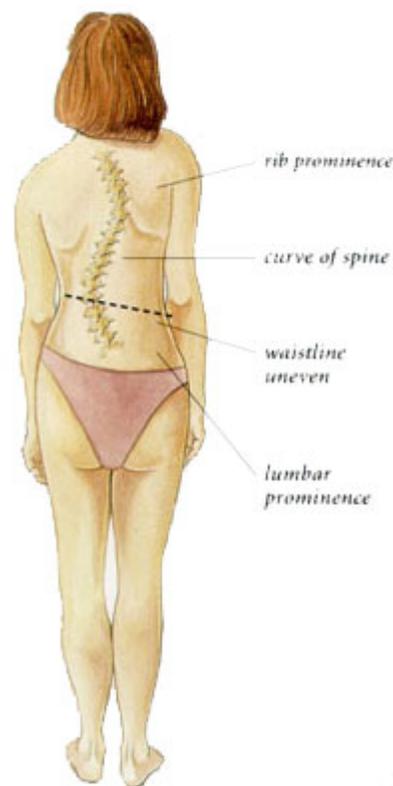




8945 Ridge Avenue
Suite 3 - 4 - 5
Philadelphia, PA 19128
215-483-8558
andorrapediatrics.com

Scoliosis in Children and Adolescents

The majority of scoliosis is "idiopathic," meaning its cause is unknown. It usually develops in middle or late childhood, before puberty, and is seen more often in girls than boys. Though scoliosis can occur in children with cerebral palsy, muscular dystrophy, spina bifida and other miscellaneous conditions, most scoliosis is found in otherwise healthy children. Scoliosis can run in families and can occur at any age. Infantile scoliosis occurs in children less than 3 years old, and may result from a birth defect, disease of the nerves and muscles (such as muscular dystrophy or cerebral palsy), injury, infection or tumors. Juvenile scoliosis occurs in children between the ages of 3 and 10 years old and is not common. Adolescent scoliosis occurs after the age of 10 years old and is the most common type.



Everyone's spine has natural curves. These curves round our shoulders and make our lower back curve slightly inward. Some children have spines that also curve from side to side. Unlike poor posture, these curves can't be corrected simply by learning to stand up straight.

This condition of side-to-side spinal curves is called scoliosis. On an X-ray, the spine of an individual with scoliosis looks more like an "S" or a "C" than a straight line. Some of the bones in a scoliotic spine also may have rotated slightly, making the person's waist or shoulders appear uneven. Scoliosis does not usually cause any pain. The picture below on the left shows an elevated shoulder blade.

Who Gets Scoliosis?

Scoliosis runs in families. If someone in a family has scoliosis, the chance of a child developing scoliosis is 20%. If anyone in your family has curvature of the spine, you should be examined for scoliosis.

When Should Screening For Scoliosis Occur?

The most important part of the management of scoliosis is the early detection of its presence, as early management may prevent the need for surgery. This will usually be checked for at all well checkups.

The Importance Of Early Detection - Tips For Parents



Idiopathic scoliosis can go unnoticed in a child because it is rarely painful in the formative years. Therefore, parents should watch for the following "tip-offs" to scoliosis beginning when their child is about 8 years of age: Any one of these signs warrants an examination by a pediatrician.

- uneven shoulders
- prominent shoulder blade or shoulder blades (Hunchback of Notre Dame)
- uneven waist (crooked suntan line)
- elevated hips
- leaning to one side

How Is Scoliosis Diagnosed?

While bending forward trying to touch the floor, the levels of the shoulder blades (thoracic) and lower back (lumbar) are compared using a handheld device called a scoliometer. Any difference measured between the left and right sides of the back is called scoliosis.

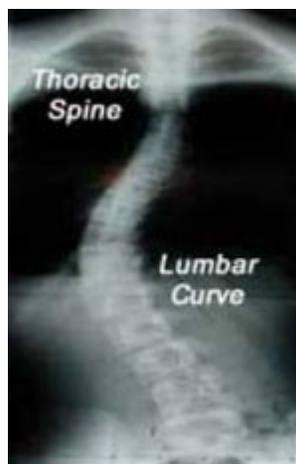
Most spine curves in children with scoliosis will remain small and need only to be watched for any sign of progression. Observation only is appropriate if the angle of the curve is not severe (less than 20 degrees) or if the child is near skeletal maturity (finished growing). Small curves can increase with rapid growth and will require re-examination every 6 months. Most cases of scoliosis referred through school screening will fall into this small curve category.



