

Scoliosis and Deformity Screening

A program approved by
the Botswana Department of Education



**American
Red Cross**

PowerPoint presentation: Courtesy of
the American Red Cross of Northeast
Tennessee. Modified by WSC.

World Spine Care Scoliosis Screening Program



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Current Status of WSC



Scoliosis Screening Program

- Permission for program received from the Botswana Department of Education
- 2 schools in Shoshong and 2 in Mahalapye. Students ages: 10-15 years old
- Scoliometers: donated by Sally Valentine
- Student gifts: pens and flashlight key chains donated by Don and Sharon Komorous (USA). Notepads by Sally Valentine (USA)
- Coordination: Geoff Outerbridge and Joan Haldeman



Goal of the WSC Scoliosis Program

- Educate and train teachers and nurses
- Identify children at risk
- Manage early so that spinal problems are dealt with prior to adulthood (refer to WSC clinic)
- Improve quality of life of children with scoliosis
- Determine the incidence of scoliosis in Botswana

Scoliosis

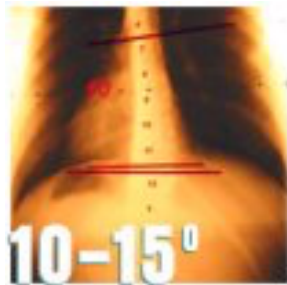
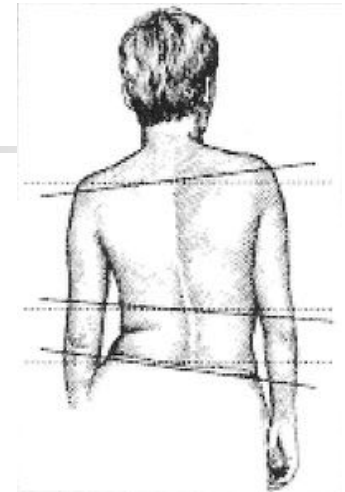
Scoliosis is defined as:

- Sideways curvature of the spine
- Spine turns on its axis like a corkscrew
- Normal spine has a "I" appearance
- Scoliosis produces an "S" or "C" appearance

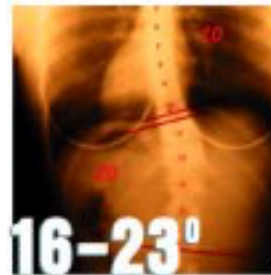


Degrees of Curvature

Scoliosis is a lateral deviation of the normal vertical line of the spine which, when measured by an X-ray, is greater than 10 degrees.



MILD



MODERATE



SEVERE

Causes of Scoliosis

■ Congenital

- Problem with the formation of vertebrae or fused ribs during prenatal development

■ Neuromuscular, Connective Tissue & Chromosomal Abnc

- Cerebral palsy, muscular dystrophy, spinal bifida, paralysis
- Marfan's Syndrome
- Down's Syndrome

■ Idiopathic

- Structural spinal curvature with no established cause
- Appears in a previously straight spine
- 80-85% of cases are idiopathic



A decorative graphic consisting of overlapping yellow, red, and blue squares with a black crosshair.

Incidence (USA)

- 10% of adolescents will have some degree of curvature
- Affects approximately 1 million children in the US
- 3-5 out of every 1,000 cases are severe enough to require treatment
- 25% will require medical attention to monitor for progression
- Affects 2-3% of the general population (can affect adults, most seen in adolescents)

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Girls Vs. Boys

- Primary age of onset – 10-15 years
 - During the last major growth spurt of adolescence

- Time of greatest risk:
 - Girls: 6 months before & after onset of menstruation
 - Boys: Time when their voices deepen

- Mild scoliosis
 - 1 in 10 girls
 - 1 in 25 boys

- More serious curves (< 30 degrees) are 8-10X greater in girls than in boys



Scoliosis facts

- Race, ethnic background and socioeconomics do not appear to be factors
- Tends to occur in families
- Usually painless and without symptoms. Child is generally unaware of curvature
- Untreated scoliosis of greater than 30 degrees can lead to back pain in adults
- 60% of curvatures in rapidly growing prepubertal children will progress
- Increased risk for osteoporosis and gall bladder problems later in life
- Poor nutrition may play a role

