You and your back

- Take care of your back
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- Anatomy of your back
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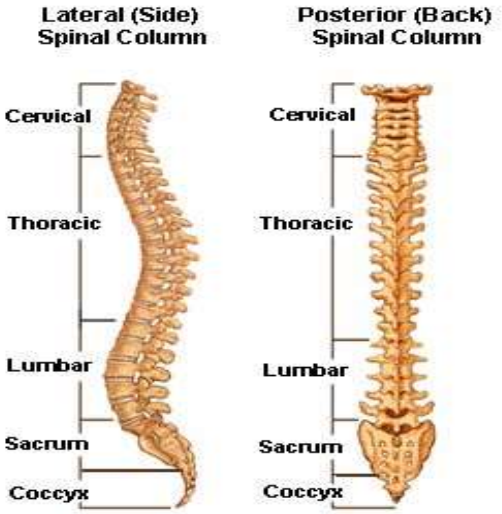
- Acute low back pain



TAKE CARE OF YOUR BACK

Introduction:

Back pain is a very common health problem. Approximately 90% of the population suffers from back pain at sometime in their lives that requires treatment. Back pain and injuries related to lifting and material handling are some of the most frequent type of injuries, both on and off the job. Some back pain is due to misuse of your back. You can prevent back pain by yourself.

Common causes of Lower Back Pain:

- Sitting for a long time in a poor working posture.
- Prolonged bending.
- Heavy lifting.
- Poor standing, sitting or lying posture.
- Poorly arranged working environment.

Good posture:

Posture refers to the position of a person in lying, sitting, standing or while doing any type of activity. In all these positions your spine should resemble an “S” shape curve which is the best posture for your spine. Good posture places minimal stress on your spinal, muscles and joints.

BACK CONDITIONS OVERVIEW

Back Strains and Sprains - A strain is a muscle or tendon injury; a sprain is a ligament injury
Back strain is a common cause of back pain, especially lower back pain. Back muscle strain can be caused by overloading of the back muscles (e.g. lifting a heavy object) or overuse of the back muscles (e.g. repetitive bending or lifting or holding the back in one position for too long). Back strain from overuse may occur quickly or may take weeks or months to develop (chronic overuse injuries). **Back sprain** may occur from a fall. Back muscles may not react quickly enough during a fall or accident and fail to keep the spine within its normal range of motion, which may result in overstretched or torn ligaments.

Sciatica is pain or numbness along the sciatic nerve that radiates from the lower back to the buttocks and back of the thigh. The pain may be caused by compression, inflammation, or reflex mechanisms (muscle spasms). The most common cause of Sciatica is a herniated disk of the lumbar region of the spine (lower back). The pain can vary from a dull ache to a burning sensation. It can be slightly annoying or intensely painful. It usually occurs on one side only. The pain often comes on gradually throughout the days and it at its worst at night. The pain intensifies after prolonged sitting or standing. Most cases resolve within 6 weeks.

Herniated Disc *(also known as 'Slipped Disc)* is a rupture of the outer casing of the disc. When a disc is ruptured some of the inner substance may protrude and touch spinal nerves, causing pain down the leg (sciatica) as well as back pain. The majority of herniated discs improve without surgery.

Spinal Stenosis is compression of the spinal cord or spinal nerve roots. This compression may be caused by a bone spur or bulging disc and is related to degeneration of the spine. Spinal stenosis is more common in the elderly. Symptoms are pain, tingling, numbness. Most cases occur in the lower back - the sciatic nerve is compressed which causes pain to radiate down the buttocks and leg. The pain is usually relieved by sitting, and made worse with activity.

Spondylolisthesis is a condition in which a vertebra slips over the vertebra below it, most commonly a vertebra in the lower back. The degree of the slippage varies. There may be no symptoms at all or there may be back pain, sometimes accompanied by pain radiating down the buttocks and leg. Surgery is rarely needed.

Isthmic Spondylolisthesis starts with a crack in a vertebra, usually the lowest lumbar vertebra, causing it to disconnect from the facet joints. This results in the vertebra slipping forward over the vertebra below it - resulting in misalignment and narrowing in the spinal canal. The fracture most often occurs in early childhood but the slippage often occurs later. Sometimes the slippage occurs in childhood, is present for years without symptoms, but often accelerates disc degeneration later in life.

Degenerative Spondylolisthesis starts with degeneration of the disks that result in a vertebra slipping over the vertebra below.

