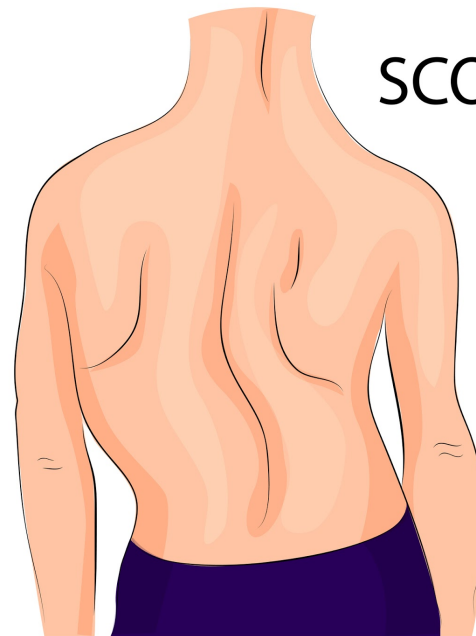


All About Scoliosis

Many people have heard of scoliosis, however, most of us do not actually know what the condition exactly is and why it occurs! This article will go through what scoliosis is, the different types of scoliosis, the diagnosis process, and treatment options.

So what is Scoliosis?

Scoliosis is the abnormal curvature of the spine.¹ This means that someone with scoliosis has a sideways curve in their spine, often resembling the shape of the letters “C” and “S”.² The curve, or what is known as the **Cobb angle**, must be at least 10 degrees for it to be classified as scoliosis.³ Most cases of scoliosis are mild and painless however, for those with severe cases, the condition can be quite debilitating. Scoliosis affects 3% of people and is most commonly diagnosed in adolescents from ages 10-15 years old.⁴



SCOLIOSIS

To understand more about what causes scoliosis to develop, we first have to learn about the different categories of scoliosis.

The different types of scoliosis

The two most broad categories that scoliosis can be classified as are **non-structural** and **structural**.

Non-structural scoliosis is a temporary curvature of the spine that can be reversed.^{3,5} The spine's structure is still normal since there is no vertebrae rotation. This type of scoliosis occurs due to muscle spasms, difference in leg height, and inflammation.⁵

Structural scoliosis is the permanent curvature of the spine due to vertebrae rotation.⁵ This is the most common type of scoliosis. Structural scoliosis can be treated but not reversed.

The three main types of structural scoliosis include:

1. Idiopathic

Idiopathic scoliosis essentially means that there is no known cause as to why the individual developed scoliosis.^{1,2,4} This is the most prevalent type of scoliosis with over 80% of scoliosis cases being diagnosed as idiopathic.¹ Idiopathic scoliosis is further divided by age group: Infant (0-3 years old), Juvenile (4-10 years old), Adolescent (11-18 years old), and Adult (18+ years old).⁴ Of all the age categories for idiopathic scoliosis, adolescent idiopathic scoliosis is the most common.¹



2. Congenital

Congenital scoliosis is due to the malformation of the vertebrae(s) that occurs while the individual is still in the uterus.^{1,4} It can affect any part of the spine. The curve develops as a result of the misshapen vertebrae forcing one area of the spinal column to lengthen at a slower rate than the rest.¹ Often this type of scoliosis can be caught at a younger age than idiopathic scoliosis.¹

3. Neuromuscular

This type of scoliosis is when scoliosis develops as a result of a neuromuscular condition such as cerebral palsy, spina bifida, muscular dystrophy, spinal cord trauma, or spinal muscular atrophy.¹ A straight spine needs sufficient muscle balance and strength in the torso.² With many of the conditions listed above, strong and balanced muscles are difficult to obtain. In addition, this is also the type of scoliosis that progresses the most rapidly.¹



Other less common categories of structural scoliosis include:

- **Degenerative scoliosis**
 - Affects mainly adults and is caused by the degeneration of the discs and joints in your spine⁶
- **Thoracogenic scoliosis**
 - Develops due to use of radiation to treat tumours as a child or from congenital heart defect surgery⁴

Are there any risk factors?

There are not many risk factors for this condition since most of the time doctors do not know what caused the scoliosis in the first place.

The few risk factors they have identified are:

- Having an underlying neuromuscular condition since it puts you at a higher risk of developing scoliosis as explained above²
- Gender; although, both females and males are diagnosed with scoliosis at the same rate, females are 8x more likely to develop a worse and more severe curvature than males are⁷
- Genetics/family history; studies have found that scoliosis can run in families⁸



What are the signs of scoliosis?

