

Curve Checks

Scoliosis Screening
Reference Guide



Children'sSM
Healthcare of Atlanta

Scoliosis Screening Program
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Children'sSM
Healthcare of Atlanta
Dedicated to All Better

The American Academy of Orthopaedic Surgeons, Scoliosis Research Society, Pediatric Orthopaedic Society of North America and American Academy of Pediatrics agree that an effective screening program helps recognize the deformity early when a variety of treatments are available.

This guide is designed to be used with the **Curve Checks** DVD, the **Curve Checks** DVD quiz and the individualized screening form.

This guide is dedicated to the many volunteers who perform scoliosis screenings in schools. Thank you for giving your time to this important process.



Scoliosis Screening Reference Guide

This *Curve Checks Scoliosis Screening Reference Guide* explains what scoliosis is and how to screen for the condition. As a screener, your role is critical. You make the experience comfortable for students, and your caring and training can save a child from a lifetime of pain and physical deformity.

The guide is to be used in conjunction with the *Curve Checks* DVD.

The screening program is not meant to be a substitute for a medical evaluation. Screening programs are designed to assess for conditions that may go undetected. This guide gives you the basis for becoming a screener. Repeating the step-by-step process will give you the experience to find the signs of scoliosis. If you have any questions about a student you have screened, inform the medical professional present at the screening.

Thank you for generously sharing your time and talents.

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Glossary

Adolescence—Growth period between the ages of 10 to 15

Idiopathic—Having no known cause

Iliac crest—The top of the hip bone

Kyphosis—A rounded back that occurs when the spine is bent forward

Lumbar—The lower part of the spine

Radiograph—An image made by radiation, usually an X-ray

Scoliosis—A sideways curve of the spine

Skeletal maturity—Bones have stopped growing

Thoracic—The midsection of the body between the neck and waist

Vertebrae—The bone segments making up the spinal column, or backbone

What is scoliosis?

Scoliosis is a condition in which the spine curves or bends to the side.

- An X-ray determines if the curve is greater than 10 degrees.
- Vertebrae (bone segments making up the spine) can also twist or rotate, producing a prominence on one side of the back and opposite side of the chest.
- One shoulder may be higher.
- One shoulder blade may protrude more than the other.
- One hip may be more prominent.
- Some curving of the spine is normal.
- A curve less than or equal to 10 degrees is considered to be within normal limits.
- A curve greater than 20 degrees can progress.

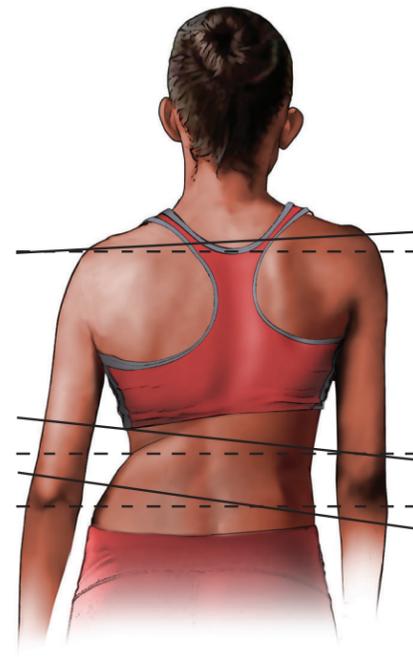
Scoliosis usually begins in adolescence and is best treated early. Signs of scoliosis are typically not known or recognized by parents. By knowing the signs, you may be able to help prevent problems later in life. Left untreated, some curves can increase to 40, 50, 60 degrees—or more—leading to:

- Back pain
- Pressure on lungs

Common types of scoliosis

There are three common types of scoliosis:

- Congenital—malformed or misshaped vertebrae at birth
- Neuromuscular—associated with other conditions
- Idiopathic—most common type that develops over time
 - Affects 2 percent to 3 percent of the population
 - Happens during preadolescence or the adolescent growth spurt
 - Cause is unknown



Misshapen body due to scoliosis. Note the lines that show uneven shoulders, ribs and hips.