Diagnosis

- Scoliometer measurements
- Physician Physical Exam
- X Ray
- MRI



Treatment for adolescent scoliosis

- Minor curvatures
 - Observation and repeated assessment
 - Exercises may help to maintain surrounding muscular strength and mobility
 - Treatment of spinal pain if present
- Mild or slowly progressive curvatures
 - Bracing to help hold spine in place while it grows
 - Can be removed for sports
- Severe or rapidly progressive curvatures
 - Surgery

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Screening

- Screening is not meant to be a diagnostic exam
- Diagnosis will be made after an examination at the WSC clinics
- Purpose- to identify the child at risk for postural deviation, excessive or abnormal curvatures of the spine
- 10-15 year old students should be screened

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Screening

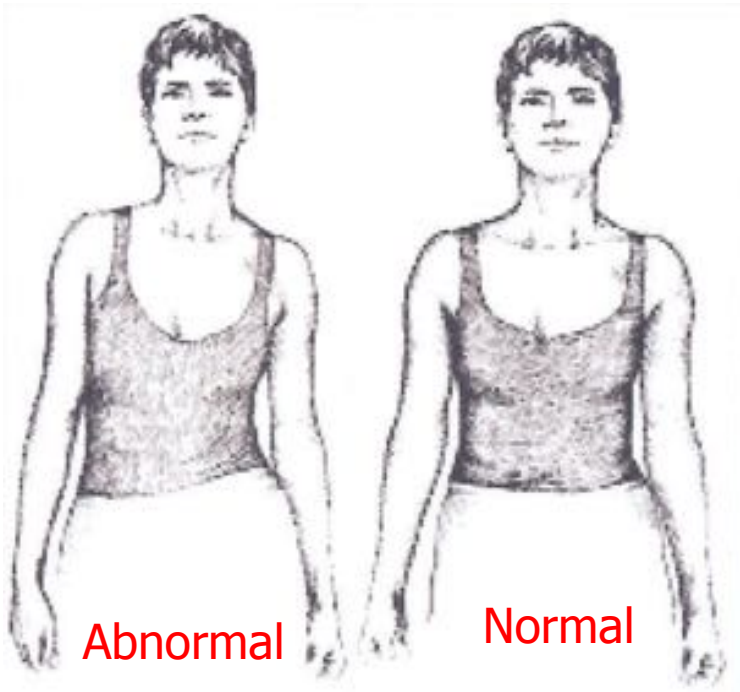
- Schedule date for screening, training, parent permission, follow-up and reports
- Provide overview with teachers & students
- Location for privacy
- Screen males and females separately and individually; barefooted; males without shirts on; females with blouses on backwards (may suggest wearing a bathing suit)

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Screening Process

- Observe the student walk toward you and then away
- Note leg length discrepancies
- With bare back, have student stand straight, feet together and looking straight ahead, with arms at his/her side
- Have student bend forward (Adam's position)
- Observe student from back, side and front
- Use scoliometer for accurate measurement

Step 1 Front View



- Shoulders should be level and at the same height
- Distance between arm and torso equal on both sides
- Crest of hips level on horizontal plane
- Head straight and centered



Step 2 Back Standing View



- Shoulders should be level and the same height
- Distance between arm and torso equal on both sides
- Crest of hips level on horizontal plane
- Head straight and centered
- Scapula level on both sides



Adam's Bending Technique



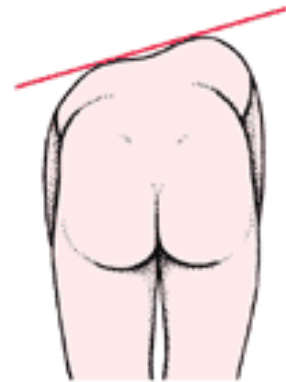
- Feet slightly apart
- Palms together
- Arms outstretched with straight elbows
- Head down
- Bend forward at waist
- Place hands between legs at knee level

