

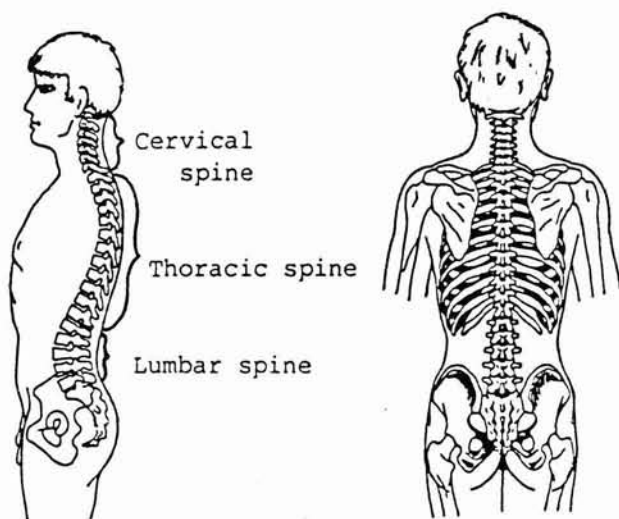
# THE LOGGER'S BACK – A PHYSIOTHERAPIST'S IMPRESSION

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## INTRODUCTION

The logging industry Accident Reporting Scheme has indicated that the logger's back is a common source of injury. This Report describes some of the anatomy involved and gives guidelines on back injury prevention.

## THE SPINE



*Fig. 1 - The spinal column*

As illustrated in Fig. 1, the spine consists of twenty four bones referred to as "vertebrae". These are divided into three groups :

- 7 cervical vertebrae (neck)
- 12 thoracic vertebrae (mid-back)
- 5 lumbar vertebrae (low back)

Since most injuries occur in the lumbar spine, it will be considered in more detail.

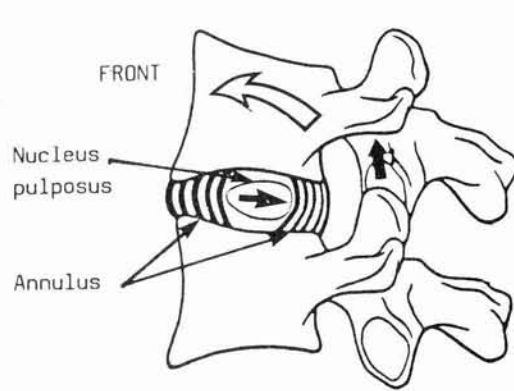
The lumbar spine consists of five bones (or "vertebrae") connected to each other by discs and supported by various ligaments and muscles. It is the discs that allow freedom of movement. Discs are formed in two parts (see Fig. 2) :

- the annulus - a thick laminated ligament within which is :
- the nucleus pulposus - a thick gel with a high water content.

The discs are continually being compressed in our daily lives. Provided the forces are constantly being changed and the pressure on the annulus increased and decreased, there are no problems.

As you bend forwards and backwards, the gel moves to the position of least pressure. As you bend forwards, it bulges backwards, and if you bend backwards, it bulges forwards (see Fig. 2).

The weakest part of the spine is posteriorly (behind), where the vertebral joints interfere with the ligament structure. Weaknesses occur more easily behind than in front, where the anterior longitudinal ligament gives the annulus a doubly thick wall.



Forward bending (Flexion) forces the nuclear gel backwards and stresses the annular wall at the back.



Backward bending (Extension) forces the nuclear gel forwards and stresses the annular wall at the front.

*Fig. 2 - Movement of the nuclear gel*

## CAUSES OF BACK PAIN

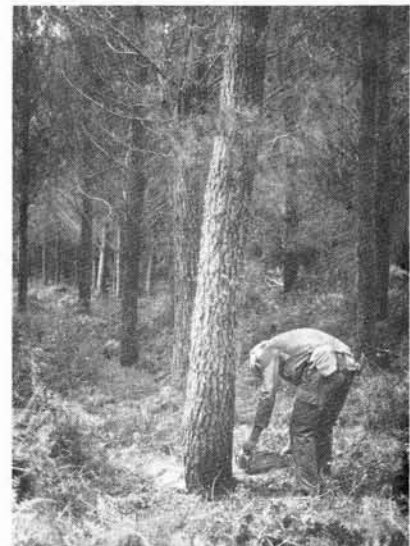
If one position is kept for a long time without change (such as bending during delimbing) then extra stress is added to the annular wall and overstretching occurs. The gel moves towards this weakened area, bulges beyond its normal confines and the problems begin.

