Scoliosis (Curvature of the Spine) and Kyphosis

Scoliosis is a back condition that causes the (back) spine to curve to the left or right side. Most cases develop in children between the ages of 9 and 14 during the growth spurt of puberty. Scoliosis is usually mild and needs no treatment. For more severe cases treatments include a back brace or sometimes surgery to straighten the spine. A very pronounced front-to-back curve is called a kyphosis, which does not usually need treatment.

What is scoliosis?

The word scoliosis comes from the Greek word meaning crooked. The back (spine) should look straight, up and down, when you look at someone from behind. If the spine has a sideways curve, it is called a scoliosis.

The curve can bend to the left or to the right. The severity of the curve can vary from very mild and barely noticeable to severe.

The curve can be in the lower part of the spine (a lumbar curve), in the upper part of the spine (a thoracic curve) or go from the upper to lower part of the spine (a thoracolumbar curve). In some cases there is a double curve - like an S shape.

What is the difference between scoliosis and kyphosis?

If you look at someone from the side, normally there are three slight front-to-back curves in the spine - one in the neck, one in the chest section, and one in the lower back. An abnormal more pronounced front-to-back curve is called a kyphosis. This is different to a scoliosis.

What are the causes of kyphosis?

Kyphosis can occur at any age, although it is rare at birth. Adolescent kyphosis, also known as Scheuermann's disease, is caused by the wedging together in a row of several bones of the back (spine), called vertebrae. The cause of Scheuermann's disease is unknown.

In adults, kyphosis can be caused by various conditions affecting the spine, including:

- Arthritis of the spine.
- 'Thinning' of the bones (osteoporosis) of the spine.
- Spina bifida.

The treatment usually depends on the underlying cause. This is covered in the articles on those specific subjects - follow links in red.
What are the types and causes of scoliosis?

Non-structural scoliosis (functional or postural scoliosis)
In this type, the back (spine) is structurally normal, but looks curved because of another condition such as differing leg length or muscle spasm in the back muscles. The curve is usually mild and it changes or goes away when the person bends sideways or forwards.

Structural scoliosis
In these cases, the curve is fixed and doesn't go away when the person changes position. There are different types:

- **Idiopathic.** This means the cause is not known. More than 8 in 10 cases of scoliosis are idiopathic.
- **Neuromuscular.** This means the curve is caused by a condition which affects muscles or nerves of the back. For example, it may occur in some cases of muscular dystrophy, polio, cerebral palsy, or neurofibromatosis. Each of these conditions has other symptoms and problems in addition to a scoliosis. Around one 1 in 10 cases of scoliosis are neuromuscular.
- **Osteopathic.** This means as a result of a bone abnormality.
- **Congenital.** This means the spine does not form properly when a baby develops in the womb. This is a cause in around 1 in 10 cases.

The rest of this leaflet is about the common type - idiopathic scoliosis.

Who gets idiopathic scoliosis?
Idiopathic scoliosis can develop at any stage in childhood. It is not known how or why it develops. It is not due to poor posture and you cannot prevent it.

It most commonly develops during the growth spurt of puberty and early adolescence. This is usually between the ages of 10-12 for girls and 11-16 for boys. About 1 in 40 children have some degree of scoliosis. Mild scoliosis affects about the same number of boys and girls. However, moderate or severe scoliosis is more common in girls.

Idiopathic scoliosis is not a straightforward hereditary condition. However, in about 1 in 4 people with scoliosis there are one or more other family members with the same condition.

What are the symptoms of idiopathic scoliosis?
In most cases the onset of the scoliosis is gradual and painless. Scoliosis is usually noticeable on bending down. Sometimes a mild-to-moderate scoliosis can develop without being noticed by the child or his or her parents. This is often because the condition usually develops during adolescence when children often become more self-conscious. Parents and others are not likely to see a naked back (spine) and see the problem.

Scoliosis can cause mild pain and imbalance of the muscles. If scoliosis becomes more severe then it can become more disfiguring. This is because when the spine curves sideways, as the curve becomes more severe, the small bones (vertebrae) that make up the spine also twist round. This pulls any attached muscles, ligaments and ribs round with them. As a consequence:

- If the scoliosis is in the chest (thoracic) region, the ribs and shoulder blade stick out like a bulge on one side of the back. Also, one shoulder may hang lower than the other and one shoulder blade may be higher than the other.
- If the scoliosis is in the lower back (lumbar) region, it can make the pelvis thrust forward on one side and one leg may appear to be shorter than the other.

If scoliosis becomes severe and is not treated, it can cause problems later in life. For example, persistent back pain may develop and breathing problems or heart problems may develop if the deformity in the chest region is very severe. This is uncommon though.
How is idiopathic scoliosis diagnosed?

Scoliosis is often seen when you bend forward. A bulge on the back (spine) is more obvious when bending forward.

If your doctor diagnoses scoliosis then you will usually be referred to a specialist.

X-ray pictures of the back are sometimes done to assess the angle of the curve. This gives an idea of the severity of the condition and the likelihood of it getting worse. Other investigations (for example, MRI or CT scans of the neck) are needed in some cases.

What is the treatment for idiopathic scoliosis?

For people with mild curves, the aim of treatment is to prevent the curve progressing and worsening. People with more severe scoliosis need treatment to stabilise the back (spine). Many people with scoliosis do not need treatment. Treatment depends on various factors, such as:

- The person’s age.
- Whether they are still growing.
- The severity of the curve.
- The exact location of the scoliosis - for example, the upper (thoracic) or lower (lumbar) back.
- The chance that scoliosis may progress.

Treatment options include observation, wearing a brace and surgery.

Observation

Most people have mild scoliosis and do not need any treatment. However, a specialist may arrange regular reviews to make sure that the scoliosis does not worsen as children get older. Once the main bone growth ends after puberty, scoliosis does not usually become worse. Sports and other activities can be done normally for most people. Occasionally, a specialist may advise against certain activities such as heavy contact sports or gymnastics.

Back braces

There are several different types of back brace. The more modern ones are more comfortable to wear than the older ones. If the scoliosis is moderate or becoming worse, then a back brace may be advised. A brace does not cure a scoliosis. The aim of a brace is to prevent the scoliosis from becoming worse as the child grows. A brace is worn most of the day and night. Towards the end of treatment they often only need to be worn at night. Most normal activities can be done whilst wearing a back brace. However, they need to be removed for washing and swimming.

Surgery

An operation is sometimes advised for people with severe scoliosis. The aim of the operation is to correct the curve, stabilise the spine and also to fuse the curve. Fusion is the joining of two or more back bones (vertebrae). Implants or rods are often used to keep the back straight after the operation. These rods are usually lengthened every 4-6 months as you grow.

There are different surgical techniques used. Your specialist will be able to advise which type of surgery, if any, may be beneficial for you. In general, the operations done for scoliosis are usually very long procedures and involve many months of recovery afterwards. Also, they are not always successful.
Alternative treatments

There is no reliable evidence that other techniques, such as osteopathy, chiropractic, physiotherapy, reflexology, acupuncture, neurostimulation, and so on, can make any difference to a scoliosis. However, these complementary techniques can sometimes be useful to improve backache or pain in some people with scoliosis.

Further help & information

**Scoliosis Association UK**

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Tel: (Helpline) 020 8964 1166, (General) 020 8964 5343

Web: [www.sauk.org.uk](http://www.sauk.org.uk)

Further reading & references


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