Step 3 Back Bending View

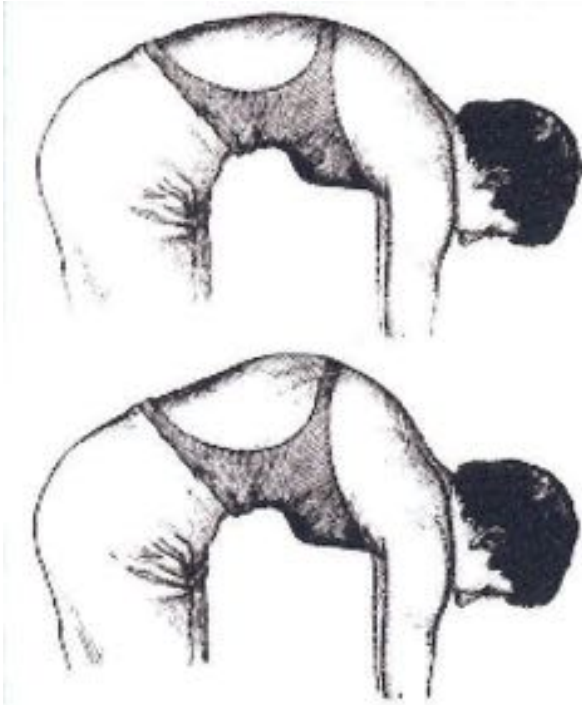


Look For:

- Rib prominence
- Lumbar Prominence
- Differences in height of hip crests

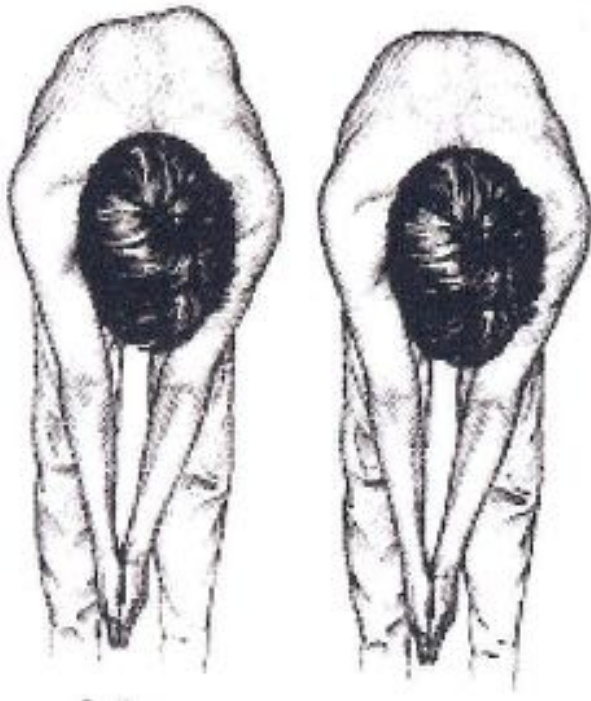


Step 4 Side View



Look for exaggerated
rounding of the back
Kyphosis

Step 5 Bending Front View



- Shoulders level?
- Is one side of torso more rounded than the other?
- Look for lumbar prominence

Step 6

Scoliometer Measurement



- Patients in Adam's flexion position
- Screener uses scoliometer to measure degree of curvature
- Measurement taken at upper thoracic, lower thoracic and lumbar levels



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Action steps for positive findings

- Students with scoliometer readings over 10 degrees or visible deformity:
- Refer to WSC clinic for:
 - Detailed clinical examination
 - Consideration for x-rays to measure degree of curvature
 - Treatment plan: observation, pain management, bracing or surgery

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Additional considerations

- No student can be screened without permission from parents or guardian
- All results to be maintained at the WSC clinic records
- Permission slip from parent permits data but no names to be used for statistical analysis
- Results of statistical analysis to be reported to the Botswana Ministry of Health and the Department of Education



Thank you for your attendance
and attention