

Exercise and Chronic Low Back Pain

Low back pain has reached epidemic proportions in Western Society. Back pain can be defined as pain emanating from an area between the buttock crease and the base of the neck. Low back pain (L.B.P) has an upper border of the lowest ribs (Klaber-Moffett et al, 1995).

Low back pain has been described as a 20th century disaster (Waddell, 1998), and shows no signs of abating as we enter the new millennium. The staggering statistics concerning the extent of the problem and the cost to society are frequently quoted in newspapers and medical journals alike, but are worth repeating.

- ◆ At some time in their life 80% of the human race will experience low back pain.
- ◆ 60% of the population will have experienced some degree of back pain in the last year.
- ◆ 2-5% will seek medical attention or lose time from work because of low back problems.

Waddell, 1987

- ◆ The costs of back pain in the U.K to the National Health Service are estimated to fall between £264.5 and £435.7 million per annum (Klaber-Moffett et al, 1995).
- ◆ Further costs to society are born out by these figures from 1993. Back pain resulted in 52 million days lost from work with an indirect cost of £3.8 billion.
- ◆ D.S.S paid benefits for 106 million days at a cost of £1.4 billion. (C.S.A.G, 1994)

It is amazing that for a condition that has such a devastating effect on society, there is so little understanding of the nature of the problem and such widespread variation in the choice of treatment. In "The Back Pain Revolution"(1998), Gordon Waddell best sums up the frustration when he states "Back pain is a 20th century disaster. We can split the atom and send men to the moon.....Yet we have no answer to simple back ache."

In order to improve upon this situation in 1992 the Clinical Standards Advisory Group (C.S.A.G), was approached. This represents a panel set up to provide independent expert advice to U.K Health ministers and the N.H.S. Their remit to "advise on the standards of clinical care for, and access to and availability of services to, N.H.S patients with back pain". To establish management guidelines a comprehensive review of the scientific literature was undertaken

following strict criteria. Only controlled trials which provide the highest scientific standard and quality of evidence were included. It is because of the extensive nature of the report and rigorous methodology applied that the C.S.A.G guidelines, published in 1994, are so frequently cited.

It is now recognised that if an attack of back pain has not settled in six weeks there is a risk of it becoming chronic (C.S.A.G 1994). This in itself leads to further problems for there is clear evidence that the longer a person is off work with back pain the lower their chances of returning to work

It is the remaining 10-15% who are off for long periods with chronic low back pain that account for the vast majority of incapacity payments and health service costs, 80-90% of the £435 million costs are attributed to chronic sufferers (Waddell, 1987).

The lack of success with chronic back pain sufferers has been attributable to the development of psychosocial factors (Strong et al 1990, Bonaiuti and Fontanella 1996). It is now recommended these be assessed in the early stages to prevent patients from receiving inappropriate treatment. Indeed following Alf Nachemsons lecture to the British Orthopaedic Association in 1994, entitled "Back Pain –No Concern of the Orthopaedic Surgeon" there is now recognition among this distinguished group of the lack of success with spinal surgery.

Unfortunately early management at the primary care stage often led directly to the development of chronic low back pain. Standard G.P treatment consisted of a prescription for painkillers and anti-inflammatory drugs along with advice for bed rest, despite its ill effects. If no improvement patients would then be referred for therapeutic intervention. However most treatments used for back pain are symptomatic, and there is little evidence that they have any lasting effect (koes et al 1991).

Relief of pain is often deemed the primary objective of treatment while restoration of function is neglected. This approach, where the patient plays a passive role, has been questioned in recent years and may not be an appropriate method to those with chronic low back pain (Waddell 1993).

As early as 1987 Waddell highlighted the need to change the approach of treatment offered to those experiencing chronic low back pain. He advocated the use of a biopsychosocial model, which includes physical, psychological, and social elements. A clear message being that the patient must take responsibility for the condition and be involved in active restoration of function. This has subsequently been supported by the C.S.A.G. report in 1994. For chronic back pain there recommendations include, provision of a "back pain rehabilitation service", which is consultant led and offers facilities available for psychological support.

In 1988, based on Waddle's recommendations The Nuffield Orthopaedic Centre, Oxford, set up a fitness programme for patients with chronic low back

pain. It consisted of eight, one-hour sessions over four weeks. Each session involved a warm up, followed by fifteen progressive exercises performed in a circuit format that were designed to work all major muscle groups. Participants were encouraged to progressively increase the number of repetitions or difficulty of exercise, and also incorporate exercise into their daily routine outside the class.

Frost in 1995, looked at 81 patients with low back pain, they were allocated to either backschool or backschool with the above fitness programme. She found significant improvements in the group incorporating exercise reported by functional disability and psychological questionnaires, and a physical function (shuttle walk) test. A later study (Frost et al, 1998), demonstrated the clinical effectiveness of the fitness programme over a control group who were instructed only in a home exercise programme.