Signs that you may have scoliosis include:

- Uneven shoulders and waist^{1,8}
- Your head not being centered directly above the pelvis^{1,2}
- One or both hips being unusually high or raised^{1,8}
- The sides of your rib cage being at different heights¹
- Alterations in the appearance or texture of the area of skin that surrounds the spine¹
 - Dimples, hairy patches, and colour abnormalities
- The appearance of your entire body leaning to one side³
- Pain in the back⁶

What does the diagnosis process entail?

There are multiple ways a doctor can diagnose scoliosis. One of the main ways is through a **physical exam**. The doctor will inspect the following areas during the examination: back, chest, pelvis, legs, feet, and skin.⁹ While examining the patient's limbs, the doctor will be on the lookout for any length differences.⁹

Your doctor will most likely also use the **Cobb method** to measure the curvature of your spine.^{1,7} Anything less than 25-30 degrees is not considered significant and will most likely require little to no treatment.¹ However, if your curve is greater than 45-50 degrees, then that is considered severe and needs immediate treatment.¹

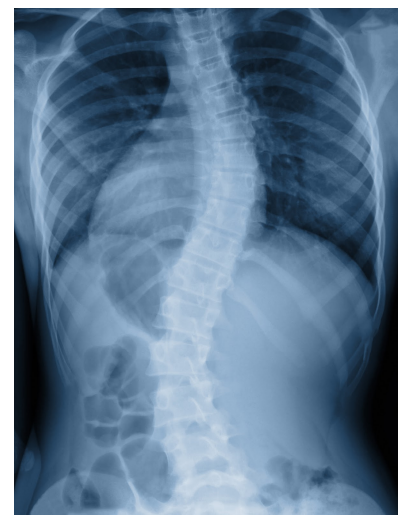


Another standard exam that is often used in screening processes is the **Adam's Forward Bend Test**.^{1,7} This test involves the patient leaning forward with both of their feet pressed together and bending 90 degrees at the waist.¹ From this position, any abnormalities in the spine and back can be easily spotted.



Imaging tests can also be used in the diagnosis process:

- **X-rays** can show the structure of the vertebrae and the outline of surrounding joints¹
- **CAT/CT scans** can show the shape and size of the spinal cord, its contents, and the structures around it¹
- **MRIs** can show the spinal cord and nerve roots. It can also show any enlargement, degeneration, and deformities¹
- **Bone scan**: involves injecting a radioactive solution into the blood so as to allow for easy detection of spinal abnormalities¹⁰



Is scoliosis treatable?

Yes and the good news is that there are several management options available!

Treatments include:

1. Casting³

Casting is only used for infantile scoliosis and is an alternative to bracing. With casting, a plaster cast is attached to the outside of the infant's body and is worn at all times. Since babies grow quite quickly, the cast will have to be changed regularly.

2. Bracing

Bracing is mainly only used for children since it is only effective if the user's bones are still growing.^{1,10} Braces are not able to reverse the curve, they can only stop it from worsening.¹⁰ A brace is only recommended to children that have a curve that measures between 20-40 degrees.¹



3. Physiotherapy

It is important to note that physiotherapy cannot alter the structure of the spine like a brace can; however, physiotherapy can help with pain management, range of motion, strength, and other symptoms.

Physiotherapy treatment will most likely include¹¹:

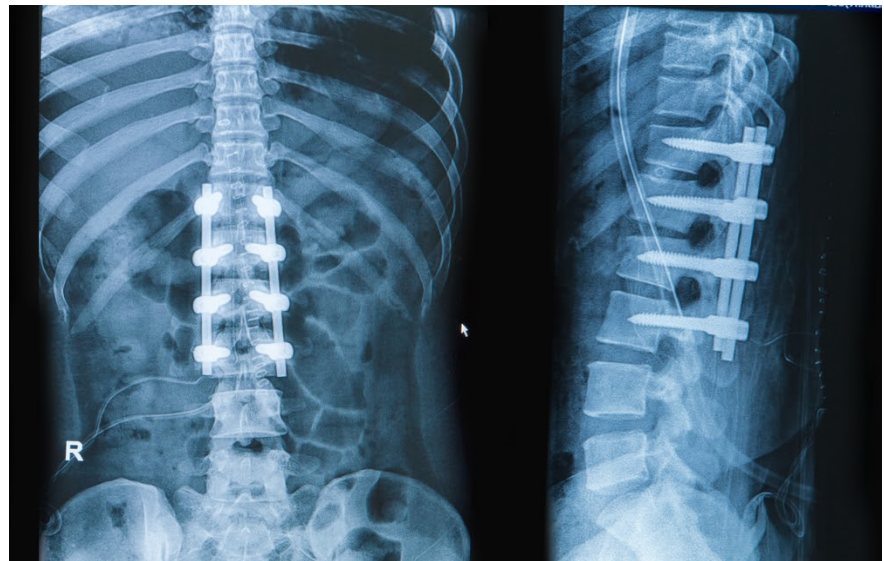
- Mobility and stretching exercises
 - Increases the body's range of motion if any limitations are present



