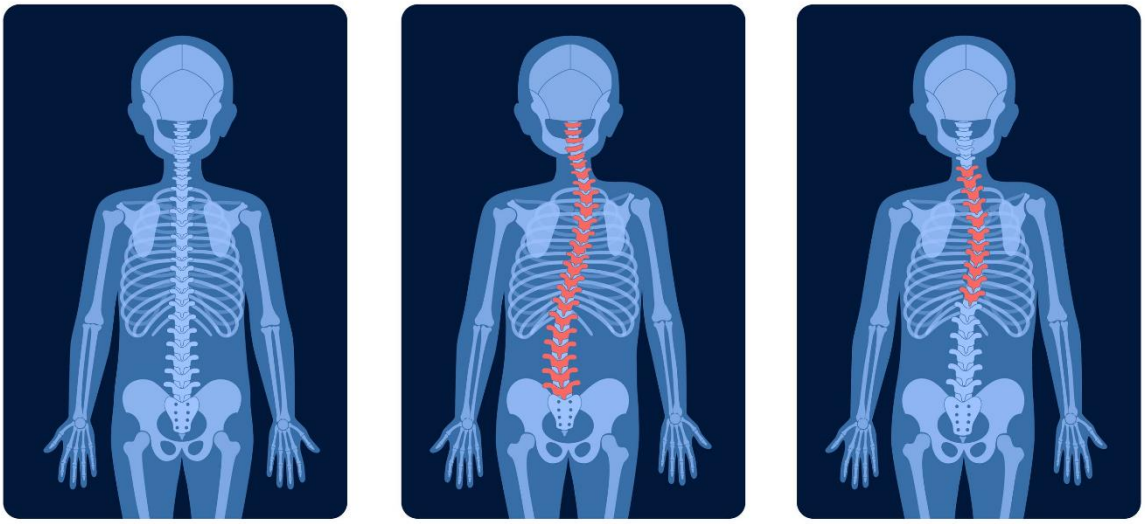
Scoliosis



Contents

What is scoliosis?

Scoliosis can be classified into "structural" and "functional" scoliosis.

「Structural」scoliosis：

- Result of poor spinal structure.
- Can be categorized into "idiopathic" and "non-idiopathic" scoliosis.
- Patients with "idiopathic" scoliosis are born with no abnormalities in their spinal bones but the spine gradually deforms as they grow.
- "Non-idiopathic" scoliosis refers to scoliosis that develops owing to congenital spinal abnormalities and/ or neuromuscular disorder.

「Functional」scoliosis：

- Scoliosis due to other factors affecting the spine, e.g. leg length discrepancy, imbalance of muscle tone between the left and right sides of the spine.

*** "Idiopathic" scoliosis is more common：

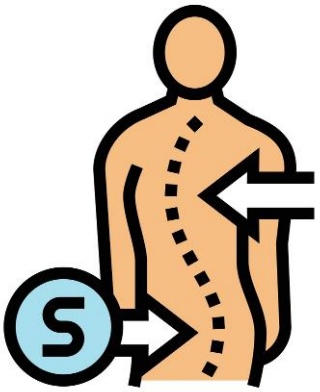
- It usually occurs during adolescence - "adolescent idiopathic scoliosis".
- Affects about 2-3% of adolescents.
- The male-to-female ratio for mild scoliosis is about 1:1.5. The more severe the scoliosis, the higher the proportion of female.

Causes of idiopathic scoliosis

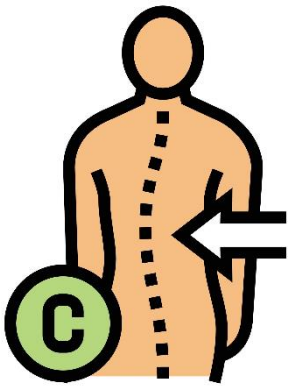
Most of idiopathic scoliosis have unknown causes.

According to scientific researches, the number of patients with idiopathic scoliosis in their immediate family members is higher than that of the general population, but there is no strong correlation, so it is recommended that the siblings of the patients should pay more attention.