Osteoarthritis of the Spine *(Spondylosis)* is a degenerative disease affecting the facet joints (spinal joints) and the intervertebral discs. Osteoarthritis usually doesn't begin until after the age of 45 and is the most common after the age of 60, but may occur at any age.

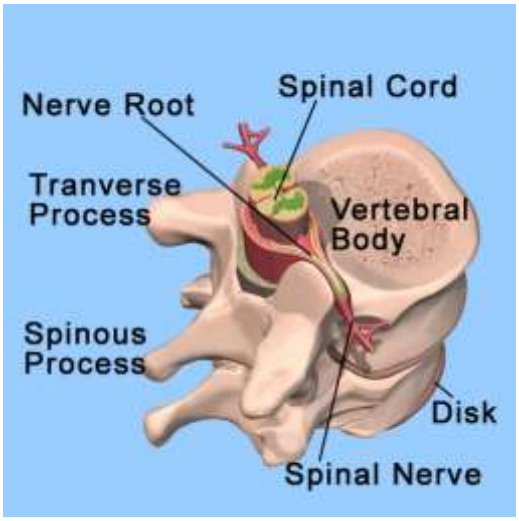
Ankylosing Spondylitis belongs to a group of chronic inflammatory diseases of the spine called Spondylitis. Ankylosing Spondylitis is a type of arthritis causing inflammation of the spine. It is most common in teens and young adults although it can also affect children and older people.

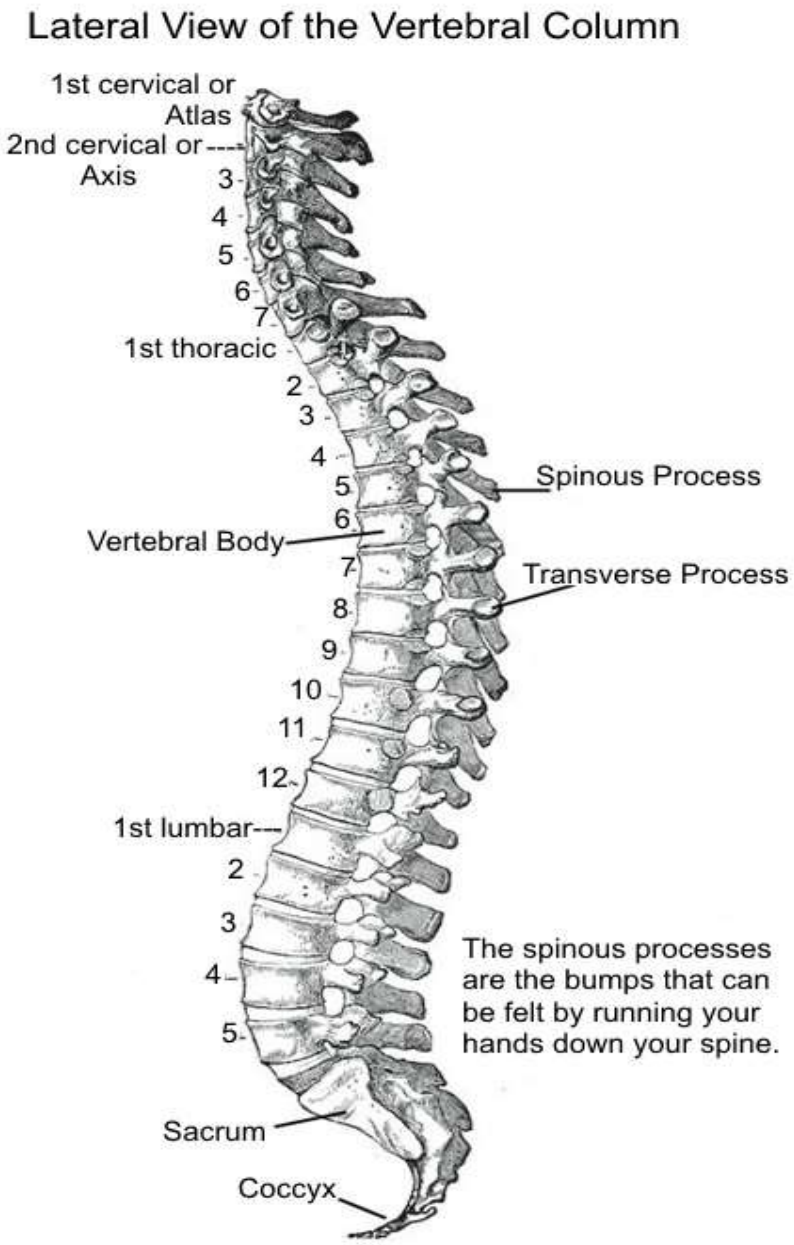
Osteoporosis is a condition in which the bones gradually become porous, brittle, and fragile. The risk of osteoporosis increases with age. Osteoporosis is most common in women over the age of 50.

