

A multidisciplinary approach to the treatment of chronic pain: a case report

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ABSTRACT

Persistent pain is a problem facing a high proportion of our society and is best treated by a multidisciplinary team approach. This case report reviews the client's presenting history from a multidisciplinary perspective and the functional assessment of a client with chronic heel pain. The use of outcome measures is an integral part of the client's assessment and treatment. The client's problems are identified and a treatment plan is developed with the physiotherapy treatment, including an Activity-Based Programme, described. The successful treatment outcome can be attributed to a team approach with regular communication between providers to co-ordinate the programme. Regular monitoring of goals set, and evaluation of improvement using outcome measures were utilised throughout the client's rehabilitation. The use of outcome measures helped the client to gain confidence, manage pain and increase activity levels. **Stephenson L (2008): A multidisciplinary approach to the treatment of chronic pain: a case report. New Zealand Journal of Physiotherapy 36(1): 15-21.**

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INTRODUCTION

Pain, although essential for survival, is the second most common reason for people seeking medical care (Turk and Okifuji, 1998). The fragmented and unimodal approach of conventional medicine often delivers poor outcomes for the client (Turk and Okifuji, 1998). Turk and Okifuji (1998) concluded that multidisciplinary pain centres delivered care that not only improved overall functioning, but was also cost effective in treating patients with chronic pain. Further research on multidisciplinary treatment for chronic pain has been mainly directed at low back and neck pain. Jensen et al (2005) concluded from their longitudinal study that multidisciplinary rehabilitation for women with chronic neck or back pain had a substantial rehabilitation impact and was "a cost effective method for improving health and increasing return to work."

The New Zealand Accident Rehabilitation and Insurance Corporation (ACC) has multidisciplinary pain management services for chronic pain (ACC website) with the aim of delivering a service that will enable the claimant to regain independence and/or a return to work. This approach utilises a team of professionals including doctors, physiotherapists, occupational therapists and psychologists with the common goal of working together with claimants to return them to maximum function.

This case report reviews the multidisciplinary assessment, rehabilitation and outcomes of a lady who developed chronic regional pain after an injury to her foot.

Case Report

J was concurrently referred to a physiotherapist (LS), an occupational therapist and a psychologist

by ACC for assessment and recommendations for appropriate treatment. The three practitioners work as part of a multidisciplinary company who have a special interest in pain management. The reason for the referral had been explained to J by her ACC case manager, the process of the assessment was explained, and consent gained.

History

J is a 61 year old female who, prior to her injury, worked as an assistant in a café. She married at 23 and after eight years left her marriage as a result of an ongoing abusive relationship. Her four children remained with her. J rebuilt their lives with minimal outside assistance and became involved in another relationship, which also ended after ten years due to physical abuse.

At the time of the interview she was again in another abusive relationship and was in the process of leaving after 8 years. J's children had left home but were supportive of her decisions. She maintained close contact with her children and is currently involved in the after school care for two of her grandchildren aged 12 and 10 years. She has done this since her daughter-in-law died approximately two years ago.

Before her current injury J enjoyed participation in a wide range of sports including golf, rock and roll, ballroom dancing and walking, as well as gardening and completing renovation projects.

In February 2001 J was standing on a bar stool tending some over-hanging plants when she jumped down. J stated she immediately felt pain in her right foot and thought she had re-injured an Achilles tendon that she had previously ruptured. She reported she had an immediate sharp pain

in her heel that radiated into her calf muscle and posterior right knee. The pain continued to persist causing her difficulty to fully weight-bear and mobilise. Some days later her general practitioner referred her to physiotherapy and gave her a medical certificate to be off work. Her physiotherapist gave a provisional diagnosis of an acute plantar fascia injury. Despite extensive physiotherapy the problem did not resolve.

Since this time she has had numerous orthopaedic referrals, a review by a Rheumatologist and an Initial Medical Assessment. She has had x-rays and blood tests that were unremarkable. Medication, that she felt gave some pain relief, consists only of celecoxib (Celebrex), used regularly rather than as-needed.

Orthopaedic treatment consisted of cortisone infiltration into the plantar fascia and calcaneal attachment. This gave her limited short duration relief. Her orthopaedic specialist advised she had developed a chronic plantar fasciitis. She was informed that nothing more could be done and she would have to learn to live with, and manage her pain. J has remained off work as an ACC beneficiary since her injury.

