CONDITION

Kyphosis

Kyphosis is an excessive forward curve of the upper spine that can cause a rounded back.

WHAT IT IS
Excessive forward curvature of the upper spine

BODY SYSTEM
Bones, joints, and muscles

MAIN SYMPTOMS
Rounded back, stiffness, back pain, tight muscles

WHAT CAUSES IT
Posture, vertebral growth, birth differences, or fractures

HOW IT IS DIAGNOSED
Physical examination and standing spine X-rays

MAIN TREATMENT
Observation, exercise therapy, bracing, or surgery

CAN IT BE CURED?
Sometimes - posture treatment or surgery may correct it

IS IT AN EMERGENCY?
Sometimes - new weakness or bladder loss needs emergency care

LONG-TERM OUTLOOK
Often stable or manageable; severe curves may progress

Overview

Kyphosis is an increased forward curve of the spine, usually in the upper back. A small outward curve in this area is normal. With kyphosis, the curve is more pronounced and may make the back look rounded or hunched.

Kyphosis is a condition rather than a single disease. It can develop because of posture, differences in how the spinal bones grow, a condition present from birth, or damage to the bones later in life. The cause affects how the curve behaves and how it is treated.

Some curves are flexible. They become less noticeable when you stand straight or lie down. Other curves are rigid because the bones of the spine, called vertebrae, have changed shape.

Mild kyphosis may cause no health problems. A larger or worsening curve can cause pain, stiffness, reduced movement, or concerns about appearance. Rarely, a severe curve can place

pressure on nerves or reduce the space available for the lungs.

Symptoms

The main visible sign is a rounded upper back. The head and shoulders may sit farther forward than expected. One shoulder may appear slightly higher, although a clear side-to-side curve may suggest scoliosis, which is a different spinal condition that can occur alongside kyphosis.

Other possible symptoms include:

Postural kyphosis is often flexible and may improve when you deliberately straighten your back. Scheuermann kyphosis, which develops as the spine grows, is usually more rigid. It may become more noticeable during a growth spurt.

Kyphosis caused by osteoporosis can appear after one or more vertebral compression fractures. These happen when a weakened spinal bone collapses. They may cause sudden pain, gradual loss of height, or an increasingly rounded back. Some compression fractures cause little pain.

Severe kyphosis can occasionally cause leg weakness, numbness, problems with balance, or shortness of breath. These symptoms need prompt medical assessment.

- Aching or tiredness in the back, especially after sitting or standing
- Stiffness in the spine
- Tight muscles at the back of the thighs
- Difficulty standing fully upright
- Tenderness over part of the spine
- Reduced confidence or distress about body shape

Causes and risk factors

Postural kyphosis is linked to habitual slouching and reduced strength or endurance in the muscles that support posture. The spinal bones remain normally shaped, so the curve is usually flexible. It often becomes noticeable during adolescence.

Scheuermann kyphosis begins while the spine is growing. Several vertebrae develop a wedge shape instead of a more rectangular shape, creating a rigid curve. The exact cause is not fully understood. Family traits may play a part.

Congenital kyphosis is present because part of the spine did not form or separate normally

before birth. It may worsen as a child grows. Some congenital spinal differences are linked with problems in other body systems.

Age-related kyphosis often has more than one cause. Changes in spinal discs, reduced muscle strength, and vertebral compression fractures can all contribute. Osteoporosis raises the risk of these fractures because it makes bones less dense and more fragile.

Other possible causes include spinal injury, infection, tumors, previous spinal surgery, and conditions affecting muscles or nerves. These are less common but may need specific treatment.

Risk is higher in people who have a family history of Scheuermann kyphosis, an underlying spinal difference, or osteoporosis. Long-term use of medicines that weaken bone, including some corticosteroids like prednisone or hydrocortisone , can also increase fracture risk.

Diagnosis

A healthcare professional will ask when the curve became noticeable, whether it is changing, and whether you have pain or nerve symptoms. In a child or teenager, they may also ask about growth and family history.

During the examination, you may be asked to stand normally, bend forward, and lie down. This helps show whether the curve is flexible or rigid. Muscle strength, sensation, reflexes, balance, and breathing may also be checked when relevant.

Standing X-rays of the spine show the shape of the vertebrae and allow the curve to be measured. The measurement is often called the Cobb angle. X-rays can also show wedge-shaped vertebrae, compression fractures, or congenital differences.

Magnetic resonance imaging, or MRI, is not needed for every person. It may be used if there is severe pain, an unusual curve, rapid progression, symptoms involving the nerves, or concern about another spinal condition. MRI provides detailed images of the spinal cord, nerves, discs, and nearby tissues.

Computed tomography, or CT, can provide more detail about bone structure, particularly when surgery is being considered. Bone-density testing may be recommended when osteoporosis or a fragility fracture is suspected.

Treatment and management

Treatment is based on the cause, flexibility and size of the curve, whether it is progressing,

your age and growth stage, and the effect on daily life. Not everyone needs active treatment.

Mild curves without troublesome symptoms may be monitored. Children and teenagers who are still growing may have repeat examinations or X-rays to check whether the curve is increasing.

Physical therapy can help improve posture, spinal movement, core strength, and muscle flexibility. It may reduce discomfort and improve function. Exercise can improve a flexible postural curve, but it does not usually reshape wedge-shaped vertebrae in rigid Scheuermann kyphosis.

Simple pain-management measures may include changing activities, using heat, and taking appropriate non-prescription pain relief. A clinician or pharmacist can help you check whether a medicine is suitable for you. Persistent pain should be assessed rather than managed indefinitely on your own.