Signs of scoliosis



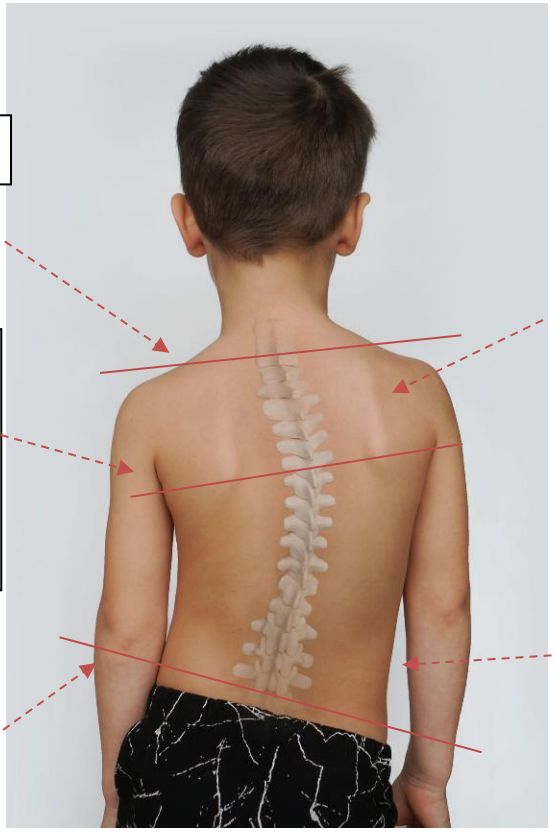
The spine bends to the left or right, resulting in a "C" or "S" shape.



Shoulder height varies.

The left and right shoulder blades protrude at different heights or asymmetrically, with one shoulder blade protruding more than the other.

Asymmetry between the two sides of the pelvis (one side is always lower when wearing pants or skirts).



Back is bulging and breasts size are uneven.

Waist asymmetry.

Effects of Scoliosis

1. Appearance

Scoliosis may affect grooming, which in turn may impair the patient's self-esteem and social life.

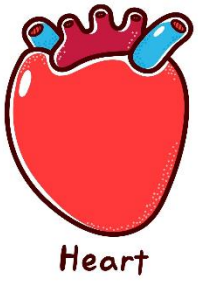
2. Back pain

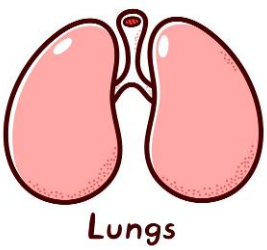
Due to lateral bending, some of the vertebrae are subjected to uneven pressure, and the side with more pressure over a long period of time will be strained more quickly, hence leading to back pain.

In addition, the muscles and tendons of one side are stretched for a long period of time, which may also lead to back pain.

3. Cardiac and chest problem

If the scoliosis is severe, the chest cavity will be deformed and there is a chance that the heart and lungs will be compressed due to insufficient space, leading to cardiac and chest problems.





Diagnosis of Scoliosis

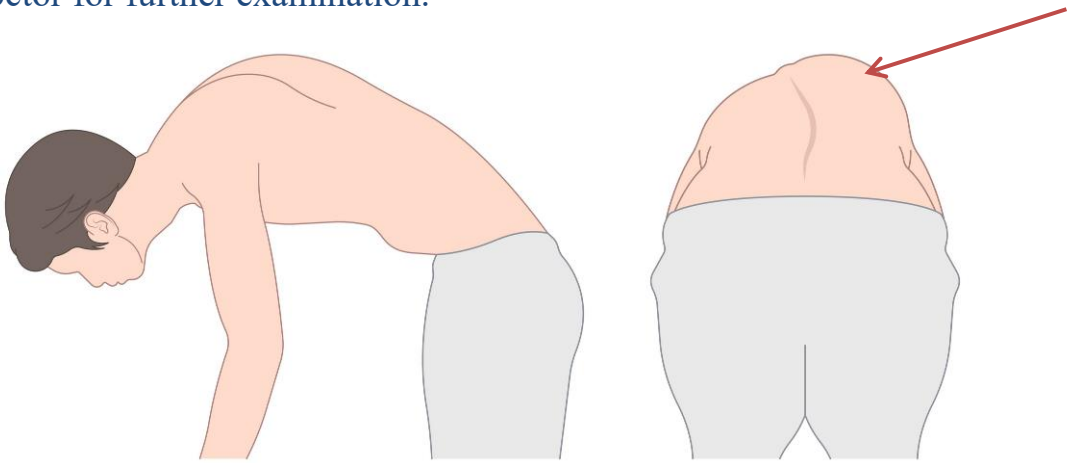
X-rays, ultrasound, magnetic resonance imaging (MRI), computed tomography (CT) scans, and EOS systems are all used to diagnose scoliosis, with X-rays being the most common diagnostic method.