Previous Relevant History

J is unsure of the exact date, but had previously ruptured her right Achilles tendon which was surgically repaired. Although rehabilitation was slow after this she had regained full function and had returned to all her sporting activities.

She had surgery for a bunion on her left foot in February 2004 and subsequently had problems with pain, keloid scarring and loss of function. This responded well to physiotherapy resulting in a return to full weight bearing and a normal pattern of gait, although some pain persisted.

PHYSICAL EXAMINATION

J presented well dressed and was not overweight. She walked with a significant limp and had decreased weightbearing through her lateral foot.

J described her pain as an almost constant toothache throb in her heel and the lateral border of her foot with pain in her calf when walking. J rated her pain at a resting level to be 4/10 and her maximum levels of pain to be 8-9/10 on a Numeric Rating Scale where 10 is maximum pain.

J reported she had difficulty getting to sleep, then woke early, often not getting back to sleep. Pain in her foot and at times her calf disturbed her sleep. She did not get up to try and relieve her pain although would rise early if she could not sleep. She had pain on rising in the morning which became progressively worse throughout the day, although would ease with rest.

Aggravating factors described by J are shown in Table 1 and Easing factors in Table 2.

Belief about her Problem

Despite no recent improvement she was still hopeful her injury would improve with time. She

Table 1. Aggravating Factors

J reported that:
Walking is limited and that "doing the supermarket shopping was difficult and very painful",
She will drive and find a park outside a shop and felt she was unable to walk more than one block. She no longer walked on rough ground.
She had some difficulty getting in and out of her car and had pain with driving, although could drive for two hours.
She has difficulty putting on shoes and socks.
Standing was limited, and prolonged sitting also became painful, limiting sitting to about twenty minutes. (During her interview she often changed position, especially moving her leg and foot.)
She longer no dances, but used to "dance all night".
Digging the garden is no longer possible.
She is no longer able to do all her housework to the level or frequency that she used to, however, still manages her own housework. She stated she used to be a perfectionist and always had a clean, tidy home.
Standing to prepare a meal aggravates her pain and she now uses a bar stool to decrease her weight bearing.

Table 2. Easing Factors

J reported that heat helps to ease her pain and that she regularly uses her spa pool at the end of the day.
Medication gives some relief but she does not want to be reliant on medication as it "is only a short term cure and I would rather be able to do something about the pain myself."

is aware that nothing more medically or surgically can be done to help her and that "I have been told I will have to learn and live with it". She wants to be able to socialise without getting sore, and be able to return to some form of work. J was prepared to look at options that might help her to manage her pain and improve her lifestyle.

Functional Assessment

J walked on the outer border of her foot and had an antalgic gait. She watched the ground directly in front of her and was unable to walk with eyes closed.

In standing she had a pronated talus, causing increased tension on the medial calf muscles and medial plantar fascia; dorsiflexion was slightly restricted and increased her pain. Pain prevented plantarflexion in standing and joint proprioception was poor.

On palpation she reported mild pain along the medial forefoot and locally over the calcaneal attachment of the plantar fascia. J did, however, have active trigger points in her upper medial soleus, flexor digitorum longus, and her lateral gastrocnemius had an extremely tight band along its length.

Functional Tests/Outcome Measures utilised in J's assessment are outlined in Table 3, and described in Appendix 1.

Table 3. Outcome Measures

Outcome Measure	Initial Assessment	Prior to ABP commencement	Mid ABP – 6 weeks	Completion of ABP - 12 weeks
•Timed Up and Go (Noonan and Dean, 2000)	9.36 Seconds	9.06 seconds	6.2 seconds	5.81 seconds
•10 metre Walk (Richards and Malouin, 1995):	7.69 seconds	6.47 seconds	6.47 seconds	6.17 seconds
•200m walk:	2 minutes 15 seconds. J’s gait became more laboured and slow on the second 100m and pain increased to 8/10 on completion.	2 minutes 04 seconds. J’s gait became slower on the second 100m and she developed an altered gait pattern. Pain increased to 7/10 on completion.	1 minute 57 seconds. J’s gait became more laboured and slow on the second 100m and pain increased to 8/10 on completion.	1 minute 46 seconds. J’s gait did not deteriorate during the walk
•Dynamic Balance Test (Hill, Bernhardt, McGann, Maltese, and Berkovits, 1996)	5 steps	5 1/2 steps	6 1/2 steps	7 steps
•Stepping on and off a 300mm step	J did not want to lead with her right foot, and when asked to, had difficulty pushing up to get onto the step. She also had poor balance when completing this task.	J was happy to lead with her right foot, but she still had difficulty pushing up to get onto the step. She had poor balance when completing this task.	J achieved this with ease	
•Lower Extremity Functional Score	16/80 indicating a 20 % level of function	not repeated.	33/80 indicating a 41% level of function.	40/80 indicating a 50% level of function.
•1.5 Km walk			11 minutes 51 seconds with only a slight limp at the end and a pain rating of 6/10. J was delighted with this result and had surprised herself with the ease that she had been able to achieve the walk..	

