan or single photon emission computed tomography scan of the spine is usually needed to evaluate stress injuries of the pars. Magnetic resonance imaging may be useful and is essential for assessing disc abnormalities.

Treatment/Referral

- 1) Most athletes find ice and nonsteroidal anti-inflammatory drugs to be helpful for acute pain. Reducing backpack use or using duplicate textbooks (one at school, one at home) to keep backpack weight below 10 pounds can be helpful.
- 2) The patient should restrict activities until free of pain. Rest until the “pain cycle” is broken, with slow gradual return to sports activity, is the mainstay of therapy. Some specialists believe treatment for spondylolysis requires a back brace until pain subsides. Strengthening of “core” muscles of the abdominal wall and back is essential. An experienced physical therapist/certified athletic trainer can be invaluable.
- 3) Any patient who does not improve with conservative therapy over 3 to 4 weeks or exhibits worsening symptoms should be referred for further diagnostic evaluation. Transient nerve root irritation is common with back pain from spondylolysis, but persistent neurologic symptoms should prompt a referral.
- 4) Primary care physicians not comfortable with the diagnosis and rehabilitation of pars, disc, or sacroiliac joint problems should consider early referral to a primary care sports medicine specialist or orthopedist.

Doctor: This side of “Sports Shorts” is for your use; flip side is for photocopying and giving to your patient

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Back pain is a frequent complaint in adults, usually a result of advancing age and spurts of overactivity. However, back pain in children, especially in athletes, is an unusual symptom and should always be taken seriously. Sometimes it is due to muscle soreness from increases in training or bruises from direct contact. However, it can also be a sign of more serious problems.

The bones that make up the back have 3 jobs. Most important, they provide protection for the spinal cord. At the same time, they have to provide strength and stability to support our body weight as we stand, run, and jump. They also have to allow the flexibility for us to bend and twist in all directions. Back pain in athletes is most commonly caused by 1 of 2 mechanisms. The first is repeated hyperextension of the spine (“bending back” or “spinal overload syndrome”), as seen in gymnastics, dancing, lacrosse, diving, and other sports. Repeated hyperextension places a lot of stress on the structures of the back that provide flexibility. Just as a paper clip will break if bent a small distance repeatedly, the bones in the back will get sore and eventually could develop a small break if the back is repeatedly hyperextended. The second mechanism of back pain involves either being hit in the back or stretching the muscles too far and occurs frequently in contact sports or when someone is trying to lift too much (weight training). Although common in adults, disc problems are unusual in children.

Management

- 1) With the initial complaint of back pain, check for any other symptoms. If fever is present, or if the pain is severe, persistent, or associated with numbness or tingling in the back (or going down the legs), call your primary care physician right away. These symptoms could be the sign of a serious problem.
- 2) Initial treatment of pain should be complete rest (no sports participation until the pain is gone) and anti-inflammatory medicines like ibuprofen or acetaminophen. Ice is frequently helpful for acute pain relief. Although heat can eventually be used to relieve muscle spasm, it should never be used in the first 24 hours after an injury.
- 3) If the pain does not get consistently better over a few days and is not gone in 3 to 4 weeks or if the pain is worse when you bend backward, call your primary care physician. Further tests may be needed to determine the cause of the pain. This is especially true if you are involved in any sport that involves bending back, like gymnastics or dance.
- 4) Rehabilitation will **never** be successful until the back is adequately rested (pain free). Rehabilitating a back injury usually involves strengthening the abdominal and back (“core”) muscles and increasing the flexibility of the hip and thigh (hamstring) muscles. Exercises that involve arching of the back should not be done during rehabilitation. Stretches should be done gently for 30 seconds without bouncing or pain and repeated for each leg. Strengthening exercises should be done in 2 sets of 10 repetitions, 2 or 3 times a day.

Stretching

Hip flexors stretch – Kneel behind a chair. Bring one knee up to the back of the chair, while tilting your pelvis forward until you feel a stretch on the other side of the hip.

Hamstring stretch – Lie on your back with your knees bent. Loop a belt around one foot, and raise your leg up while pulling the foot toward you until you feel a gentle pull in the hamstring.

Strengthening

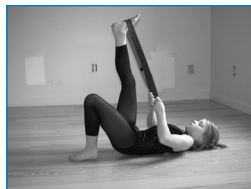
Abdominal crunches – Lay on your back with your feet against a wall so that your hips and knees are both at 90° angles. Lift up your head until you feel the abdominal muscles tense up, and hold it for a few seconds before relaxing. Moving the shoulders from side to side while the head is up will strengthen the lateral abdominal walls.

Planks – Lay on your stomach, resting on your elbows, and lift up your midsection so that all the body weight is on your elbows and toes. Try to keep the entire body perfectly straight. Hold for a few seconds, then relax.

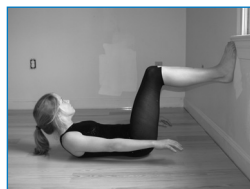
Quadruped – Start on your hands and knees, maintaining a straight upper back, and lift 1 arm straight out next to your ear and then extend the opposite leg out behind you. Hold for 5 to 10 seconds, and repeat with the opposite limbs.



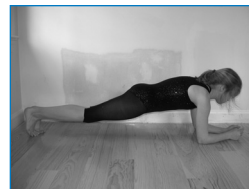
Hip flexors stretch



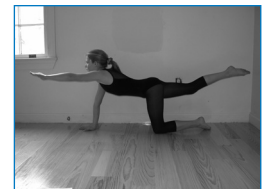
Hamstring stretch



Abdominal crunches



Planks



Quadruped

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