If parents are in doubt, they can give their child a quick checkup called the Adam's Forward Bend Test.

The method is as follows.

The child stands with his/her feet together, knees straight, hands tightly closed, and body bends forward.

Parents should observe from the back. If there is unevenness over the back or one side of the ribs is protruding, it is very likely that the child is suffering from "Structural Scoliosis". Parents are advised to take the child to the doctor for further examination.



Severity of Scoliosis

The severity of scoliosis can be confirmed by the Cobb's angle. Generally speaking, Cobb's angle >10° is defined as having scoliosis: <20° is mild, 20°- 45° is moderate to severe, >45° is severe scoliosis.

Treatment of Scoliosis

The treatment of idiopathic scoliosis depends on the degree of scoliosis and whether the patient's bone development is complete.

In **mild** cases, most of the patients just need to be observed.

Patients with **moderate to severe** scoliosis may require bracing and physiotherapy exercises to slow down the deterioration of scoliosis until bone development is complete.

In **severe** cases, surgery may need to be considered, and conservative treatment will not be of much help to these patients.

How to prevent Scoliosis

There is no evidence to suggest that our daily habits, such as exercises, diet or physiotherapy, can prevent the onset or progression of scoliosis.

Although scoliosis cannot be prevented, **maintaining good posture and doing exercises** can help keep the spine healthy.

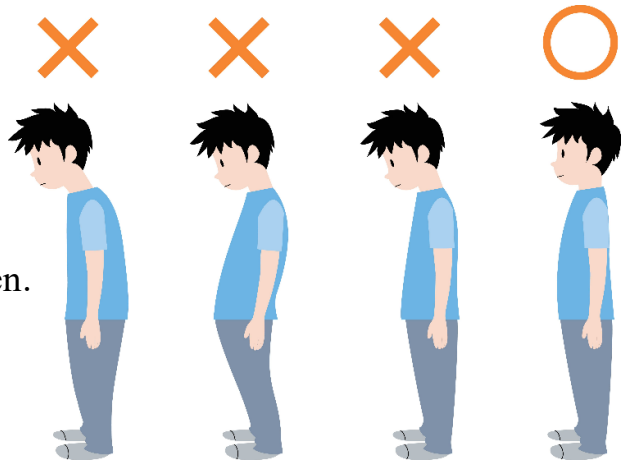
Regular scoliosis screening through the Student Health Service of the Department of Health can help detect the problem at an early stage and make early referrals to specialists for treatment.

Department of Health
Student Health Service Information

Tips for daily life spinal care

I. Maintain good posture

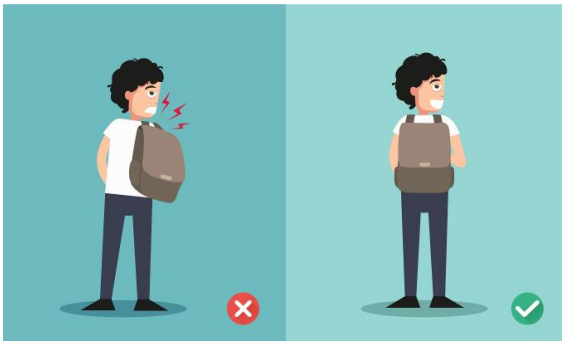
1. Eyes forward.
2. Tuck in your chin.
3. Shoulders relaxed and back,
   avoid rounded shoulders.
4. Keep the body straight and tuck in the abdomen.
5. Keep your pelvis in a neutral position,
   avoid tilting.
6. Bear your body weight evenly on both feet.