Radiographs of different kinds of curves from 9 degrees to 85 degrees



Thorocolumbar curve
9 degrees
Spinal asymmetry



Lumbar curve
15 degrees
Orthopaedic observation with
periodic rechecks



Thorocolumbar curve
26 degrees
Orthopaedic intervention
may include spinal brace



Double curve—"s" shaped
30 degrees
Orthopaedic intervention and
observation over lifetime



Primary Thoracic/compensatory
lumbar
52 degrees/30 degrees
Surgical intervention



Thoracic curve
85 degrees
Risk of shortness of breath and
decreased lung function

There is potential for significant psychological stress from spinal deformity due to societal emphasis on appearance and health.

Why is screening important?

Children should be screened in the adolescent years, ages 10 to 15, when they are most at risk for developing scoliosis. When curves are small, they are not always obvious. Small curves have small deformities.

- If we can identify these curves early, we can prevent progression of the curve.

Scoliosis statistics

- Idiopathic scoliosis is most common and the cause is unknown.
- Scoliosis usually occurs during an adolescent growth spurt.
- Scoliosis tends to run in families.
- Scoliosis affects 2 percent to 3 percent of the adolescent population. Approximately two or three out of every 100 students you screen will actually have scoliosis.

How is scoliosis treated?

There are three treatment options: observation, bracing and surgery.

- All curves are at risk for progression.
- Risk of progression depends on how big the curve is and how much bone growth remains.
- The treatment goal is to keep the curve sufficiently small until bone growth is complete.
- If there is a small curve with a small risk of progression, that curve is observed (rechecked) to make sure the curve does not get worse.
- If there is a small curve with a large risk for progression, that curve is braced to make sure it does not get worse.
- If there is a large curve with a large risk for progression, surgery may be required.

What is my role as a screener?

It has been proven through research that screening prevents problems later in life.

- As a screener, you often catch scoliosis when brace treatment will still be effective.
- You will not diagnose scoliosis.
- A screening program is designed to identify those who are more likely to have scoliosis.
- There is not a definite test for scoliosis. As a screener, you look closely for signs of the condition. You will become more accurate with time. Training will help you avoid false readings.
- False positives and false negatives can occur.
 - False negatives are students who have scoliosis but are not identified in the screening process.
 - False positives are students who do not have scoliosis but are identified and referred to their primary doctor.

Screening preparation

- Screening takes less than one minute.
- Screen boys and girls separately.
- Through training, you will learn how to put children at ease and know how to find the signs that indicate a potential problem.

How to prepare the screening area:

- Screen each child separately.
- The floor should be stable and even.
- Place tape on the floor to let the child know where to stand and to mark the placement of the screener's chair.
- Placing a level line of tape on the wall behind the screening area can be helpful to note uneven shoulders.
- The screener's eyes should be at the height of the child's shoulders, so the screener may need to sit or stand.
- The area should have adequate lighting to prevent a shadow crossing the body.
- Keep the room temperature comfortable for removing shirts.

You may need to guide the child through the screening process, repeating the directions to help the child stand and bend correctly.

Screening process

Use with **Curve Checks** DVD, **Curve Checks** DVD quiz and individualized screening form.

DVD quiz—see additional printed sheet.

Watch Daniella as she is given instructions during a typical screening.

5-step screening process

1. Examine the student from the front, in a standing position.
2. Examine the student from the front, bending toward you.
3. Examine the student from the back, in a standing position.
4. Examine the student from the back, bending away from you.
5. Examine the student from the side, in a bending position. (see page 6)

A successful scoliosis screening program

A successful scoliosis screening program must be a process with numerous activities completed both before and after the examination.

Although schools do things differently, most or all of the following steps are necessary for a successful program:

- Recruit and train volunteers.
- Create screening schedule.
- Coordinate with teachers.
- Notify parents.
- Inform students.
- Arrange for students to watch *Scoli What?* video.
- Arrange private screening area.
- Prepare and distribute screening forms.
- Conduct the screening.
- Identify students who have possible signs for scoliosis and refer them for further evaluation.

