

Annals of the
**RHEUMATIC
 DISEASES**

Leader

Simple low back pain: rest or active exercise?

Back pain is not new; it has been reported throughout recorded history.¹ Nor is there evidence of any change in the nature or severity of back pain. What is new is the scale of chronic disability due to simple backache. The latest Department of Social Security statistics for 1990-1 (fig 1) show that back pain now accounts for 67 million days of sickness and invalidity benefit each year in the United Kingdom and is the second most common cause of physical disability after cardiovascular disease. Moreover, it is increasing faster than any other form of chronic disability and has increased by 13% in the last year. Nor is there any evidence of change in the biological basis of back pain. What has changed is our understanding and management of this common bodily symptom. With the introduction of the disease model of illness in the 19th century, three key ideas laid the foundation for what is now traditional treatment for low back pain: that it comes from the spine; that it is commonly caused by injury; and that the basic strategy of management should be rest.

Therapeutic rest for back pain was first introduced by the newly emerging specialty of orthopaedics.² Previously, the sick bed had always been regarded as a consequence of serious disease rather than a treatment.³ Since that time rest has become the traditional treatment for low back pain. Indeed, the most recent edition of one of the standard

undergraduate textbooks of orthopaedics⁴ actually still advocates: 'the principle is to provide rest for the lumbar spine ... [either] by a plaster jacket or bed rest ... rest for the spine must be continued for 6 to 12 weeks according to progress'. In a postgraduate education questionnaire⁵ 67% of general practitioners in the United Kingdom selected bed rest as the 'correct' treatment for a 38 year old man with a two week history of simple low back pain.

The rationale of rest for low back pain is not nearly as obvious as might be imagined. It appears to be a mixture of ideas based on a disease model of the spine and ignoring the physical and biopsychosocial effects on the patient. The main concepts are: the painful spine is irritable; movement and physical activity will increase pain and hence must be harmful; diagnoses of 'disc' problems—biomechanical studies show that disc pressure is lowest when supine, so that somehow the disc will 'go back' by lying down; and the orthopaedic principle of therapeutic rest. None of these concepts has pathological validity for simple low back pain.

Conversely, the ill effects of rest are part of standard medical and nursing teaching. Prolonged bed rest is the most effective method known of producing a severe disuse syndrome.⁶ We no longer use prolonged rest to treat any other condition and go to considerable lengths to avoid it. Nor does the scientific evidence support bed rest for low back pain or even sciatica. There are now five controlled trials of bed rest for low back pain.⁷⁻¹¹ The only trial to suggest that bed rest was better than staying ambulant⁸ had serious methodological defects. The two most carefully designed and executed trials showed that two days of bed rest for low back pain were better than seven days of bed rest, whereas no bed rest at all was better than four days of bed rest. Deyo *et al*¹⁰ showed that patients with acute low back pain given medical recommendation of two days of bed rest returned to work significantly faster than those recommended seven days of bed rest. Gilbert *et al*⁹ showed that those who received no bed rest reported significantly less restriction of daily activities and returned to normal levels of activity significantly faster than those instructed to stay in bed for at least four days. No trial showed any adverse effects of earlier mobilisation. There is no evidence comparing bed rest in hospital with bed rest at home. So in these days of increasing demand for the cost effective use of resources it is difficult to justify the admission of 40000-50000 patients to hospital each year in the United Kingdom for bed rest for low back pain and sciatica.

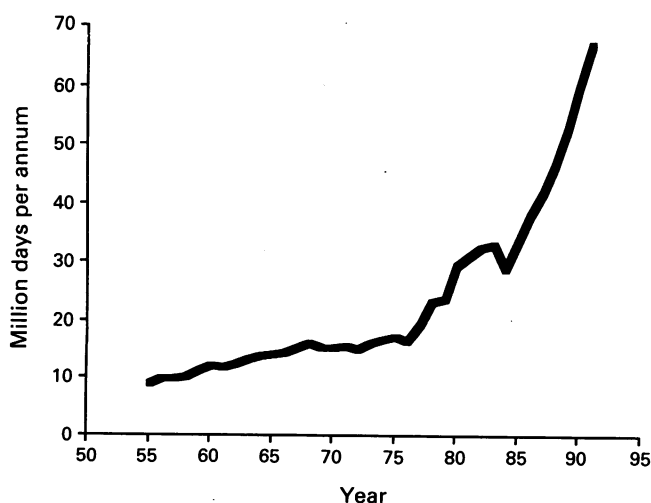


Figure 1 Increase in payment of sickness and invalidity benefit for back pain in the United Kingdom. Unpublished data supplied by the Department of Social Security.