coliosis is an abnormal lateral (side-to-side) curvature of the spine with rotation of the vertebrae within the curve. Adolescent Scoliosis is the most common form. Scoliosis does not usually cause any pain when it occurs in children. In growing children, orthopedic braces usually prevent the curve from getting worse but do not correct the curve that is already present; therefore, it is important to catch scoliosis early. Surgery can be performed if the curve is severe.

Fibromyalgia is a condition that causes widespread pain and fatigue. Although any area of the body may be affected, the lower back, neck, shoulders, are common problem areas.

Whiplash is usually the result of a car accident, but can also occur in a fall. It is an injury to the neck caused by sudden backward and forward movements of the neck in which the muscles don’t have time to react to keep the neck within a safe range of motion. (Or the force may too great for the muscles to hold the spine within a safe range of motion). This results in overstretching or tearing the ligaments and muscles that support the cervical spine and possible injuries to the discs and facet joints. The main symptoms are neck pain and stiffness.





The Spinal Column: The spinal column (*also called the vertebral column*) contains and protects the spinal cord and supports the body and head. The spinal column is flexible to allow movement of the body. The spinal column is comprised of a column of small bones called **vertebrae**. Shock absorbing **discs** separate the vertebrae.

Vertebrae: The **24 vertebrae** are named according to their location along the spine. We start out with **33 vertebrae** but the lowest nine fuse together to form single bones – 5 fused vertebrae form the sacrum and 4 tiny fused vertebrae form the coccyx (tailbone).

The 24 True or Movable Vertebrae:
Cervical spine (neck area) with 7 vertebrae (labelled C1 – C7)
Thoracic spine (chest area) with 12 vertebrae (labelled T1 – T12)
Lumbar spine (lower back) with 5 vertebrae (labelled L1 – L5)

Fused Vertebrae (below the lumbar spine)
Sacrum: a triangular shaped solid base with 5 fused vertebrae – connects with the pelvis
Coccyx: (the tailbone) with 4 very small fused vertebrae

Main Parts of a Vertebra: ***The two main parts of the vertebra are the vertebral body and the vertebral arch.*** **Vertebral Body: The anterior** segment and largest part of a vertebra, basically cylindrical in shape.
Vertebral Arch: The posterior part of a vertebra; the vertebral arch has several processes (bony projections).

Processes (bony projections) of the Vertebral Arch:
The **spinous process** (projecting from the centre of the vertebral arch) and the **transverse processes** (projecting from either side of the vertebral arch) serve as attachments for the muscles and ligaments.

Intervertebral Foramen (**plural: intervertebral foramina**): The opening formed between adjacent vertebrae from which the spinal nerves exit. There is an opening on each side.

Facet Joints: Facet joints (commonly called spinal joints) join adjacent vertebrae. Facet joints are hinge-like and allow adjacent vertebrae to move on one another to allow bending and twisting and also keep the spine within a normal range of motion. The surfaces of the bones that make up the facet joints are coated with smooth cartilage that allows the bones to glide smoothly against each other. Muscles, ligaments and discs support the joints of the spine.

Spinal Cord: A part of the central nervous system, the spinal cord transmits messages from the brain to other parts of the body and vice versa. The spinal cord begins at the brain and runs down to the level of the second lumbar vertebrae. Three meninges (membranes) cover the spinal cord. Spinal nerves branch out form the spinal cord.

Cauda Equina: The spinal nerve roots continue beyond the lower end of the spinal cord, within the spinal canal. This collection of nerves resembles a horse's tail and is called the cauda equina.

Meninges: The three membranes enclosing the spinal cord and brain - the pia mater, arachnoid, and dura mater. The dura mater is the outermost and toughest of the three meninges.

Sciatic nerve: A sensory and motor nerve, the sciatic nerve originates in the lumbar and sacral areas of the spinal column. The sciatic nerve is formed by several nerve roots that extend beyond the lower end of the spinal cord and converge. (The spinal cord at the second lumbar vertebrae). Its two branches run through the pelvis, deep into each side of the buttocks, through the hip, the backside of the upper leg down to the foot. . The sciatic nerve is the largest nerve in the human body - the diameter of a finger.