Five-Step Screening Process

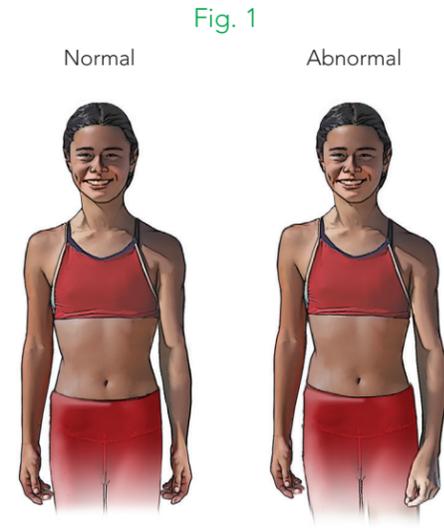
First position: Front, standing position

Instructions to the child:

- Face the screener. Put your feet together with weight equally on both legs.
- Breathe in. Let it out, and relax your shoulders. Let your arms hang naturally at their sides.

Look for:

- Uneven shoulders (Is one shoulder higher?)
- Arm hanging out farther from body on one side
- Hip that appears higher on one side (see Fig. 1)



Second position: Front, bending forward (Adams forward bend test)

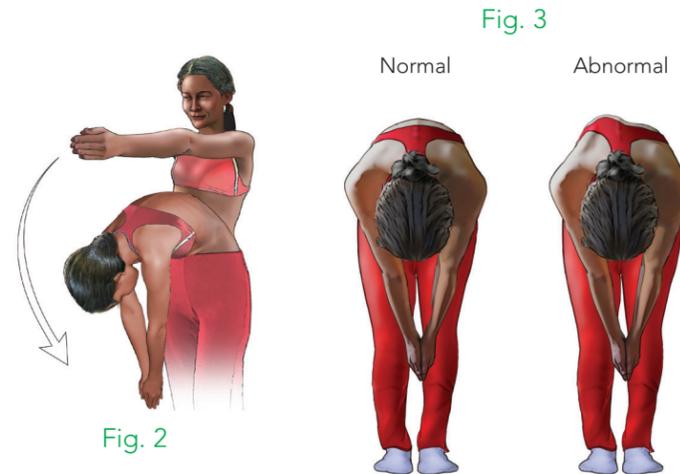
Instructions to the child:

- Put your palms together with arms out straight.
- Put your chin on your chest and roll down until your hands touch your feet. (see Fig. 2)

Note: Encourage the child to continue to roll down as far as possible until the child's back is parallel to the floor. Have the child repeat the Adams forward bend test if he rolls down too quickly or if he rolls down to one side or the other. (The child's hands should be pointing at the big toes.)

Look for:

- Upper rib prominence on one side
- Lower rib prominence on one side
- Lower back (lumbar) prominence on one side (see Fig. 3)



Third position: Back, standing position

Instructions to the child:

- Turn around, (child's back is now to screener), put your feet together with your weight equally on both legs.
- Breathe in. Let it out and relax your shoulders. Let your arms hang naturally at their sides.

Look for:

- Uneven shoulders (Is one shoulder higher?)
- Shoulder blade (scapula) more prominent than other or one higher



- Arm hanging out farther from body on one side
- Waist fold deeper on one side (see Fig. 4)

Fourth position: Back, bending away (Adams forward bend test)

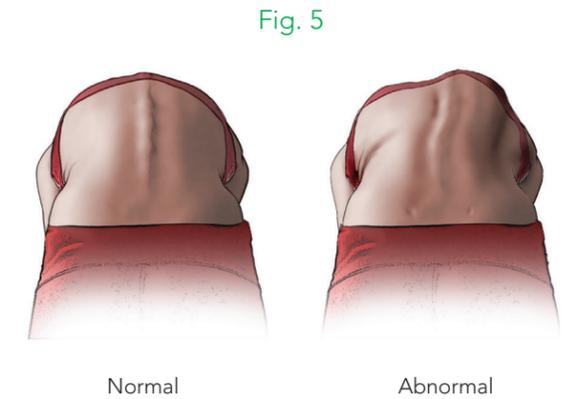
Instructions to the child:

- Put your palms together with arms out straight.
- Put your chin on your chest and roll down until your hands touch your feet.