There is increasing evidence that low back pain and disability are better understood and managed according to a biopsychosocial model¹² (fig 2). Viewed from this perspective, there are strong theoretical arguments against bed rest and for an active exercise approach to low back pain and sciatica. Physically, this will prevent the disuse syndrome and promote the natural history of recovery. Perhaps even more importantly, it will minimise the harmful cognitive, affective, behavioural, and social effects of assignment to disability status. These theoretical arguments are supported by solid scientific evidence. There are now 18 published controlled trials of an active exercise approach for low back pain¹³⁻³¹ (reviewed by Waddell¹²). Fourteen of these trials show statistically and clinically significant benefits in pain, disability, physical impairment, cardiovascular fitness, psychological distress, or work loss.

Fundamental questions remain. Koes *et al*³² found little evidence favouring any specific type of physiotherapy exercise. The benefit appears to lie in an active exercise approach with the emphasis on increasing physical activity and return to work. Most of the trials considered chronic low back pain, though a well designed and executed trial by Lindstrom *et al*³¹ showed that the same approach can be applied successfully at the six week stage. Moreover, the control groups in the bed rest trials⁷⁻⁹⁻¹¹ confirm the advantages of early mobilisation in patients with acute low back pain. There is still doubt about the most effective methods of achieving this strategy. The key treatment elements in the trial by Lindstrom *et al*³¹ were measurements of functional capacity, an incremented exercise programme, an operant conditioning behavioural approach, and rehabilitation directed towards return to work including a workplace visit. This reduced the average duration of work loss from 15.1 to 10 weeks and reduced the number of patients progressing to chronic invalidity from 4/52 to 1/51. Some trials, however, have shown that improvements are maintained for at least six months to two years,^{15-17 19 21 30 31} whereas others have found that initial improvements regress after a few months.^{22 24 25 28 29} There is no evidence that earlier return to work predisposes to recurrence or 're-injury'. On the contrary, Lindstrom *et al*³¹ showed that the active group still had significantly less work loss due to low back pain in the second year of follow

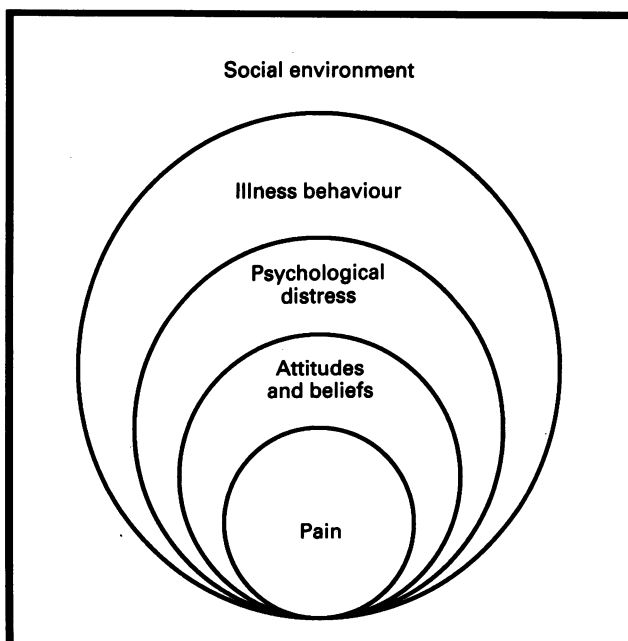


Figure 2 Biopsychosocial model of low back pain and disability.

up. Doubt also remains about the mechanism of these effects. Some of the improvements seen in performance occur too rapidly to be physiological. It is not clear to what extent successful rehabilitation is primarily physiological or behavioural. Further trials are required in the early stages of acute low back pain and in sciatica. Most importantly it remains to be proved whether comparable results can be achieved in community health care delivery.