Assessment Summary/Findings

J has both psychosocial and functional problems associated with her ongoing pain which needed to be addressed.

From a psychosocial approach she is in a traumatic and abusive relationship that she is leaving. She does not feel unsafe, although fears she may still be likely to suffer from both physical and verbal abuse.

She has lost significant confidence, general fitness and is no longer socialising. J is demonstrating activity related fear avoidance behaviours (Linton 1999, Robinson and Riley 1999), such as not walking further than is necessary. She no longer dances and has stopped all sporting activities. J felt

frustrated she was no longer able to be as fastidious in her house and found it difficult to pace activities as previously she would have cleaned her whole house in one go.

J’s current social situation, recent surgery on her left foot and fear avoidance behaviours would be perpetuating her problem.

Functionally J has developed a poor gait pattern, and along with poor joint biomechanics (Travell and Simon, 1983; Donatelli et al, 1988) this was stressing the medial arch and soft tissues of her foot and medial calf resulting in active trigger points (Travell and Simon, 1983).

Several Yellow flags (Kendal et al, 2003) were identified as part of J’s Assessment.

These were:

1. Attitudes and Beliefs about the pain – Fear avoidance.
2. Behaviours – Use of extended rest.
 - Reduced activity and withdrawal from activities of daily life.
 - Sleep quality reduced since onset of pain.
3. Emotions – anxiety or heightened awareness of body sensations
 - Stress
4. Family – Extent of support in attempts to return to normal activities, including work.
 - History of abuse.

These needed to be addressed for her rehabilitation plan to be effective.

J was living in a dysfunctional abusive relationship (Robinson and Riley, 1999; Turk and Okifuji, 2002) and it has been shown that there is an “increased risk for the negative emotion....to the effects of a patient’s social interactions and interpersonal relationships” (Robinson and Riley, 1999, p.81). “In addition, marital dissatisfaction and conflict have been linked to poor patient adaptation to chronic pain” (Robinson and Riley, 1999, p.81).

J was stressed about her relationship and her pending separation as well as the fact she was again going to be alone. As a result J could have an increase in her pain response and lowered coping mechanisms and strategies (Melzak R, 1999; Boothby J, Stratford PW, Stroud MW et al, 1999). This would have an additive factor to the emotional factors that co-exist with her chronic pain.

J was an over-achiever who always took a pride in her house and garden and this contributed to a significant loss of her self esteem (Linton, 1999). In addition, she had the loss of her third relationship, the loss of a daughter in law, and the loss of her employment to contend with. She had lost social contact with a lot of her friends. Her main social contact was her immediate family, where she also undertook a significant supporting role.

J had developed fear-avoidance behaviours (Butler and Mosely, 2003; Nicholas et al, 2001; Vlaeyen and Linton 2000) that need to be addressed to enable her to achieve her goal of increased socialisation and activity.

To allow J to get to sleep more readily and refocus her thoughts away from pain the development of relaxation techniques (Winterowd, 2003), including distraction and imagery would be helpful. In addition, the occupational therapist could educate J on strategies to improve sleep hygiene. These strategies are well documented in Dr Glen Johnson’s online book *Traumatic Brain Injury Guide* (2007).

In addition, to the psychological factors that could be relating to J’s chronic pain she had some biomechanical issues that would be beneficially addressed.

Trigger points are known to refer pain to sites away from the location of the trigger point (Travell

and Simon, 1983). In this situation, the active triggers in J’s medial gastrocnemius are referring pain to her medial instep. This trigger point may also cause nocturnal pain (Travell and Simon, 1983), and to a lesser extent the trigger point in her soleus. Trigger points from soleus refer primarily to the heel with some pain in the medial calf and also restrict dorsiflexion (Travell and Simon, 1983). Finally the trigger point in flexor digitorum longus (Travell and Simon, 1983) has a referral pattern to the lateral border of the foot with some pain in the lateral calf.