A spinal brace may be considered for some young people with Scheuermann kyphosis who are still growing. Bracing aims to prevent progression and may guide growth. Its benefit is affected by the type and size of the curve, remaining growth, and how consistently the brace is worn. Bracing does not generally correct a fixed curve after growth has finished.

If osteoporosis or compression fractures are involved, treatment focuses on bone health, pain, safe movement, and reducing future fracture risk. This may include bone-strengthening treatment after an individual assessment.

Surgery is reserved for selected cases, such as a severe or progressing curve, persistent disabling pain despite non-surgical care, pressure on the spinal cord or nerves, or major effects on breathing or function. Surgery usually involves straightening and stabilizing part of the spine with implants and a bone graft. It can improve alignment, but it is major surgery with risks such as infection, bleeding, nerve injury, implant problems, and failure of the bones to fuse fully.

Complications

Many people with kyphosis do not develop serious complications. Possible problems are more likely with a large, rigid, or worsening curve.

Long-term pain and muscle fatigue can make work, study, exercise, or sleep more difficult. A pronounced curve may affect self-image and emotional well-being, particularly during adolescence.

A severe curve can reduce the space in the chest and make breathing less efficient. Rarely, the curve or its underlying cause can press on the spinal cord or nerves. This may lead to numbness, weakness, walking problems, or loss of bladder or bowel control.

Untreated congenital kyphosis may progress during growth and has a greater risk of neurological problems than ordinary postural kyphosis. Osteoporotic compression fractures can lead to further height loss, reduced mobility, and additional fractures.

Spinal surgery can also have complications and may require long-term follow-up. The benefits and risks are considered carefully before it is recommended.

Prevention

Not every form of kyphosis can be prevented. Scheuermann kyphosis and congenital kyphosis are related to spinal development, not poor choices or a failure to exercise.

Postural habits and physical conditioning may influence flexible postural kyphosis. Regular movement, exercises that strengthen the back and core, and avoiding long periods in one slouched position may support comfortable posture. These measures cannot prevent or reverse vertebrae that developed in a wedge shape.

Some age-related kyphosis may be reduced by protecting bone health and preventing fractures. Helpful measures include weight-bearing activity where safe, adequate nutrition, avoiding smoking, limiting falls, and having osteoporosis assessed when you have relevant risk factors. Bone-health treatment should be based on a proper clinical evaluation.

Living with it and what to expect

The course of kyphosis depends mainly on its cause and whether the spine is still growing. Flexible postural kyphosis often improves with awareness, exercise, and physical therapy. It does not usually lead to nerve or breathing problems.

Scheuermann kyphosis develops during growth and often becomes more stable once growth ends. Some people continue to have stiffness or back pain as adults, while others have few limitations. A rigid curve will not usually disappear through exercise, even when strength, movement, and pain improve.

Congenital kyphosis may progress as a child grows, so regular specialist follow-up is important. Age-related kyphosis may gradually increase if bone loss, fractures, muscle weakness, or disc changes continue.

Most people can remain active. Activities may need to be adjusted if they cause pain, and a physical therapist can help with movement strategies. Follow-up is usually routine when symptoms and the curve are stable. Growing children, people with osteoporosis, and anyone with a progressing curve may need more regular checks.

A visible curve can affect clothing choices, confidence, and social life. Support from family, counseling, or peer groups may help if appearance-related distress is affecting daily life.

When to get medical help

Arrange a routine appointment if you notice a new or increasing curve, ongoing back pain, loss of height, or difficulty standing upright. A child or teenager with a rounded back that does not straighten when prompted should also be assessed.

Seek prompt medical advice for severe or persistent pain, pain after a minor fall in someone at risk of osteoporosis, rapid change in the curve, unexplained fever, unexplained weight loss, or pain that regularly wakes you.

Get emergency help for:

These symptoms do not always mean kyphosis is the cause, but they need urgent assessment.

- New weakness or numbness in both legs
- New loss of bladder or bowel control
- Numbness around the genitals or buttocks
- Sudden difficulty walking
- Severe breathing difficulty
- Major back trauma with weakness, numbness, or severe pain

Common questions

Is kyphosis the same as bad posture?

No. Postural kyphosis is linked to posture and is usually flexible, but other forms involve changes in the shape or formation of the vertebrae. A rigid curve cannot simply be corrected by "standing up straight."

Can exercises fix kyphosis?

Exercises can improve posture, strength, flexibility, comfort, and function. They may make a flexible postural curve less noticeable. They do not usually change the shape of vertebrae in Scheuermann or congenital kyphosis.

Does kyphosis get worse with age?

It can, but it does not always. Scheuermann kyphosis often stabilizes after growth. Later in life,

osteoporosis, compression fractures, weaker muscles, and changes in spinal discs may increase the curve.

Can kyphosis cause breathing problems?

Mild and moderate curves usually do not. A very severe curve can limit chest expansion and reduce breathing capacity. New or worsening breathlessness should be medically assessed because many conditions can cause it.

Will I need surgery?

Most people do not. Surgery is generally considered when a curve is severe or progressing, causes major pain or disability, affects nerves or breathing, or cannot be managed with non-surgical care.

Can kyphosis cause height loss?

Yes. A larger curve can reduce measured height. Vertebral compression fractures can also cause loss of height, especially when more than one vertebra is affected.

Sources

- American Academy of Orthopaedic Surgeons, OrthoInfo: Kyphosis (Roundback) of the Spine
- NHS: Kyphosis
- Scoliosis Research Society: Kyphosis
- National Institute of Arthritis and Musculoskeletal and Skin Diseases: Osteoporosis
- American College of Radiology: Appropriateness Criteria-Management of Vertebral Compression Fractures
- Zhu W, Sun X, Pan W, et al. Scheuermann Kyphosis: Current Concepts and Management. Journal of Clinical Medicine . 2023;12(6):2280