There is now sufficient evidence to demand a fundamental reappraisal of our basic strategy of management for low back pain. The Agency for Health Care Policy and Research in the USA and the United Kingdom Clinical Standards Advisory Group are currently considering management guidelines for low back pain. The choice is clear: rest or active exercise? The scientific evidence is also clear. Many patients with low back pain may need to modify their activities temporarily in the acute stage. A few patients may require one to three days of bed rest for acute low back pain or up to two weeks for nerve root pain. Rest, however, is better regarded as an unfortunate and undesirable consequence of acute pain, not as a treatment. Bed rest should be avoided whenever possible and always ended as rapidly as possible. The prescription of rest and restricted activity for chronic pain is absolutely contraindicated. There is now good evidence for an active exercise approach for chronic low back pain. There is strong theoretical argument for, some scientific evidence for, and no evidence against a similar approach to acute low back pain. The same principles probably apply, though over a slightly longer time scale, to nerve root pain.

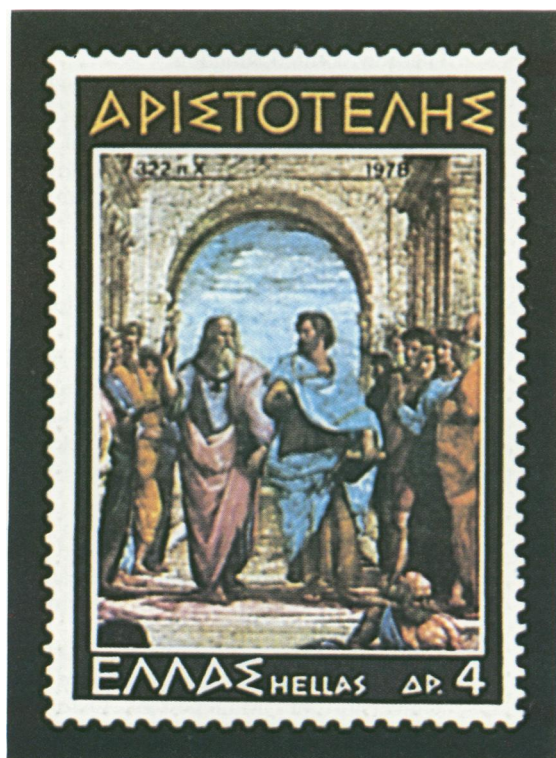
We are now facing an epidemic of lower back disability in all western societies. Traditional medical treatment has not halted this epidemic and may even have contributed to it. We need a new strategy of management directed equally to pain and disability, which places equal emphasis on the symptomatic relief of pain and restoration of function. We need a community health care delivery system which achieves this in practice, within the first three months before chronic pain and disability become established. This requires changes in how patients, doctors, and society deal with low back pain. The prime responsibility lies with doctors who not only provide medical advice and sick certification for low back pain, but also provide society with the concept and understanding of low back pain on which our whole management system is based. If this analysis is correct, the first step to halting this epidemic requires a radical change in medical thinking and practice. Such change in the behaviour of doctors is always difficult to achieve,³³ but if we continue as we are doing it appears likely that low back disability will continue to increase. From the present statistics, that is the inescapable challenge of low back pain in the last decade of the 20th century.

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Aristotle (384-322 BC) was a distinguished disciple of Plato at the 'Academy'. He became the tutor of Alexander. After Alexander, now 'the Great', conquered most of the world and then built the city of Alexandria a university was established. As part of biological sciences, medicine stressed anatomical dissections. Aristotle changed the concept of mysterious humors to disease entities in organs as causes of disease. He studied the bones and joints. He stated (*Historia Animalium*): 'The nutrient is consumed into the bones . . . The bones of males are harder than those of females.' 'There is no bone that is isolated and separated.'

As a result students came from all over to study under Aristotle and his school. Aristotle's writing had great influence on medical thought and practice. In his writings he discussed heredity, public health, social hygiene, psychiatry, and care of the unfortunate.

He has been commemorated on several issues of stamps, including those from Greece, Mexico, and Cyprus.