

## Pain in the back

Anyone can get back pain as it can be caused by conditions ranging from those present at birth to those related to ageing.

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IF you have lower back pain, you are not alone.

Back pain is one of most common reasons people see a doctor or miss days at work.

Even schoolgoing children can have back pain.

This pain can range in intensity from a dull, constant ache to a sudden sharp or shooting pain.

It can begin suddenly as a result of an accident or by lifting something heavy, or it can develop over time as we age.

Getting too little exercise followed by a strenuous workout can also cause back pain.

There are two types of back pain:

> Acute, or short-term, pain that lasts a few days to a few weeks.

> Chronic pain that continues for 12 weeks or longer.

About 20% of people affected by acute low back pain will go on to develop chronic low back pain with persistent symptoms in a span of one year.

### Causes of low back pain

Most acute low back pain is mechanical in nature.

This means that there is a disruption in the way the components of the back (i.e. the spine, muscles, intervertebral discs and nerves) fit together and move.

Mechanical causes of low back pain

can be congenital in nature.

This includes skeletal irregularities such as scoliosis (a curvature of the spine), lordosis (an abnormally exaggerated arch in the lower back) and kyphosis (excessive outward arch of the spine), among others.

Spina bifida is another congenital condition that involves the incomplete development of the spinal cord and/or its protective covering.

This can cause problems involving malformation of the vertebrae, abnormal sensations, and even paralysis.

Injuries such as sprains (overstretched or torn ligaments), strains (tears in tendons or muscle) and spasms (sudden contraction of a muscle or group of muscles) are a common cause of back pain.

Traumatic injuries from playing sports, car accidents, or a fall that injures the tendons, ligaments or muscles, can also cause such pain, in addition to compressing the spine and causing the intervertebral discs to rupture or herniate.

Another mechanical cause of low back pain is degenerative problems, which are usually related to ageing.

One example is intervertebral disc degeneration, which occurs when the otherwise rubbery discs wear down as a normal process of ageing and lose their cushioning ability.

Meanwhile, spondylosis is the general degeneration of the spine associated with normal wear and tear that occurs

in the joints, discs and bones of the spine as people get older.

Arthritis or other inflammatory diseases in the spine, including osteoarthritis, rheumatoid arthritis and spondylitis (inflammation of the vertebrae) are also degenerative conditions that can cause back pain.

Nerve and spinal cord problems are another set of conditions that can cause low back pain. They include:

> Spinal nerve compression, inflammation and/or injury

> Sciatica

Also called radiculopathy, this is caused by something pressing on the sciatic nerve, which goes through the buttocks and down the back of the leg.

People with sciatica may feel a shock-like or burning low back pain, combined with pain extending through the buttocks and down one leg.

> Spinal stenosis

This is a narrowing of the spinal column that puts pressure on the spinal cord and nerves.

> Spondylolisthesis

This occurs when a vertebra of the lower spine slips out of place, pinching the nerves exiting the spinal column.

> Herniated or ruptured discs

These can occur when the intervertebral discs become compressed and bulge outward.

> Infections

These include osteomyelitis (infection of the vertebrae), discitis (infection of the intervertebral discs) and sacroiliitis

(infection of the sacroiliac joints connecting the lower spine to the pelvis).

> Cauda equina syndrome

This occurs when a ruptured disc pushes into the spinal canal and presses on the bundle of lumbar and sacral nerve roots.

Permanent neurological damage may result if this syndrome is left untreated.

> Osteoporosis

This condition causes a progressive decrease in bone density and strength that can lead to painful fractures of the vertebrae.

Meanwhile, non-spine sources of back pain include:

> Kidney stones

These can cause sharp pain in the lower back, usually on one side.

> Endometriosis

This condition involves the buildup of uterine tissue in places outside the uterus.

> Fibromyalgia

This is a chronic pain syndrome involving widespread muscle pain and fatigue.

> Tumours

Specifically, those that press on or destroy the bony spine or spinal cord and nerves, or those located outside the spine elsewhere in the back.

> Pregnancy

In this case, the back symptoms almost always completely go away after giving birth.

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**Risk factors for low back pain**

Anyone can have back pain; the factors that can increase the risk for low back pain include:

> **Age**

The first attack of low back pain typically occurs between the ages of 30 and 50, and becomes more common with advancing age.

