

INTRODUCTION TO BASIC ERGONOMICS

As a result of the modern sedentary lifestyle, 4 out of 5 adults will suffer from back or neck pain at one time or another in his life.

Common causes of back pain include:

- **Poor sitting posture** which puts undue strain on the facet joints connecting the individual vertebrae. This is common for office workers.
- **Soft tissue injuries** (or myofascial strains) which are injuries to the muscles and ligaments which work to stabilise the spine. These injuries may be caused by vigorous exercise, lifting of heavy weights or accidents like "whiplash".

Disc herniation or a tear in the outer annulus (outer elastic material) of an intervertebral disc, causing the nucleus pulposus (inner gel-like material) to expand and press against a nerve. The result is severe pain, numbness and weakness in the arm or leg. Most people who suffer from disc herniation will recover without surgery.

Anatomy of the spine

The spine is one of the most important parts of the human anatomy, as it supports the weight of our body, as well as protects the spinal cord.

The spine is made of 24 true vertebrae, forming three regions:

- cervical spine (neck) - 7 vertebrae
- thoracic spine (upper back) - 12 vertebrae
- lumbar spine (lower back) - 5 vertebrae

The spine has a natural S-shaped curve. This S-shaped curve is further split into three natural regions corresponding to the cervical, thoracic and lumbar spine:

- *cervical lordosis* is the forward curve in the cervical spine.
- *thoracic kyphosis* is the backward curve in the thoracic spine
- *lumbar lordosis* is the forward curve in the lumbar spine.

These curves must be balanced in order to allow us to stand upright without effort or pain.

Each vertebra is linked to the next by a pair of joints called *facet joints*. These joints help to stabilise the spine and guide its movements.

Ligaments are strong rope-like fibres that bind vertebrae together and help to stabilise the spine. The spinal cord runs through a hole in the centre of each vertebra, which is called the *spinal canal*. The spinal cord comprises all the nerve fibres that connect to our brain, allowing us to move and to feel. Small openings at the side of the vertebra called *foramina* (singular = *foramen*) provide a tunnel for the spinal nerves to come out from the spinal cord to connect to the rest of the body.

Intervertebral discs separate each vertebra, serving as a shock-absorber for the countless jolts and strains on our backs. The disc is essentially an inner gel-like material (*nucleus pulposus*) surrounded by an outer layer of elastic material (*annulus fibrosus*).

Care for the spine

Because the spine is so important to our health, it is imperative that we know how to take care of it. These include:

- adopt a proper sitting posture with an ergonomic chair or backrest.
- lift heavy weights upwards by pushing the leg muscles up, not by bending the back up.
- provide adequate cervical support when sleeping.
- Keep up a reasonable level of exercise
- sleep on a firm hard bed.