Spinal Canal: Spinal Canal (also called **vertebral canal**) is the large canal in the centre of the spinal column that contains the spinal cord and its membranes.

x Don'ts

- Don't bend over to lift anything
- Don't do repetitive movements e.g. bending forward
- Don't lift with a rotated or lateral flexed spine

✓ Do's

- Assess the load
- Plan the lift
- Maintain correct posture
- Keep spinal curves intact
- Place the feet correctly

Hold the load with the hands not the fingers

Brace the abdominals

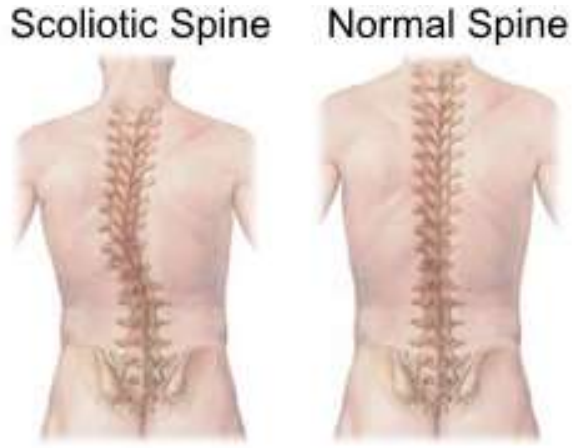
Lift with leg and buttock muscles and use momentum

Hold the load close to the body

Keep fit for lifting

WHAT IS SCOLIOSIS?

Lateral or Sideways Curvature of the Spine



Definition:
Scoliosis is the term given to a lateral (away from the middle) or sideways curvature of the spine.

Who gets Scoliosis? Scoliosis has a rate of 2:1 girls to boys. The statistics suggest a rate of about 3-5 out of 1,000 people are affected. Scoliosis usually occurs in those older than 10 years, but the condition has been diagnosed in infants.

Predisposing Factors: In most cases (85%), the cause of scoliosis is unknown (what doctors call idiopathic).

The other 15% of cases fall into 2 groups:

Non-structural (functional): This type of scoliosis is a temporary condition when the spine is otherwise normal. The curvature occurs as the result of another problem. Examples include 1 leg being shorter than another, from muscle spasm, or from appendicitis. Also activities that require prolonged amounts of time sitting or standing can induce scoliosis.

Structural: In this type of scoliosis, the spine is not normal. The curvature is caused by another disease process such as birth defect, muscular dystrophy, metabolic diseases, connective tissue disorders or Marfan's syndrome.

Progression: Pain will become persistent if irritation of ligaments results. The greater the initial curve of the spine, the greater the chance for progression of the condition after growth is complete. Severe scoliosis (curves in the spine greater than 100 degrees) may cause breathing (respiratory) problems.

Probable Outcomes: With early screening and detection, most children with scoliosis can be treated to prevent more curvature. They can lead normal lives and have the same life span as other healthy people. The prognosis depends more on why the scoliosis occurred. If the scoliosis has occurred as a result of an infection by another disease, then the prognosis would be based upon this infection, not the scoliosis.

How is Scoliosis diagnosed? The physical examination will include a forward bending test that will help the practitioner define the curve. There will also be a thorough neurologic exam to look for any change in strength, sensation or reflexes.

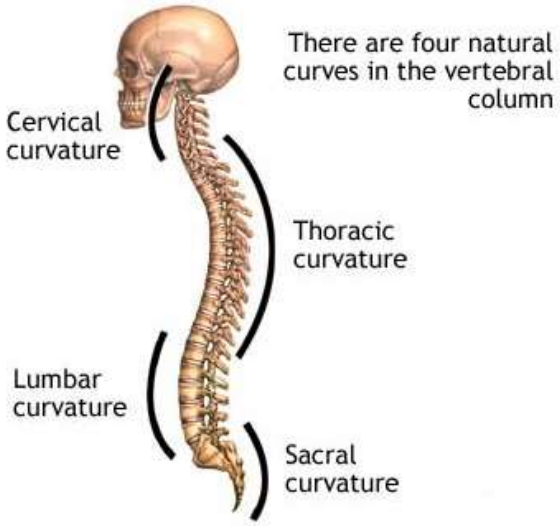
How is Scoliosis treated? The treatment is determined by the cause of the scoliosis, the size and location of the curve, and the stage of bone growth (how close to maturation). Most cases of adolescent idiopathic scoliosis require no treatment (less than 20 degrees) but should be checked by a doctor at regular intervals (often every 6 months). As curves progress above 25 to 30 degrees in a child who is still growing, bracing is usually recommended to help slow curve progression. There are many different kinds of braces used which have names such as the Boston Brace, Wilmington Brace, Milwaukee Brace and Charleston Brace, named after the centre which developed them. Each has a different appearance and there are different ways of using each type properly. The selection of brace and the manner in which it is used is determined by many factors, including the specific characteristics of your curve, and will be decided on following consultation between you and your doctor. A back brace will not reverse the scoliosis; rather the spine is straightened by the brace from