As a result of the excessive pronation of J’s talus the rigid lever required for push off is unable to be achieved (Travell and Simon, 1983; Donatellei et al 1988), thus decreasing forefoot stability and flexor stabilisation. Flexor digitorum longus in turn acts earlier and longer in an attempt to stabilise the forefoot (Travell and Simon, 1983). It could be hypothesised that this is the reason for active triggers in J’s flexor digitorum longus.

Coupled with poor joint function, weak muscles and poor fitness, J was adding to the pre-existing fear avoidance issues associated with her chronic pain.

PHYSIOTHERAPY INTERVENTION

On receipt of the report, J’s ACC Case Manager referred her back to me to provide the recommended physiotherapy interventions.

It was decided that local treatment would be undertaken prior to the Activity Based Programme. The rationale for this was to ascertain whether we would gain a change in J’s pain status and, also, to allow time to address the fear avoidance issues and discuss ways of self help for pain management.

Initially J was fitted with custom made orthotics for her walking shoes that addressed her specific biomechanical needs with fore and rearfoot wedging. A comfort insole with arch support was fitted into J’s casual shoes. The orthotics made an immediate difference to the way J was able to weightbear and walk, however, no change in pain was noticed.

Local trigger point release of massage and dry needling (Travell and Simon, 1983) were used to address the active trigger points. During treatment, J’s lateral foot pain was reproduced indicating this to be a source of some of the pain she experienced. Trigger point treatment was followed by acupuncture.

Acupuncture was based on a Western approach, addressing the acupuncture channels along the trigger points with local needles to stimulate the release of, beta endorphins, norepinephrine, serotonin, histamine and GABA (Lundeburg, 1998; Baldry, 1993). The master point of muscle and tendon GB34 was also needled to promote healing and increase Qi (Maciocai, 1989). Needles were inserted and Qi achieved and with further stimulation were left in for 20 minutes.

Treatment was scheduled on a weekly basis. After 4 treatments J reported a decrease in her

medial calf and lateral foot pain, with pain becoming localised to her heel. The intensity of pain had not changed, however, her activity had increased and she had a decreased fear of activity..

During this time a cognitive behavioural approach (Sharp, 2001; Thompson, 2005) was taken to encourage J to increase her level of activity. Discussion around the issues of what chronic pain is and the Gate-Control Theory (Melzak and Wall, 1996) of pain was undertaken.

After 7 treatments it was decided, in consultation with J and the clinical psychologist, that the Activity Based Programme would commence. The initial functional assessments were repeated to gain baseline performance measures to enable assessment of J's progress. Results can be seen in Table 3.

The following goals were set by J to be achieved within the 12 week time frame

- J will be able to comfortably walk for 20 minutes at 6/52 and at 12/52 will be able to walk for 60 minutes.
- J will have enjoyed a night out and have regained recovery to her "normal" level after 24 hours.
- J will be able to dance for 9 minutes – 3 dances.
- J will be ready to start playing a few holes of golf.

The goals were to be achieved through a gym based programme and an independent walking and home exercise programme.

J was taken to a local gym and I set up a programme, teaching all the exercises. Exercises were chosen that would minimise the need to fully weightbear, but would strengthen all muscle groups as well as increase J's joint proprioception to help with her ability to walk on uneven ground. Weight training was followed by a progressive low impact cardiovascular programme.

J attended the gym 2-3 times a week and I monitored and progressed her programme on a weekly basis. Time was spent discussing the progress of her independent walking programme and monitoring her home-based exercises, as well as encouraging an increase in functional activity with task setting (Beattie, 2001; Vlaeyen and Linton, 2000) to help diminish the fear of walking. For example, she was asked to park her car some distance from the corner store and walk to and from the shop. Daily walking was undertaken on a distance contingent basis starting with a block walk and progressing from there.

J attended a further two times for local treatment, at which time she had latent trigger points with localised heel pain. During treatment discussion centred on pacing and the increased activity she achieved in her new home and garden. In conjunction with her concurrent psychological therapy her outlook had become more positive and she demonstrated fewer fear avoidance behaviours.

At the six week point of her programme she was reassessed using the functional outcomes previously used and her goals were reviewed. As J had not achieved the planned level of independent walking a 1.5km walk was also undertaken. However, J's results indicated a significant level of improvement of function as reported in Table 3.