When carrying a backpack:

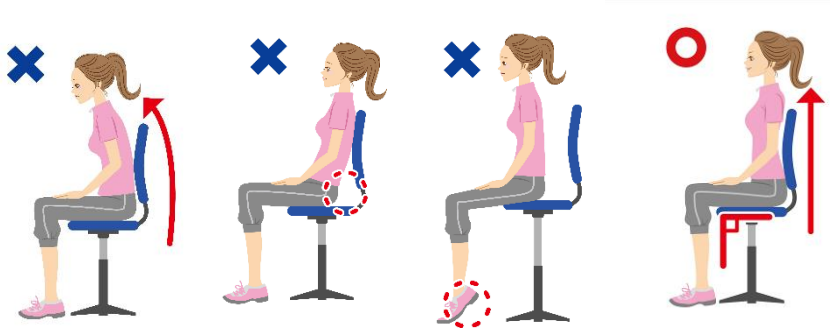
- The backpack should fit snugly and should not weigh more than 10 percent of your body weight.

- Avoid using a one-shoulder backpack; use it on both shoulders.



Good sitting posture:

- Keep shoulders relaxed and back, avoid rounded shoulders.
- Keep your body straight and tuck in your abdomen.
- Keep your lower back close to the back of the chair or use a lumbar roll to support your lower back.
- Keep your pelvis in a neutral position and avoid tilting it back.
- Keep hips slightly above or level with knees.
- Keep feet flat on the floor or footrest.
- Avoid crossing legs.



II. Exercise

Exercise is designed to relieve or minimize the effects of chronic asymmetry of the spine, which can lead to soft tissue and muscle imbalance of the body.

Physiotherapy exercises aim to achieve the following goals:

1. Improve posture
2. Maintain flexibility
3. Strengthen core muscles
4. Improve low back muscle control and coordination
5. Prevention of low back pain

The followings are simple exercises to stretch and strengthen your muscles:

Stretching exercise:

1. Hamstring Stretch Sit on the ground, keep your back straight, lean body forward slowly, keep your finger tips as close as possible to the back of your feet, hold for 15 seconds, repeat 4 times for each side.	

2. Side Waist Stretch Sit with bent knees, straighten your arm, stretch your hands up to the side, hold for 15 seconds, then repeat the above movement to the other side, repeat 4 times.	

3. Chest and lumbar spine stretching Sit with bent knees, arms by your side, back straight, turn your shoulders and head to one side, hold for 15 seconds, then repeat to the other side, repeat 4 times.	

4. Cat Stretch Kneel on your hands and knees, bend your head forward and bulge your lower back to a half-lone shape, hold for 15 seconds, repeat 4 times.	

Muscle strengthening exercises:

1. Abdominal Strengthening Exercise Lie on your back with knees bent and perform sit-ups, repeat 10 times. (You can put your hands in front of your chest or behind your head according to the strength of your Abdominal muscles.)	

2. Abdominal Strengthening Exercise Lie on your back with knees bent, tighten your abdominal and buttock muscles, press your low back flat against the floor, hold for 5 seconds and repeat 15 times.	

3. Back Strengthening Exercise Lie on your tummy, lift your arms, upper body and legs slightly, stretch your hands forward and feet backward at the same time, hold for 5 seconds, repeat 10 times. (Aircraft take-off)	

Please consult your physiotherapist for any enquiry and questions.

Reference:

Konieczny, M. R., Senyurt, H., & Krauspe, R. (2013). Epidemiology of adolescent idiopathic scoliosis. *Journal of children's orthopaedics*, *7*(1), 3-9

Negrini, S., Donzelli, S., Aulisa, A. G., Czaprowski, D., Schreiber, S., de Mauroy, J. C., ... & Zaina, F. (2018). 2016 SOSORT guidelines: orthopaedic and rehabilitation treatment of idiopathic scoliosis during growth. *Scoliosis and spinal disorders*, *13*(1), 1-48.

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