asymmetric pressure, and can be adjusted as the patient grows.

Bracing is not effective in the cases of congenital or neuromuscular scoliosis and is less effective in infantile and juvenile idiopathic scoliosis. Curves of 40 degrees or greater usually require surgery because curves this large have a high risk of progressing even after bone growth stops. Surgical correction involves correcting the curve (although not all the way) and fusing the bones in the curve together. The bones are hold in place with one or two metal rods held down with hooks and screws until the bone heals together. Sometimes surgery is performed through an incision in the back and sometimes through an incision on the abdomen or beneath the ribs. A brace may be required after surgery to stabilize the spine. The limitations imposed by the treatments are often emotionally difficult and may threaten self-image, especially of teenagers. Emotional support is important for adjustment to the limitations of treatment.

Physiotherapists and orthotists (orthopaedic appliance specialists) can be helpful in explaining the treatments and ensuring a comfortable fit of the brace to increase the compliance with the treatment plan.

WHAT IS OSTEOPOROSIS?



Osteoporosis is the thinning of bone tissue and loss of bone density over time.

The leading causes of osteoporosis are a drop in estrogen in women at the time of menopause and a drop in testosterone in men. Women over age 50 and men over age 70 have a higher risk for osteoporosis.

Osteoporosis occurs when the body fails to form enough new bone; when too much old bone is reabsorbed by the body, or both.

Calcium and phosphate are two minerals that are essential for normal bone formation. Throughout youth, your body uses these minerals to produce bones. If you do not get enough calcium, or if your body does not absorb enough calcium from the diet, bone production and bone tissues may suffer.

As you age, calcium and phosphate may be reabsorbed back into the body from the bones, which makes the bone tissue weaker. This can result in brittle, fragile bones that are more prone to fractures, even without injury.

A diet rich in calcium and regular weight based exercise throughout life (especially childhood and adolescence) decreases the risk of osteoporosis in later years.

People with existing osteoporosis can also benefit from exercise. A sedentary lifestyle encourages loss of bone mass.

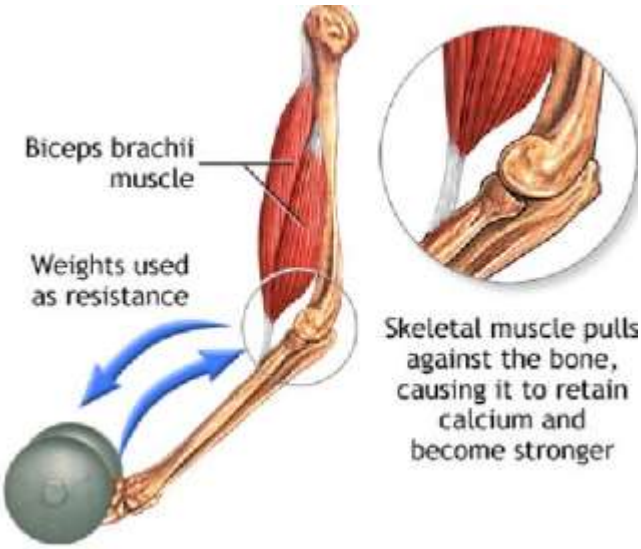
Exercising regularly decreases the rate of bone loss, and conserves remaining bone tissue, reducing the risk of fractures.

