

## APPENDIX 1

### CASE STUDY

#### **History**

A forty-five year old man is referred by his GP; he is a computer technician, with a job that involves some driving and sitting, but is also reasonably varied and active. He scores 12 out of 24 items on the Roland and Morris disability questionnaire and indicates his pain at six on a 0-10 visual analogue scale. He is not off work with the present episode. He has stopped his usual sporting activities because of back pain; these are running and climbing, but he is keen to resume them again. On the last occasion he tried to run his leg pain was severely exacerbated for several days.

His symptoms have been present for about three months, they came on for no apparent reason, and are now unchanging. They consist of aching that radiates from his back and left buttock all the way down the back of his thigh and leg to his ankle. Sometimes he has noted pins and needles in the outer border of his foot.

Symptoms commenced in his back, and spread into his leg after several weeks. The intensity of the pain is the same in the back and leg. In the back, symptoms are constant, but in the limb they are intermittent. He estimates that he feels the ache in the thigh about 80% of each day and in the leg about 50% of each day. The pins and needles in his foot are less frequent, but do occur every day, when the pain is at its worst.

He reports that his symptoms are made worse and in time peripheralise by bending, sitting, driving and as the day progresses. Standing and walking for extended periods also aggravated his symptoms. He prefers being on the move, his symptoms are also better when he lies down and in the morning. His sleep is not disturbed.

He relates that he has had several previous episodes of back pain over the last ten years, but no leg pain before. Previous episodes have lasted a few weeks and then spontaneously resolved; with more recent episodes tending to be longer in duration. He has not sought treatment before.

He reports no disturbance of bladder function, no altered gait, but sometimes increased buttock pain on coughing and sneezing. He has not had x-rays, has had no surgery, nor been involved in any accidents, and his weight is stable. He reports his general health is excellent with no ongoing medical conditions.

He sometimes takes analgesics, up to about four a day, these dull the pain temporarily, but as they are rather ineffective he only uses them a few days a week. When he first saw the GP he took a course of anti-inflammatory tablets, but their effect was also negligible.



## Physical Examination

He sits slouched on the treatment couch and reports that his pain has peripheralised into his thigh during the interview. On attempting posture correction the thigh pain is increased. He stands with a flattened lumbar spine and without a lateral shift.

His pain status in standing is back and thigh pain, with no symptoms in his leg. He displays a moderate loss of flexion, reaching to his upper shin, which increases his thigh pain. Normally he can reach his feet on forward flexion. He also displays a major loss of extension, which produces calf pain after one movement that abates after a few minutes – this movement is not tested further. Side gliding is asymmetrical; with nil loss of right side gliding, but a major loss of left side gliding.

A neurological examination is conducted. Resistance testing of his calf muscles, extensor hallucis longus and dorsiflexors are the same on both sides, and there is no apparent loss of sensation around the lateral border of his foot, big toe or medial part of his leg.

His pain status in lying is back and thigh pain again. Extension in lying produces calf pain after several repetitions and so again he is stopped from performing further movements.

The patient's hips are shifted to the right, as he lies prone on the plinth, so that he lies in a position of left lateral bending. The therapist stabilises his hips in the off centre position while the patient performs extension in lying. During repeated movements of this kind he reports a lessening of symptoms in the thigh. After two sets of ten repeated movements he reports that the pain is no longer to his knee, but now just below his buttock. When he stands after performing two more sets of repetitions he reports only left sided and central back pain.

## Session Two

He is not able to return for two days. When he returns he is asked, 'as a result of what you have been asked to do, are you better, worse, or the same?' He reports he is better, and is questioned about the five possible dimensions of improvement:

- Has pain location changed?
- Has pain frequency changed?
- Has pain intensity changed?
- Is there more movement for less pain?
- Has function improved?

He reports that he has had neither calf pain nor pins and needles since the initial consultation. The thigh pain is mostly now in the top of his thigh and is present much less frequently. The back pain is still constant, and is slightly more noticeable. Movement is easier and certain activities, that were painful, cause less or no pain now. He reports that he has performed the extension in lying with hips off centre movement regularly, at least every two hours. Every time he performs the procedure any symptoms present in his thigh are abolished, and symptoms in his buttock is reduced. Overall he rates himself at least 50% better already, very satisfied with progress, and continuing to improve.



On checking his mechanical presentation extension displays a minimum loss and there is now only a minor loss of left side gliding. His technique is checked and he is performing the procedure correctly.

He is not able to attend for five days, but is encouraged to continue with the present management as long as it produces the same response.

### Session Three

He is pleased upon his return, but also feels that no further improvement has occurred in the last two days. In that time he has only experienced an ache in the back, which is present about 50% of the day. There have been no symptoms in his thigh or lower leg in the last forty-eight hours. The exercise has little effect on the remaining back pain. He has not felt any need to take tablets at all since starting treatment.

On further questioning he reports that back pain returns mostly when he is sitting or driving. He is generally free of symptoms when walking about. He reports some back pain as he sits in the clinic. This is abolished with posture correction. His range of flexion has now returned to normal, his side gliding movements are equal right and left. He has a minor limitation of extension that produces his back pain. Repeated extension in standing begins to increase the back pain, which goes when he stops the movement. Extension in lying also produces back pain, but this is reduced and then abolished on repetition. Afterwards extension in standing is pain free and full.

### Session Four

He has had virtually no symptoms at all in the last few days. Occasionally, if he sits poorly symptoms return, but he is rapidly able to abolish these with a change in position. Extension in lying has either been pain free and full, or if pain is present on first performing the exercise it is soon abolished. He has been for a two-mile jog at a gentle pace with no ill effect. He indicates no functional loss on the Roland and Morris disability questionnaire (Roland & Morris 1983), and between nought and one on the visual analogue scale. All his movements are examined; there is no loss and no discomfort. He is considered to have made a full recovery, and he is encouraged to make a gradual increase in his sporting activity. The issue of relapse and the use of the same exercises, as long as they generate the same response, and the importance of general fitness, are discussed. He is happy to be discharged.