Note: Encourage the child to continue to roll down as far as possible until his back is parallel to the floor. Have the child repeat the Adams forward bend test if he rolls down too quickly or if he rolls down to one side or the other. (The child's hands should be pointing at the big toes.)

Look for:

- Upper rib prominence on one side
- Lower rib prominence on one side
- Lower back (lumbar) prominence on one side (see Fig. 5)



Fifth position: Side, in a bending position (Adams forward bend test)

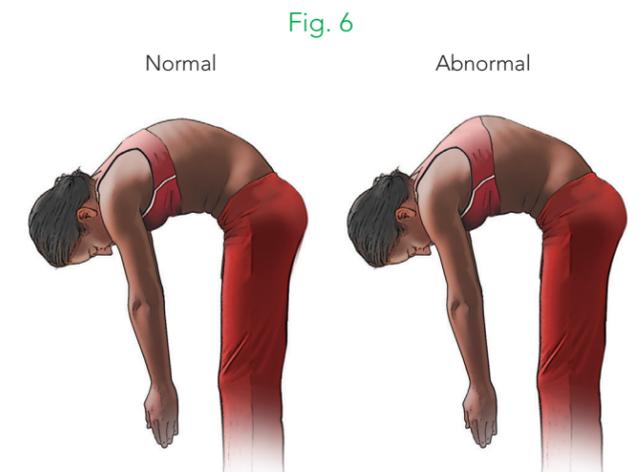
Instruction to the child:

- Turn to the side. Put your feet together with weight equally on both legs.
- Put your palms together with arms out straight.
- Put your chin on your chest and roll down until your hands touch your feet.

Look for:

- Normal "c" shaped curve or more than normal roundness (kyphosis)

Note: Encourage the child to continue to roll down as far as possible until his back is parallel to the floor. Have the child repeat the Adams forward bend test if he rolls down too quickly or if he rolls down to one side or the other. (The child's hands should be pointing at the big toes.) (see Fig. 6)



Curve Checks DVD quiz. Use with Curve Checks DVD and individualized screening form.

- Karlena
- Erin
- Brittany
- Christopher
- Alexis
- Valentina

Your job is important

- Children are screened twice to validate screening results.
- Most children who are screened will be normal.
- Early detection is important.
- Screening is important prior to achieving adult height to avoid complications as an adult.
- Scoliosis can be a disfiguring and painful condition.
- Screening will minimize health problems later in life.

Additional screenings

Use with **Curve Checks** DVD

- Jasmine
- Mahogany

Documentation of screening results

Information about the screening results is not shared with children at the time of the screening. If children ask, tell them their parents or guardians will be notified if any follow-up is needed.

Using the form provided by the school

- Note whether screening is negative or refer for a second screening.
- Document the positive signs of scoliosis—usually a checkmark noting difference on right or left side of body.
- Date the form if child has not noted the date.
- Print your name as the primary screener or secondary screener.
- Initial or sign the form if required.

Curve Checks DVD Answer Key

Correct answers are circled in red 

| | Student name | | | | | | | | | |
|--|--------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|
| Front view | Daniella | Karlena | Erin | Brittany | Christopher | Alexis | Valentina | Jasmine | Mahogany | |
| Shoulder elevation | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Unequal distance between arm and body | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Uneven hips | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N |
| Rib prominence | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Lumbar prominence | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Back view | | | | | | | | | | |
| Shoulder elevation | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Shoulder blade elevation or prominence | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Waist fold difference | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N |
| Unequal distance between arm and body | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Rib prominence | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Lumbar prominence | L R | L R | L R | L R | L R | L R | L R | L R | L R | L R |
| Side view | | | | | | | | | | |
| More than normal rounded back | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

Children's Scoliosis Screening Program | Children's offers monthly clinics for positive scoliosis screening follow-up at several Atlanta neighborhood locations.

- Clinical assessment by a registered nurse with parent in attendance
- Education for teens and parents
- Spinal X-ray if needed, read by a pediatric radiologist
- Coordination of recommended follow-up
- Postcard reminder for curve monitoring

 Parents can call 404-785-7553 to schedule an appointment.