The next week at the gym, J reported that she had increased her walking and had achieved 50 minutes. She kept to the grass and was more confident on uneven surfaces. Over the next 5 weeks J continued to walk for an hour most days, attended the gym 2-3 times a week and had begun to socialise. She had also walked on hills and was very positive about her progress.

On completion, J had again made progress with the functional assessments undertaken (Table 3). She reported that when caught in rain she had been able to run to avoid it, and although painful, it had not remained so. J had much less difficulty doing many activities including light household chores and had started to feel confident to tackle heavier activities. Pain scores were not discussed at this stage as J was no longer focusing on the pain.

A review of the goals that J had set indicated that she had achieved them all. In addition she had been out to the driving range with an iron to practice, as well as caddying for 5 holes while away with friends for a weekend. She planned to join a nine hole golf competition. Overall she was pleased with the outcome and had regained a positive outlook on life.

She attributed her progress to a number of things but particularly felt the use of orthotics has enabled her to walk in a much improved pattern with a decreased stretch on her muscles and tendons. This gave her confidence to be able to walk further without the fear that her limp and pain would prevent her from getting home.

Multidisciplinary Care

Due to the number of underlying psychosocial factors that were likely to be impacting on her pain levels and on her ability to cope with these, it is less likely physiotherapy alone would have achieved such a good outcome (Dersch et al, 2002). The treatment approach utilised by the clinical psychologist was that of a Cognitive Behavioural Therapy model and addressed J's grief and loss from leaving her relationship, symptoms of depression, fear avoidance and social isolation. The occupational therapist's intervention was aimed to assist J with self management strategies for task simplification, pacing of activities, relaxation and sleep hygiene.

With appropriate communication between providers I was able to complement these strategies during her therapy sessions and gained a trust that enabled us to challenge J to undertake more activity and overcome the isolation and low self esteem that had developed as a result of her chronic pain and relationship breakdown.

CONCLUSION

This case report has demonstrated the complexity of disability attributable to chronic pain. Pain, fear and sleep were addressed by the physiotherapist, occupational therapist and clinical psychologist respectively. The team approach was valuable in managing the assessment, planning and goal setting for the complex situation. By utilising a cohesive multidisciplinary approach a positive and rewarding clinical outcome was achieved for all concerned.

In the clinical situation that many physiotherapists work in, they may not have the option of a multidisciplinary approach. However, physiotherapists do have the resources and skill base to undertake a cognitive behavioural and pain management approach, teach relaxation and educate regarding pacing and sleep, to assist our clients' progress and manage their chronic pain.

Through communication with the General Practitioner and support from the ACC case manager, physiotherapists can broaden their focus on patient treatment and rehabilitation. Using "permissible touch" and a substantive knowledge and skill base, physiotherapists can achieve the rehabilitation of patients with a disability attributable to chronic pain.

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APPENDIX ONE

Outcome Measures

Timed Up and Go (Noonan and Dean, 2000):

This test assesses agility as the client starts and finishes in a sitting position with being required to change direction after 3 metres. As J had a fear of moving quickly and looked where she was going it would be expected that she would be slow in completing this test which was therefore deemed to be an appropriate measure to undertake.

10 metre Walk (Richards and Malouin, 1995):

This test measures maximum walking speed over a set distance and the results are compared against those of the same client.

200m walk:

This was set as a specific measurable distance to assess J's walking speed and was able to be repeated on a regular basis. This test gave J encouragement

to see how she was improving as well as offering observation of her pattern of walking.

Dynamic Balance Test (Hill, Bernhardt et al 1996):

This test is used to assess the patient's ability to step up and down of a 700mm step and assesses joint proprioception and balance. The assessment is based on construct validity and in J's case it was chosen as she did not like walking on uneven ground and found steps and stairs difficult. It was a measurable and repeatable test that was able to assess changes in function and also expose J to a task she was not confident in undertaking.

Lower Extremity Functional Scale:

This looks at twenty general activities related to function in the lower limb, and is completed by the client. Items are scaled on a five point scale

0 = extreme difficulty or unable to perform

4 = no difficulty

The maximum score is 80 and it has been assessed to have an error of +/- 5 scale points at a 90% confidence interval (Binkley, 1999). In J's case, we achieved a 24 point difference which was therefore clinically significant. It proved a useful tool for assessing J's initial level of function, on-going progress, and completion outcome as well as being helpful in setting functional goals.