- Strength training
 - Addresses any muscle imbalances and weakness in the surrounding area of the spine
- Manual therapy
 - Restores motion to the joints and muscle tissue that may have become restricted
- Modalities
 - Ice and heat therapy, electrical stimulation, and/or ultrasound therapy may be used to help reduce any pain and inflammation
- Patient education about the condition
- Functional training
 - Retraining of the body to gain optimal and proper movement patterns

4. Surgery

Surgery is only recommended when the spinal curve is greater than 40 degrees and shows signs of worsening. The main surgical treatment used is known as **spinal fusion**.¹ During this procedure, surgeons connect 2 or more vertebrae together and then take a piece of bone (could be from your body, a cadaver, or a synthetic bone substitute)⁴ and place it in between the vertebrae. Next surgeons use either metal rods, hooks, screws, or wires to keep that part of the spine straight until the old and new bones fuse together.



Exercises

1. Cat and camel

Start on your hands and knees, with your knees directly underneath your hips and your hands underneath your shoulders, and your back in a neutral position. Place your hands flat on the floor and contract your abdominal muscles, making sure that your spine is well aligned with

your back, straight as a table-top. Inhale, and arch your spine away from the floor, pulling your belly up like a cat. When it comes time to exhale, round your spine in the opposite direction, lowering your belly towards the floor and lifting your head. Complete 2 sets of 5 reps.



2. Downward dog

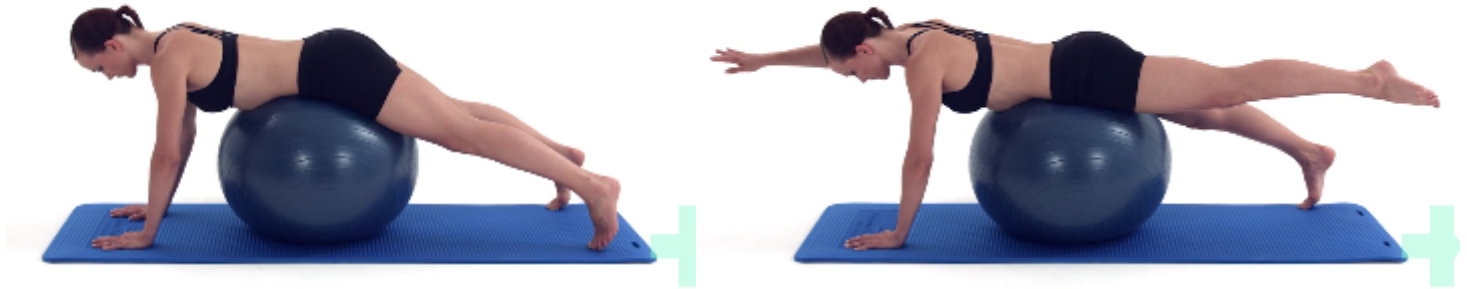
Start on your hands and knees. Tuck your toes underneath and lift your knees off the floor. Straighten your knees and elbows. Make sure your ears are between your arms. Push your bottom up into the air. Push your heels down to the floor. Complete 2 sets of 6 reps.



3. Arm and leg raises

Start in a kneeling position. Place a stability ball in front of you and reach over the ball to the other side and put your hands on the floor.

Steadily extend your opposite arm and leg maintaining good stability in your body. Return to the start position and repeat using the other arm and leg. Complete 2 sets of 5 reps.



What Next?!

If you think you have scoliosis or have been diagnosed by a doctor, you should see a physiotherapist. Together we can come up with a treatment plan that works best for you! Email us at informphysio12@gmail.com for more information!

Disclaimer

The information provided on this account is general information only. The content provided is not medical advice, a diagnostic tool, a treatment plan or therapeutic care. It is not intended to change or replace any advice, a diagnosis and/or treatment you have been given from your healthcare team. Always speak to your healthcare provider if you have any questions or concerns that you think may be relevant to you.

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