The pain begins as a dull backache which, if ignored and continually abused, can develop into buttock and/or leg pain, which may radiate as far as the foot. The pain is caused through compression of a nerve by the bulge in the annulus. In severe cases you may find you cannot straighten easily as the bulge interferes with the vertebral joint mechanism. The following photographs show a number of logging activities which can cause these problems in a worker :



Delimbing

Felling



Breaking out, unstropping and machine operation



Skid work



All these activities include either repetitive or prolonged forward bending (flexion). The added weight of a chainsaw, log or equipment, increases the amount of load on the discs.

### **AVOIDING BACK INJURIES**

An understanding of the causes of back pain can help to avoid such injuries. If posterior pressure caused by bending forward is relieved at regular intervals throughout the working day and if correct postures kept while working and resting, the number of injuries should be minimised. It should be pointed out that the "danger period" may begin on climbing out of bed. Overnight, the discs take in more water and are very vulnerable to any increase in pressure. Putting on your boots, cramming into the gang transport, driving to the bush, and immediately starting heavy physical work all increase the chances of damage.

If you have been sitting all weekend or bent over the engine of your car, you have already begun to stretch the annular wall. Continued abuse on Monday morning may be the final straw.

The following photographs show how applying simple modifications to work techniques can reduce the likelihood of back problems occurring.



**Straight back, bend at knees**



**Lowered on to one knee rather than bending over**



**Another example of bending the knee to avoid back strain**



**Kneeling on the log when delimbing**

## GUIDELINES FOR MINIMISING BACK PROBLEMS

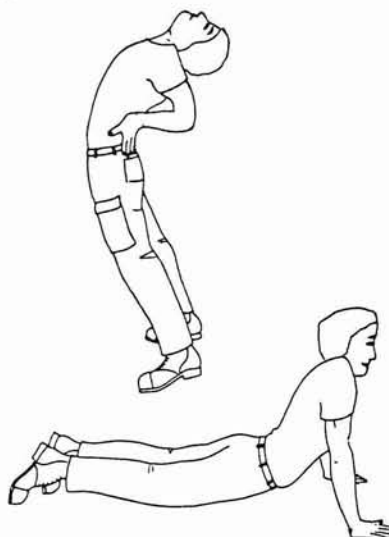
The advice and exercises that follow should be utilised not only at work but also throughout all daily living :

- (1) Correct working postures must be used, e.g.
  - bend your knees not your back
  - lift correctly
  - where possible, let the tree or log take the weight of the chainsaw
- (2) Change working techniques where necessary :
  - avoid crowded vans
  - improved felling and delimbing posture
- (3) Simple corrective exercises for preventing further problems:

- (a) Stand erect. Then placing your hands in the small of your back, bend backwards, hollowing your lumbar spine, and then straighten to the erect position. Repeat ten times.

or

- (b) Lying face down with your hands and arms positioned for a press up, perform a half press up keeping your hips and legs slack and arching your lumbar spine. Repeat ten times.



Each exercise should be done before and after any heavy lifting or prolonged forward bending and, especially, if low back pain has developed. Each exercise done correctly takes one minute to perform ten times. If done three times a day as maintenance or two hourly if back pain is evident, they should help avoid further disability or lost time.

Seek medical help if problems persist.

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### References :

- McKenzie, Robin (1980) "Treat your own Back". Spinal Publications, Waikanae, N.Z.  
McKenzie, R.A. (1981) "The Lumbar Spine, Mechanical Diagnosis and Therapy". Spinal Publications, Waikanae, N.Z.

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