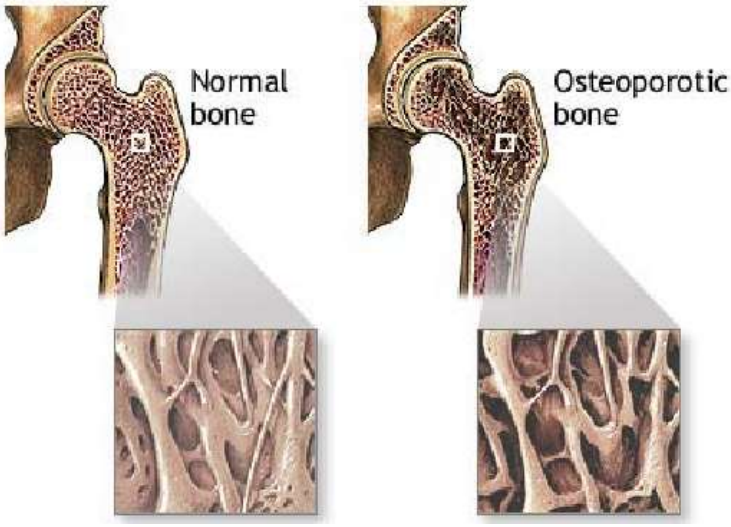
Exercise:

Weight-bearing—walking, jogging, playing tennis, dancing
Resistance—free weights, weight machines, stretch bands
Balance— tai chi, yoga
Riding a stationary bicycle
Using **rowing** machines

High Calcium Foods include:

Cheese
Ice Cream
Leafy green vegetables
Low-fat milk
Salmon
Sardines (with the bones)
Tofu
Yoghurt





Acute low back pain

Acute low back pain refers to pain in the lower back which has lasted for less than 12 weeks. The lower back is the region of the body where the lumbar spine is located. The lumbar spine is the bottom section of the spine and consists of five bones (vertebrae). Between these vertebrae are structures called discs which act as shock absorbers. There are countless muscles acting on the lumbar spine and a number of strong ligaments which provide the spine with stability. Many of these structures can be involved when you experience acute low back pain.

Lower back pain can unfortunately happen to anyone at any time. Around 70% of Australian adults will experience lower back pain at some point during their life.

What causes back pain?

Acute low back pain can be caused by many factors such as:

- trauma (fall, car accident, lifting)
- muscle imbalances (postural issues)
- existing medical conditions
- rheumatological conditions

Injuries can happen when you do something new, different or strenuous, such as lifting heavy items or playing a new sport. The pain may also occur because of a build-up of stress on the back that gradually turns into an injury. Although serious causes of back pain are rare, it is important that you have your condition assessed by a qualified health professional such as a physiotherapist. This is particularly important if your back pain is associated with other symptoms like fever, unexplained weight loss, pins and needles or numbness, or if your pain was caused by a high velocity trauma such as a car or sporting accident.

What should you do?

At the first sign of back pain, there are a few simple things you can do to provide short term relief and give your back the best chance of healing quickly.

- ***Stay active*:** It may be tempting to stay in bed, it is important to keep moving as much as you comfortably can. By doing this, you can prevent stiffness and relieve muscle spasms. Your physiotherapist can prescribe a gentle exercise program tailored to suit your condition. They can also gradually progress your exercises to help you return to normal function as soon as possible.

- ***Use heat*:** Heat has been shown to improve pain and function during the first 48 hours of back pain. A few easy options are heat wheat bags, gel heat packs and electric heat pads.
  Make sure you test the heat before you apply it.

- ***Find comfortable positions*:** Although you should remain as active as possible during the early stages of back pain, there are times when you need to be lying or sitting down. Find positions that allow you the most comfort, especially when sleeping. Using a pillow under the knees when lying on your side can offer support and relief from pain. When sitting ensure your lower back is supported. You can use a rolled up towel placed in the small arch of your back. This will help provide support and may relieve the pain.

- ***Stay positive:*** Back pain is a distressing and disabling condition, but it is important to remember that you will get better. With proper treatment you should regain normal pain-free movement as well as improving the strength of the key supporting muscles that surround your spine.

How your physio can help

It is important to consult a physiotherapist as soon as possible to assist with pain relief and improve movement. Physiotherapists are experts in the assessment of musculoskeletal injuries, especially back pain. They will provide a thorough examination to ascertain the structures responsible for your pain. The physiotherapist will also be able to give you a better understanding of the cause of pain and further self-management techniques. Your physiotherapist will also discuss the treatment options with you. Some options may include:

- joint mobilisation
- massage
- stretching
- strengthening exercises
- taping
- advice on recommended positions and postures at home and during work.

Treatment of the underlying cause will not only resolve your back pain, but prevent it from coming back again. If you're suffering from back pain, don't delay! The earlier you see a physiotherapist, the quicker they can help get your back pain under control.

Contact Bourbong Street Physiotherapy Centre

4153 6474

to make an appointment with Elizabeth

and she will get you back to work, sport and life.