Over the last ten years there has been a gradual increase in the use of similar exercise sessions for chronic low back pain with various studies attempting to gauge their effectiveness.

Kankaanpaa et al, 1999, performed a study comparing the results of an active rehabilitation programme (n = 30) over a passive control group (n = 24) in a population with chronic low back pain. The active rehabilitation consisted of twenty-four exercise sessions during a twelve-week period. The exercises are only reported as "physical exercises with specific equipment" together with stretching and relaxation. The control group received thermal therapy and massage. Evaluation was made via pain scores, disability indexes and an objective back extension test. Results demonstrated that the active rehabilitation group was more successful in reducing pain, disability and improving lumbar endurance when followed up after one year.

This study however should be viewed with caution, the control group were in effect receiving no treatment (heat and massage for 4 weeks), while the active rehabilitation group trained for 12 weeks on what appears to be expensive isotonic back training machines. Their exercises on these were exactly the same as the objective test used to record lumbar fatigability. Therefore it is not surprising their scores were higher than the control at 6 month follow up. It is also worth noting that the exercise programme used hardly fits in with the idea of low tech, low cost and high volume design as recommended in the C.S.A.G. (1994) report.

Various recent studies report on the long term effect of rehabilitation programmes for chronic low back pain. Hartigan et al (2000), performed a study on 122 subjects who completed a programme of quota based exercise with assessment at evaluation, 3 months and 12 months using patient completed questionnaires. Disability scores, pain scales and frequency of exercise performed were obtained. Results demonstrated significant improvements ($P < 0.000$) at 3 month follow up that were maintained at 12 month follow up. However there was no standardisation of the treatment received with differing programmes implemented based on the initial level of back pain reported using a visual analogue scale. Another weakness of the

study is that exercise behaviours are self-reported and may not accurately reflect true exercise behaviours.

Taimela et al, (2000), equally demonstrated reduced episodes of persistent pain and decreased levels of absenteeism 14 months after completing a 12 week rehabilitation programme. Again though the difficulty with reporting on the population with chronic low back pain is that other factors may influence their subjective results for example depression and compensation claims.

As mentioned some trials utilising exercise intervention have a wide discrepancy in the type of exercise used ranging from expensive machines (Kankaanpaa et al 1999) to impractical home equipment (Ljunggren et al 1997). Much closer in design to the recommendations by Waddell (1996), and C.S.A.G (1994) guidelines is work by Klabber-Moffett et al (1999).

They demonstrated good results in a one year follow up of 187 patients randomly assigned to either an exercise programme or standard care from their G.P. The exercise sessions consisted of eight classes over a four week period. The exercises were purposely kept simple and did not utilise specialised equipment. Each session also involved a warm up and relaxation period. Following the class, patients received advice and tips directing them towards self reliance. After six months and one year intervals, the intervention group showed significantly greater improvement in a disability questionnaire score. At the one year follow up, the same group showed greater improvement in the Aberdeen back pain scale and reported only 378 days off work compared to 607 in the control group.

Reviewing these studies reveals strong evidence in favour of an active exercise and rehabilitation approach to back pain. Interestingly the type of exercise does not need to be complex in its nature. At Physical Solutions we certainly support the concept of exercise and functional restoration of movement ie get the feet on the ground and off the plinth. Initially we may tackle the hips and restore range and mobility, inactive lifestyles often cause this area to become 'shut down' shifting the workload on to the lumbar spine. By 'freeing up' the hips the stress is reduced on the spine and we can then safely mobilise the lumbar and thoracic spine in all three planes. *A full programme of flexibility exercises and pathways to achieve hip separation can be found in the functional resource.* Often the important concept is to aid the patient in overcoming their fear that movement will harm or worsen their condition. This is hardly surprising since for many years the medical message has been rest, don't bend, wear a corset and stop working!

Another important conclusion that can be deduced from the studies is that back pain is often associated with psychological and social factors. It is therefore important that these be addressed in conjunction with an exercise regime (C.S.A.G 1994). The C.S.A.G. report recommends an active rehabilitation service staffed by the appropriate disciplines, in effect the needs are low-tech, low-cost and high volume in nature. It is clear to see that the potential cost benefits with this approach are enormous. Patients can be treated in a primary care setting in a group environment. Earlier return to

work and decreased benefit payments would result in huge savings to society in general. In the long term if only a small percentage of these patients continue with a life long commitment to exercise there will be the untold savings associated with a decreased incidence of C.H.D , diabetes and strokes.

Changing the approach to the treatment of back pain will be a gradual process but evidence is increasingly favouring an exercise based approach. It will be interesting to see if simple exercises, incorporated into a biopsychosocial model hold the key to aiding and preventing a condition, which has had such a devastating effect on Western society.

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