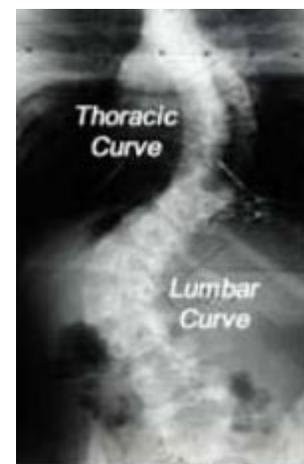
35 Degree Curve



3Thoracic Curve



Thoracolumbar Curve



Double Curve

Long-Term Effects If Scoliosis Is Not Treated

If left untreated, scoliosis can have some long-term effects. Depending on the degree of curvature, the condition can worsen during adult life. The spine may buckle under the added load and the curve will become worse. In addition to curving, the spine can begin to rotate, contributing to diminished lung capacity and the development of restrictive lung disease. Cosmetic concerns are significant to many patients. The incidence of back pain among patients with scoliosis approximates that of the general population.

When Is Treatment Necessary?

A positive history of scoliosis in the family, the age at which the curve began, the curve's location and severity of the curve are important factors that help determine treatment.

The treatment of patients with idiopathic scoliosis begins with an estimation of the probability for curve progression. The two major determinants of curve progression are the patient's age (both chronological and bone development) and the size of the curve.

Small curves measuring less than 20-25 degrees that do not require brace treatment should be observed during periodic examinations of four to six months or 1 year intervals based on their size. Observation is important because any 5 degree increase in the size of the curve may change the course of treatment.

In general, the current treatment of adolescent idiopathic scoliosis is guided by certain principles. First, small curves in older patients have less chance of progression than larger curves in younger patients. Second, adolescent curves greater than 40 degrees are difficult to control mechanically with braces. Third, adult curves greater than 50 degrees will continue to progress at an average rate of 1 degree per year. Taken together, the goal of treatment is to keep adolescent curves less than 50 degrees. Finally, cosmetic considerations should only be a rare, primary indication for surgery. The following are guidelines for adolescents who are skeletally immature (child's bones are still growing).

Adolescent Idiopathic Scoliosis Treatment Skeletally Immature Adolescent	
Curve (degrees)	Treatment
less than 20°	Observation
greater than 20° less than 25°	4 month x-rays
25°-30° or 5° documented progression	Brace
30°-40°	Brace
greater than 40°	Consider surgery

The goal of bracing is to prevent curves from getting worse. Bracing can be effective if the child is still growing and has a curve of less than 30 degrees.

The following points are important in order to achieve the best results. First, bracing alters the natural history of curve progression. Second, the more the brace is worn, the greater chance for it to be effective. Third, for the brace to be effective, it should be worn until skeletal maturity.

There are several types of braces that reach to the underarm or higher. The specialist will recommend a brace and tell you how long it should be worn each day. Wearing a brace does not affect participation in sports or exercise.

Braces can be custom made or can be made from a pre-fabricated mold. All must be selected for the specific curve problem and fitted to each patient.

Surgery

If a scoliosis curve is severe (more than 50 degrees) when it is first seen, or if treatment with a brace does not control the curve, surgery may be necessary. In these cases,

surgery has been found to be a highly effective and safe treatment. The surgery requires a bone graft from the hip, ribs or a bone bank and may use a series of rods, hooks, screws or wires to straighten the spine. Patients can usually walk around on the second or third day and will be discharged from the hospital within a week. Once home, daily activities can be resumed. A return to some sports is possible in 6 to 9 months.



Other Treatments

Surface electrical stimulation has been discredited as a treatment, and studies have shown that the children treated in this way do no better than those left untreated. Treatment such as manipulation has no place in the management of the mechanical defect in scoliosis, although manipulation and physical therapies can help any low back pain that occurs in association with a scoliosis.

Exercises can be prescribed, but they will probably not effect the progression of a curve. If a brace is required, an exercise program will also be prescribed. If a brace is not required, instruction regarding review of the scoliosis and exercises should be provided.

Kids and Backpacks

Backpacks do not cause scoliosis. The extra stress placed on the spine and shoulder from the heavy loads that children carry in their backpacks can cause back muscle fatigue and strain. Excessive weight in backpacks could cause some children to develop bad habits early in life like poor posture or excessive slouching. The following suggestions may help lessen back pain:

- Use a hip strap for heavier weights.
- Use a backpack with padded, wide straps and a padded back.
- Use both of the backpack's straps, firmly tightened, to hold the pack two inches above your waist.
- Engage in exercises to condition your back muscles.
- Use the correct lifting techniques. Remember, bend with both knees when picking up a heavy backpack.
- Place the heaviest items close to your back.
- Neatly pack your backpack, and try to keep items in place.
- Try to make frequent trips to your locker, between classes, to replace books.
- Consider purchasing a backpack with wheels.

Summary

Scoliosis is a common problem that usually requires only observation with repeated examination in the growing years. Early detection is important to make sure the curve does not progress. In the relatively small number of cases that need medical intervention, advances in modern orthopedic techniques have made scoliosis a highly manageable condition.

This information should not be used as substitute for the medical care and advice of your child's physician. Health related

topics found on the Andorra Pediatrics web site should not be used for diagnosing purposes or be substituted for medical advice. As with any new or ongoing treatment, always consult your professional healthcare provider before making any changes in treatment or beginning any new treatment. If you have any questions or concerns, please call our office.