The loss of bone strength from osteoporosis can lead to fractures, and at the same time, muscle elasticity and tone decreases.

> **Fitness level**

Back pain is more common among people who are not physically fit.

Weak back and abdominal muscles may not properly support the spine.

“Weekend warriors” – i.e. people who go out and exercise a lot after being inactive all week – are more likely to suffer painful back injuries than those who make mode-rate physical activity a daily habit.

Studies show that low-impact aerobic exercise can help maintain the integrity of intervertebral discs.

> **Weight gain**

Being overweight, obese or quickly gaining significant amounts of weight can put stress on the back and lead to low back pain.

> **Genetics**

Some causes of back pain, such as ankylosing spondylitis (a form of arthritis that involves fusion of the spinal joints leading to some immobility of the spine), have a genetic component.

> **Work**

Having a job that requires heavy lifting, pushing or pulling, particularly when it involves twisting or vibrating the spine, can lead to injury and back pain.

Working at a desk all day can contribute to back pain, especially from poor posture or sitting in a chair with not enough back support.

> **Mental health**

Anxiety and depression can influence how closely a person focuses on their pain, as well as their perception of its severity.

Pain that becomes chronic can also contribute to the development of such psychological factors.

Stress can affect the body in numerous ways, including causing muscle tension that leads to pain.

> **Backpack overload in children**

A backpack overloaded with schoolbooks and supplies can strain the back and cause muscle fatigue.

**Diagnosing low back pain**

A complete medical history and physical examination can usually identify any serious conditions that may be causing the pain.

Neurologic tests, such as electromyography (EMG), evoked potential studies and nerve conduction studies (NCS), can help determine the cause of pain and appropriate treatment.

Imaging tests are not needed in most cases, but may be ordered to rule out specific causes of pain, such as tumours and spinal stenosis.

These include:

> **Computerised tomography (CT) scans**

These can show soft tissue structures that cannot be seen on conventional X-rays, such as disc ruptures, spinal stenosis or tumours.

> **Magnetic resonance imaging (MRI)**

This creates a computer-generated image of bony structures and soft tissues such as muscles, liga-

# Step-by-step treatment



While back pain caused by pregnancy usually goes away after birth, poor posture and a non-ergonomic workspace can cause the condition to persist. — wavebreakmedia\_micro/Freepik



Acupuncture has been shown to be moderately effective in treating chronic low back pain. — Filepic

ments, tendons and blood vessels.

An MRI may be ordered if a problem such as infection, tumour, inflammation, disc herniation or rupture, or pressure on a nerve, is suspected.

> **X-ray imaging**

This can show broken bones, or an injured or misaligned vertebra.

Other tests can include:

> **Blood tests**> **Bone scans**> **Discography**> **Myelograms**

Occasionally, the cause of chronic lower back pain may be difficult to determine even after a thorough examination.

**Treating low back pain**

Acute back pain usually gets better on its own, but those who need some relief can take medications designed to relieve pain and/or inflammation.

These include analgesics like paracetamol and aspirin; non-steroid-al anti-inflammatory drugs (NSAIDs); muscle relaxants; and topical pain relief medications like capsaicin and lidocaine, which can come in the form of creams, gels, patches or sprays applied to the skin to stimulate nerves to provide feelings of warmth or cold in order to dull the sensation of pain.

Similarly, heat and/or ice may help ease pain, reduce inflammation and improve mobility for some people.

Gentle stretching (not vigorous exercise) upon advice by your healthcare professional may also help with acute back pain.

Exercising, bed rest and surgery are typically not recommended for this condition.

Meanwhile, chronic back pain is most often treated with a stepped-care approach, moving from simple low-cost treatments to more aggressive approaches.

Specific treatments may depend on the cause of the pain.

The first step, i.e. early treatment, is fairly similar to the treatments for acute back pain.

Aside from medications like analgesics and NSAIDs for pain relief, doctors may prescribe opioid drugs (to be used only for a short period of time under a physician's supervision, as opioids can be addictive, aggravate depression and have other side effects), anti-convulsants (for those with sciatica) and antidepressants such as tricyclics, and serotonin and noradrenaline reuptake inhibitors.

Patients can also administer hot or cold packs to ease the pain, as well as continue with their normal activities – bed rest is not recommended.

Exercises that strengthen core or abdominal muscles may also help to speed recovery from chronic low back pain.

But patients should always check with their doctor first before starting an exercise programme and get a list of helpful exercises.

Step two covers complementary and alternative treatment techniques, such as:

> **Acupuncture**

This is moderately effective for chronic low back pain.

It involves inserting thin needles into acupuncture points throughout the body and stimulating them (by twisting or passing a low-voltage electrical current through them), which may cause the body to release naturally-occurring painkilling chemicals.

> **Transcutaneous electrical nerve stimulation (TENS)**

This involves wearing a battery-powered device that places electrodes on the skin over the painful area, which generate electrical impulses designed to block or modify the perception of pain.

> **Physical therapy**

This aims to strengthen core muscle groups that support the low back, improve mobility and flexibility, and promote proper positioning and posture.

It is often used in combination with other interventions.

> **Spinal manipulation and spinal mobilisation**

These are approaches in which chiropractors use their hands to mobilise, adjust, massage or stimulate the spine and the surrounding tissues.

The manipulation involves a rapid movement over which the individual has no control, while mobilisation involves slower adjustment movements.

> **Spinal injections**

This can include trigger point injections, which can relax knotted muscles (i.e. the trigger point); epidural steroid injections, which tend to only offer temporary pain relief and are not advised for long-term use; and radiofrequency ablation.

The latter involves inserting a fine needle into the area causing the pain through which an electrode is passed and heated to destroy nerve fibres that carry pain signals to the brain.

The next step involves more advanced care options such as surgery. When all other therapies fail, surgery may be considered to relieve pain caused by worsening nerve damage, serious musculoskeletal injuries or nerve compression.

Specific surgeries are selected for specific conditions/indications.

However, surgery is not always successful.

It may be months following surgery before the person is fully healed and there may be permanent loss of flexibility.

Surgical options include:

> **Vertebroplasty and kyphoplasty**> **Spinal laminectomy**> **Discectomy and microdiscectomy**> **Foraminotomy**> **Nucleoplasty**> **Radiofrequency denervation**

This destroys part of the target nerves and offers temporary pain relief.

> **Spinal fusion**

This is used to strengthen the spine and prevent painful movements in people with degenerative disc disease or spondylolisthesis (following laminectomy).

The spinal disc between two or more vertebrae is removed and the adjacent vertebrae are “fused” by bone grafts and/or metal devices secured by screws.

> **Artificial disc replacement**

This is an alternative to spinal fusion for treating severely damaged discs.

> **Interspinous spacers**

These are small devices that are inserted into the spine to keep the spinal canal open to avoid pinching the nerves.

There are also rehabilitation programmes designed to help the patient reduce pain and reliance on opioid pain medicines.

These programmes usually last two to three weeks, and can be done on an in-patient or out-patient basis.

**Preventing low back pain**

Recurring back pain resulting from improper body mechanics may be prevented by avoiding movements that jolt or strain the back.

Here are some recommendations for keeping one's back healthy:

> **Exercise regularly to keep your muscles strong and flexible.**

Consult your doctor for a list of low-impact, age-appropriate

exercises that are specifically aimed at strengthening lower back and abdominal muscles.

> **Maintain a healthy weight and eat a nutritious diet with sufficient daily intake of calcium, phosphorus and vitamin D to promote new bone growth.**> **Use ergonomically-designed furniture and equipment at home and at work.**

Make sure work surfaces are at a comfortable height.

> **Switch sitting positions often and periodically walk around the office or gently stretch muscles to relieve tension.**

A pillow or rolled-up towel placed behind the small of the back can provide some lumbar support.

Put your feet on a low stool or a stack of books when sitting for a long time.

> **Wear comfortable, low-heeled shoes.**> **Sleeping on one's side with the knees drawn up in a fetal position can help open up the joints in the spine and relieve pressure by reducing the curvature of the spine.**

Always sleep on a firm surface.

> **Don't try to lift objects that are too heavy.**

Lift from the knees, pull the stomach muscles in, and keep the head down and in line with a straight back.

When lifting, keep objects close to the body.

Do not twist when lifting.

> **Quit smoking.**

Smoking reduces blood flow to the lower spine, which can contribute to spinal disc degeneration.

Smoking also increases the risk of osteoporosis and impedes healing.

Coughing due to heavy smoking may also cause back pain.

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